SUSTAINABILITY REPORTING, FINANCIAL PERFORMANCE AND PROFITABILITY: EVIDENCE FROM SOUTH KOREA

by

Anna Nagornova

THESIS

Submitted to

KDI School of Public Policy and Management

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ABSTRACT

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The company's dilemma of whether or not to disclose non-financial metrics is no longer a debate for economic actors. Businesses have been adopting innovative habits while voluntary disclosing alternative information as to obtain intangible market responses in the form of legitimacy, reputation, value creation, and improved stakeholder's relations. From the financial perspective side, this paper aims to test the correlation between sustainability reporting, financial performance and profitability. In this sense, it analyzes sustainability, Corporate Social Responsibility (CSR) and annual reports from primary sources, as well as financial data from FnDataGuide for 50 Korean companies within the period from 2012 to 2014. The negative association of mandatory disclosure and earnings per share (EPS) reveals hidden factors of cost and time; it describes relatively low, yet statistically significant magnitude of negative association. In contrast, voluntary disclosure and EPS have a positive and significant association, which displays positive financial market response for the greater amount of sustainability reporting, as well as the hunger for useful information impacting companies' decision-making and investment trade-offs.

초록

한국 기업의 지속가능경영보고와 재무성과 및 수익성의 상관 관계에 관한 실증 분석

Anna Nagornova

비(非)재무지표 공개여부는 회사경영에 있어서 더 이상 논란의 대상이 아니다. 일례로 최근 많은 기업들은 합법성, 가치창조, 이해관계자들과의 관계개선 등의 시장반응 제고를 주요사안으로 인지하여 대안적 정보들을 자발적으로 공개하는 등 혁신적인 행태를 보이는 추세이다. 이 논문은 재무적 관점에서 지속가능경영보고와 재무성과 및 수익성 간의 상관관계 분석을 목적으로 한다. 따라서, 주요 출처에서 수집한 지속가능성, 기업의 사회적 책임(CSR)에 관한 연차보고서와, 2012-2014 년의 50 개 한국 기업의 재무정보를 수록한 FnDataGuide 를 분석하였다. 분석결과 의무공시와 주당 순이익(EPS)은 상대적으로 낮지만 유의미한 부적 상관관계를 보였으며, 이는 의무공시가 간접 비용과 시간을 수반한다는 결론을 뒷받침한다. 이에 반해 자발적 공시와 주당 순이익은 유의미한 정적 상관관계를 나타낸다. 따라서 지속가능경영보고는 투자결정(위험-수익 균형)을 위한 정보수요와 맞물려 긍정적인 시장반응을 도출해낼 수 있다.

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I. INTRODUCTION

Executive managers are no longer skeptical upon the sustainability reporting practice, as there is no dilemma regarding disclosure or non-disclosure of non-financial information by enterprises and businesses. Even though in many developed countries sustainability disclosures, also acknowledged as non-financial reporting, are not mandatory by law, the incidence of voluntary sustainability reporting is prevalent among many large corporations, which are seeking to advance relations with their investors and stockholders, or legitimize business activities to gain differentiating reputation from the market competition (Dierkes & Antal, 1985); (Deegan, 2002); (Adams, 2008).

Does sustainability reporting reveal measurable financial benefits? Or does it cover only intangible market rewards? These questions are alluring not only researchers, but also businessmen, who seek to legitimize their business processes through non-financial disclosures. Thus, the potential relationship between Corporate Social Responsibility (CSR), Sustainability Reporting (SR), financial performance and profitability has been widely investigated (Cho & Park, 2015); (Milne, Tregida, & Walton, 2009); (Murray, Sinclair, Power, & Gray, 2006). At this point, it is hard to conclude on a causal conjecture of such association, however, many studies attempt to demonstrate a correlation between non-financial information reporting and financial performance as to have empirical evidence that would optimize their decision-making processes (Orlitzky, Schmidt, & Ryness, 2003); (Park & Oh, 2014).

South Korea is a unique case of rapid and qualitative economic growth within the last three decades. After upgrading from being a middle-income to a high-income country, South Korean business milieu has also advanced and developed not only financially, but also from the

perspective of social and environmental responsibility reporting. Although the degree of sustainability reporting in South Korea is far less than the volume of disclosure in the UK, the US or other developed countries, Korea is showing a dynamic trend of increasing sustainability disclosure habit. Moreover, in 2015 Dow Jones Sustainability Index has reported three Korean conglomerates, e.g. *LG Electronics Inc.* (Commercial and Professional Services), *Lotte Shopping Co Ltd* (Retailing), *KT Corp* (Telecommunication Services), as industry group leaders of the world, in terms of corporate governance, risk management, customer relations management, environmental policy and management system, stakeholder engagement, operational eco-efficiency etc. (ROBECO SAM, 2015).

The objective of this study lies within two tracks. First, South Korean business market has not been researched extensively by international and domestic researchers, which gives more incentives for other foreign scholars to engage in investigating sustainability reporting behavior and its effect on financial performance of South Korean companies. Second, this study is employing new research approaches, using a mix of quantitative and qualitative data analyses from primary sources. The outcomes of this research ought to contribute to the existing literature and shed a light on the relationship between sustainability reporting and financial performance, which has been previously treated as ambiguous (Gray, Kouhy, & Lavers, 1995). In this regard, this thesis aims to reduce uncertainty surrounding inconclusiveness of previous findings in this research area.

The structure of this paper will be presented in the following steps. First, it looks at existing literature, in order to build a theoretical framework, develop hypotheses and familiarize the reader with concepts, the South Korean market sustainability practice history, features, peculiarities and general assumption pertaining the relationship between sustainability reporting

and financial performance. Second, the paper aims to rationalize about the variables selection and describe data collection procedures and methodology. Third, the study presents the research design and results, while describing models, regression outcomes and technical interpretation of coefficients respectively. Lastly, final results and concluding remarks are presented from the conceptual and theoretical perspective, in order to derive valuable implications for further research studies.

To summarize, this paper aims to examine the association between sustainability reporting, financial performance and profitability. It utilizes qualitative and quantitative data analysis methods, using a sample of 50 South Korean companies listed in the Korea Stock Exchange market. The financial data is derived from FnDataGuide financial database for the period of 2012 to 2014. Additionally, sustainability reporting practice has been codified using QDA Miner – a qualitative analysis tool – to minimize measurement errors. In fact, sustainability reporting has been approached from two features – mandatory and voluntary sustainability disclosures. The purpose of this separation is to tackle the difference, if any, between mandatory reporting behavior, what is disclosed beyond and firm's financial performance. Since mandatory disclosures are unavoidable, in the process of justifying firm's voluntary sustainability reporting behavior, this should be reflected in its financial performance.

In general, this study intends to answer the question: "*Does sustainability reporting have positive implications for financial performance and profitability of firms*?"

II. LITERATURE REVIEW

The vast amount of literature debates on why sustainability disclosures are important and whether this practice ultimately affects financial performance and profitability. Moreover, it has been long discussed if disclosures of non-financial information are alluring stakeholders, vested groups and investors that try their best to maximize their firms' profits and operations. Therefore, under what circumstances and why is "going green" compelling for large, small and medium enterprises in most developed countries and some developing ones (Murray et al. (2006); Milne et al. (2009); Clarkson et al. (2011))?

Recent literature mentions that practice of sustainability disclosure is an efficient pioneer for reporting on social and environmental corporate responsibility (Choi, Kwak, & Choe, 2010); (Clarkson, Li, Richardson, & Vasvari, 2011); (Dhaliwal, Li, Tsang, & Yang, 2011). Currently, numerous influential works based either on qualitative or quantitative studies have examined the correlation between the environmental disclosures and firms' profitability outcomes (Cormier & Magnan, 2013); (Ghoul, Guedhami, Kwok, & Mishra, 2011) (Lopez, Garcia, & Rodriguez, 2007). In this sense, the framework that researchers usually follow has been based on testing environmental costs against a wide range of other financial measures accordingly.

Empirical findings fluctuate around environmental disclosures on projects and investments implying that greater volume of non-financial compliance is actually strongly linked with positive financial performance and results, thus, smaller volume of sustainability reporting is negatively linked to financial results, subsequently. These findings are based on a variety of tests, more specifically, some studies have proved that companies with good scores, in terms of independent environmental criteria, have reached stronger stock gains in S&P500 overall and vice versa (Barth & McNichols, 1994). Additionally, from the legal perspective, companies

which were more obedient towards environmental laws have also scored better upon stock prices in S&P500 compared to lower indicators of laggard companies in the markets (Barth, McNichols, & Wilson, 1996). In this regard, progressive environmental strategies that engage external stakeholders in company's environmental programs tend to be associated with fundamentally better financial performance (Christmann, 2000). In contrary, other findings summarized in literature review by Gray et al (1995) record a twofold relationship between environmental compliance, sustainability reporting and profitability, so that previous findings are largely inconclusive.

A. General Assumption: Why Sustainability Disclosures Should Be Correlated to Financial Performance and Profitability?

The Sustainability Reporting (SR) or Corporate Social Responsibility (CSR) reporting initiatives are not mandatory in most of the developed countries, without mentioning developing world. Thus, the law does not oblige companies to publish non-financial information related to social, environmental and human impact of their business practices. In this connection, Gray et al (1995) do not characterize the social and environmental disclosures practice as a systematic process, but rather as a company's voluntary act driven by the "going green" notion. Further, this is an intriguing controversy though, as research findings by Milne and Patten (2002), Deegan (2002) and Adams (2008) reveal potentially weak or no association between CSR disclosures and financial performance; however, advocating for the probable channel of shaping stakeholders' interests and perceptions on company's investment portfolios through seeking more reputation and legitimacy.

Globally and internationally competitive companies are committed to disclose information on their non-financial performance due to the belief that it will further improve their image and

reputation in the domestic as well as international markets. Yet, does empirical evidence verify that? In fact, few studies on the relationship between CSR or sustainability disclosure and company's reputation document a positive reverse association (Michelon (2011), Branco and Rodrigues (2008)). For this reason, more profitable companies tend to legitimize their business activities by disclosing sensitive information to stakeholders. Moreover, the commitment to stakeholders identifies the need for CSR initiatives in the global markets. The study of 92 US firms, from environmentally sensitive industries suggests that the theory of legitimacy, proposed by Suchman (1995), explains the growing need for including environmental and social reporting, which provides vital information for firm's survival in the markets (Cho, Guidry, Hageman, & Patten, 2012).

In addition, Global Reporting Initiative (GRI) published a study on sustainability reporting value, which emphasizes the importance of sustainability disclosures. The benefits of such reporting practices lie in the grassroots of financial performance, access to capital, innovation, waste reduction, efficiency, risk management and other social benefits (EY & Boston College Center for Corporate Citizenship, 2013). This report accentuates on the results of more than 200 independently conducted observational studies, which demonstrate positive financial market responses from sustainability disclosure practices.

Before proceeding to the development of theoretical framework, it is essential to conceptualize two views: *Corporate Social Responsibility (CSR) Reporting* and *Sustainability Reporting (SR)*. In fact, GRI recognizes SR similar to other non-financial reports like CSR, environmental reports, etc. Nevertheless, Sustainability Report[1] integrates broader aspects of

[1] Global Reporting Initiative identifies sustainability reporting as a link between its strategy and its commitment to a sustainable global economy (EY & Boston College Center for Corporate Citizenship, 2013).

non-financial performance indicators, like organization's values, governance model, social and environmental impacts, future targets and past performance. Table I below summarizes the differences between CSR and SR. This study aims to investigate South Korean companies and analyze any type of disclosures available from Korean enterprises, i.e. Annual Reports[2], Environmental Reports, Corporate Social Responsibility Reports, and Sustainability Reports.

Table I. *Differences between CSR Reports and Sustainability Reports*

Item	CSR Report	Sustainability Report
Vision	Reports on past performance, within last 12 months	Reports on future performance, plans what contributions and changes can be made by business (e.g. reducing energy consumption, improving waste managements, governance etc.)
Target	Opinion formers, like public officers, vested groups, mass media	Whole value chain: suppliers – operations – partners – end-consumers
Rationale	Aims to promote and protect reputation and company's image in developed markets	Aims to integrate broader development perspective and create opportunities in developing and emerging markets

The great amount of studies supports the goal of financial and managerial accounting and/or environmental disclosures as to provide useful information for internal managers and external stakeholders. Moreover, as aforementioned the legitimacy theory is highly applicable to explanations of why companies disclose this information to further successful operations of their business activities (O'Donovan, 2002). On the other hand, other prominent studies conclude that the relationship between corporate disclosures, i.e. sustainability reporting and corporate

[2] In the absence of other reports on sustainability, Annual Report should include information on carbon emissions, energy consumption, waste management and reduction of environmental impact strategies and/or targets.

financial performance, is ambiguous (Gray & et al., 1995); (Brey & Haavaldsen, 2014) (Aupperle, Carroll, & Hatfield, 1985) (Cho, Guidry, Hageman, & Patten, 2012). In this sense, some scholars report on positive, whereas others on negative relationship pertaining to financial performance and corporate reporting practices ((McWilliams & Siegel, 2001); (Orlitzky, Schmidt, & Ryness, 2003); (Mitchel, Agle, & Wood, 1997); (Murray, Sinclair, Power, & Gray, 2006)). In addition, scholars in the US, the UK and other high-income states, have concluded that the stakeholder's theory along with legitimacy theory are the most viable and supportive explanations as to understanding the importance of reporting sustainably. Thus, stakeholders and investors find non-financial information useful for decision-making about investments (Dierkes & Antal, 1985).

Investigations on the relationship between environmental sustainability and company's earnings, i.e. profitability are critical to shed the light in this matter. There is a clear relationship between earnings per share and the adoption of sustainability reporting practices (Christoffersen, Frampton, & Granitz, 2013). The research was conducted on top 49 firms from the health sector and arrived to the conclusion that "financial impact is concurrent to the policy implementation with no expectations of future benefits factored into stock prices" (2013, p. 331). It implies that impact of sustainability reporting on company's earnings is reflected in the short-run period without long-term connotation. Therefore, other findings support the idea that environmental management practice is not the only factor for long-term corporate financial performance, but impact of sustainability reporting might be reflected in the short-term period.

B. Sustainability Reporting in South Korea

The seminal papers by prominent scholars in South Korea have also attempted to demonstrate a statistically significant association between business ethics, corporate governance and financial

performance vis-a-vis firms' valuation. Choi and Jung emphasize on the importance of ethical commitment for corporate managers and stakeholders, as this information is reflected in the stock market (2008, p. 458). Moreover, "…the market [specifically consumers] rewards companies with high ethical commitment since it anticipates positive future financial performance from such companies" (Choi & Jung, 2008, p. 458). Another seminal paper documents that cost of capital decreases with the magnitude of corporate governance and business ethics; hence, it justifies managers' commitment for firm's value creation (Pae & Choi, 2011).

In fact, the notion of CSR and SR in South Korea is recently introduced practice for businesses. Due to recent birth of this practice in the country it has been hard to identify specific reporting levels in the Korean market, as the scope of non-financial reporting is different for private and public firms, meaning that it is mostly voluntary. The Korean government, from early 1995 onwards, has introduced a new framework on carbon emissions reductions, which has been constantly improved thereafter.

Overall, sustainability trend statistics in the Korean market indicates that only 114 companies reported on their sustainability practices in 2013 (refer to Table II). To illustrate this better, 92 companies, which is about 80.7 percent, have been releasing sustainability reports annually (Sung, 2014). Sung Jin-Young also mentions that during the decade from 2003 to 2013 about 195 companies disclosed sustainability information at least once, and total of 644 reports have been introduced to the public (2014, p. 35). Moreover, he identifies three potential factors to explain the sustainability reporting trend in South Korea:

- ✓ Given the low awareness level, the sustainability reporting practice trend is increasing;

- ✓ Large corporations, which employ immense capital and human resources, are the ones taking initiative of sustainability reporting;
- ✓ The share of public companies' sustainability reporting[3] is also a significant part of the trend, accounting for 32 percent of the share.

Table II. *Sustainability Reporting by Private and Public Companies in South Korea*

Company Type	Organization by sub-group	Number of organizations
Private	Listed in KRX (Korea Stock Exchange) - *1,832*	59
	Not listed	16
	NGOs	3
Private Organizations sub-total		**78**
Public	Public Corporations - *30*	15
	Semi-governmental agencies - *87*	14
	Other Public Agencies - *178*	3
	Local Government & Other Agencies	4
Public Organizations sub-total		**36**
	Grand Total	***114***

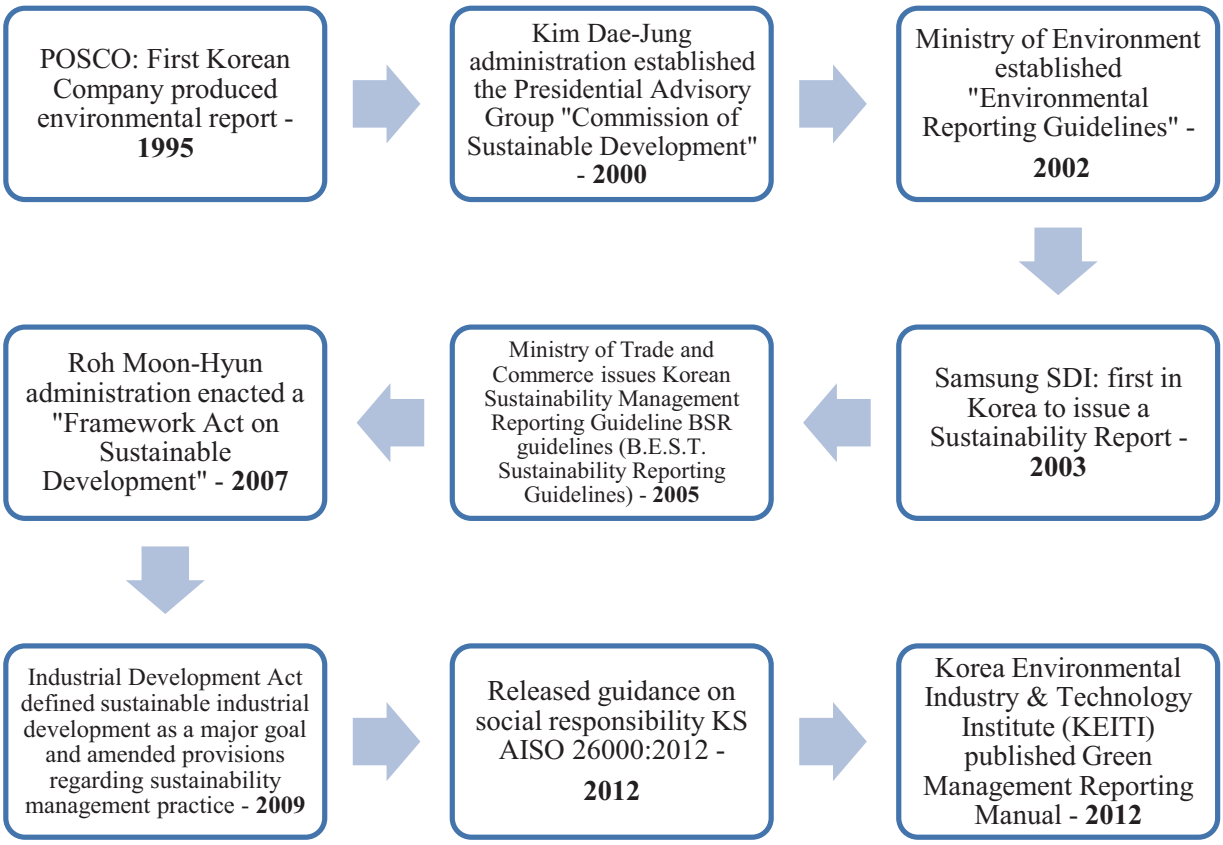
Source: Sung, Jin-Young. (2014). Sustainability reporting trend in Korea. *KAS Journal on Contemporary Korean Affairs*, p.34.

In the late 2000s South Korea has been extensively promulgating and amending acts on sustainability development, performance and disclosure. In 2007 under the governance of Roh Moon-Hyun president, the "Framework Act on Sustainable Development" was proclaimed, which aimed at balancing the economic growth, with social and environmental policies integrated as to shaping a more sustainable future (Sung, 2014). In fact, in terms of chronology, non-financial reporting in South Korea dates back to early 1995, with the release of first environmental report by POSCO Company (refer to Figure I). The first sustainability report was published by Samsung SDI in 2003. It is observed that sustainability reporting in South Korea is

[3] "In April 2007, with the implementation of the "Act on the Management of Public Agencies," all data relevant to business performance and the operations of Korean public agencies subject to business performance evaluations were disclosed in the "Public Agency Management Disclosure System (ALIO)"" (Sung, 2014, p. 39).

a very young practice, which is still voluntary given that only 114 companies are disclosing information, but on a relatively regular basis.

Figure I. *The Chronology of Sustainability Reporting Practice in South Korea*

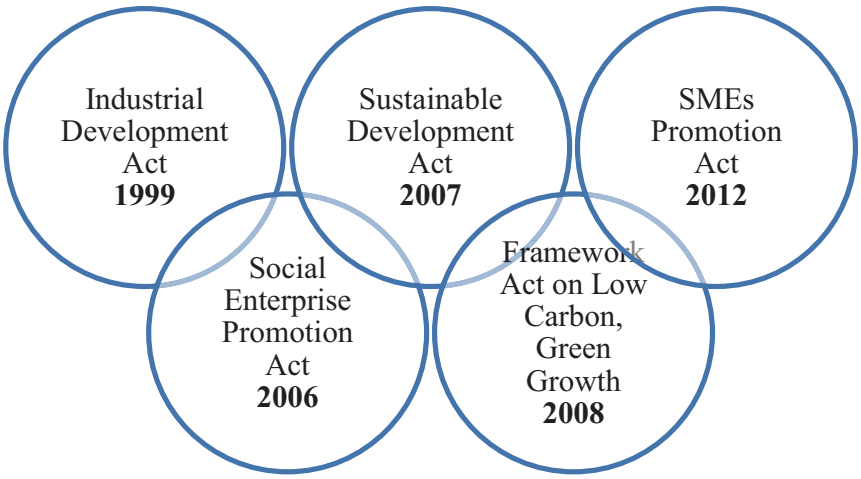


Source: Sung, Jin-Young. (2014). Sustainability reporting trend in Korea. *KAS Journal on Contemporary Korean Affairs*, p.37.

An attempt to standardize sustainability reporting practice in South Korea has its own peculiarities for several reasons. First, there is no clear law binding mandatory CSR reporting practice or any legal enforcement act, which would systemize the process and make it consistently solid. Second, current legislation can only indirectly influence the regulation of CSR and sustainability reporting. Finally, the need for non-financial reporting is mainly driven by growing social demand for sustainability reporting. Therefore, the emergence of legislation to regulate CSR and sustainability reporting can be summarized as indirect effect on legal

framework through acts (refer to Figure II). Moreover, Kwak (2014) highlights rapidly changing business environment after the enactment of those acts, which aim to improve social and environmental conditions in South Korea.

Figure II. *Legislation relevant to Sustainability and CSR reporting in South Korea*



Source: Kwak, K.-H. (2014). ESG disclosure: Legal requirement to facilitate CSR implementation by Korean companies. *KAS Journal on Contemporary Korean Affairs*, 91-107

Furthermore, Korea has recently upgraded its economic status. During the past 20 years, economic growth has opened new windows and changed the country's development strategy; therefore, the sustainability disclosure practices along with CSR reporting have been recently emerging in the South Korean market. To better illustrate this idea, in 1995 the first Framework Act on Environmental Policy aimed at reducing negative environmental impact either by state and local governments or enterprises and citizens (Ministry of Environment Republic of Korea, 1995). This Act was released to mitigate risks that would damage the environment, it stated the following:

> *"All enterprisers shall implement measures necessary for preventing any environmental pollution caused by their industrial activities, and are responsible for participating in and cooperating with the*

> *environmental preservation policy of the State or local government"* (Ministry of Environment Republic of Korea, 1995, p. 2).

Additionally, it is quite interesting to note that the 2014 "Framework Act on Environmental Policy" is no longer obliging businesses to implement measures for environmental impact reduction, but rather to perform their "duties" in a voluntarily manner, the Act states:

> *"Any business entity shall voluntarily take measures required for preventing any environmental pollution and environmental damage that may result from his/her business activities and shall have the obligation to participate and cooperate in environmental preservation policies of the State or local governments"* (Ministry of Environment Republic of Korea, 2014, p. 3).

This slight change in the formulation of business entities' obligation towards environmental impact can be explained by recent emergence of the "green growth" concept. In this regard, in 2008 under the governance of President Lee, many Korean companies adopted practices in order to reduce carbon emissions; later in April 2010 the "Low Carbon Green Growth Fundamental Law"[4] was ratified (Climate Disclosure Standards Board, 2013). This law is intended to provide guidance for reducing carbon emissions, as well as regulate reporting practices by business entities.

Recently, Korean scholars have been conducting studies at a relatively large scale to examine the relationship between CSR reporting and Corporate Financial Performance (CFP). Interestingly, a great amount of these studies indicate that in the South Korean setting CSR

[4] Later in this work, this law is used in the categorization of mandatory and voluntary disclosure items and key identification words.

reporting, along with sustainability reporting are distorted by measurement problems associated with CSR rating and sustainability indexes (Cho & Park, 2015); (Park & Oh, 2014); (Choi, Kwak, & Choe, 2010). To further elaborate, Cho and Park (2015) has mentioned the lack of consistency and standardized measurement approach in CSR rating and sustainability indexes. Different agencies approach measurement from various perspectives influencing validity and consistency of results. Nonetheless, Choi, Kwak and Choe (2010) document a positive and statistically significant relationship between CSR and corporate financial performance, while emphasizing on bilateral association of sustainability reporting and financial performance. On the one hand, a company can be financially sophisticated and hence support sustainability disclosure practice due to immense financial resources. On the other hand, a company may exercise non-financial reporting practice to gain reputation and strong stakeholder relationship for its future corporate financial performance. Whatever reason company may have, incidences of sustainability reporting in South Korea are increasing; thus, this paper aims to analyze the effect of this practice on firm's financial performance.

C. Research Questions and Theoretical Framework

Undoubtedly, company's disclosures on environmental performance are part of their annual agendas; yet, investors and stakeholders expect companies to initiate voluntary activities beyond mandatory compliance. For instance, KPMG International (2013) and Deloitte (2015) mentioned in their recent reports that besides pressure created by B2B actors, stakeholders and investors are looking for outcomes of environmental and social impacts created by activities of businesses. In this sense, questions have been raised on the relationship between the quality and quantity of sustainability disclosure and company's financial performance and profitability. As a result, the main **research questions** of this paper are:

1. Is there statistically significant relationship between sustainability disclosures and (i) firms' financial performance and (ii) firms' profitability?
2. Are *mandatory/voluntary disclosures* correlated to earnings per share and cost of capital? What are the direction and magnitude of potential association?
3. Does controlling for industry type produce statistically significant effect on the findings of this study?

First of all, before proceeding to the construction of theoretical framework, it is relevant to look at different theories explaining the potential relationship between non-financial reporting and financial performance. This research focuses on four basic and most relevant theories proposed in the previous papers, which are (i) legitimacy theory, (ii) stakeholder and value creation theory, (iii) corporate governance and firm valuation theory, and (iv) investor relations theory.

Legitimacy theory is considered as one of the most densely mentioned concept within the social and environmental accounting areas (Hybels, 1995, p. 241). Scholars are profoundly skeptical on whether this theory offers a well-defined insight on voluntary disclosures of firms and corporations. On the other side, it is believed that the legitimacy theory anyhow offers sort of driving instrument for acknowledgement of voluntary sustainability disclosures released by firms and corporations. Inside the theoretical framework there are two dominant categories of legitimacy theory. The first one is related to the macro level with organizational structures and is known as the Institutional Legitimacy theory. In this sense, it usually involves business environments, capitalistic structures and democratic governments. The second one is labeled as the Organizational Legitimacy theory, sometimes referred to as the "Strategic Legitimacy" theory (Suchman, 1995, pp. 575-576). Additionally, it is defined as being a process rather than

just an institution, since it focuses more on particular actions and consequences that organizations will have to support and confront while taking into account lessons learned from the past and future needed actions. In a nutshell, considering the two classes, the legitimacy theory offers researchers a certain way to dispatch corporate disclosure. Thus, the admission and study of the theory must take place in a more sophisticated manner that would be rather connected with accounting than with firms operations.

Stakeholder and value creation theories are frequently argued in the neoclassic theory, stating that economic value is created simply when the paid price by the consumer is greater than the cost of producing that good. In this regard, these costs are referred to as an economic opportunity costs for resources. As a consequence, an economic optimum needs to occur in order to have market clearance, also known as equilibrium, which in most of the cases is strongly correlated with "social value" (Jensen, 2001). Thus, if consumers are able to maximize their utility (Mossin, 1977) and companies maximize profits, the social value will reach maximal point (Williamson, 1984). However, in practice these conditions are hardly met due to market externalities. For instance, it might be the case when some actors have extensive market powers or unequal access to information, leading to information asymmetry in the market. For this reason, the promised social efficiency is never fully or partially achieved. Then, the main question is: what really does value mean for stakeholders? Based on the scholars' classifications six types of values might exist: (1) *economic intrinsic* (the economic value itself), (2) *intangible intrinsic* (the one provided by company), (3) *psychological intrinsic* (the level of satisfaction), (4) *intrinsic value* (operational learning), (5) *transcendent value* (evaluative learning) and value that relates to (6) *negative externalities*. Furthermore, these types of values are cordially reflective in the interaction between a firm and its stakeholders. Similarly, the stakeholder theory is

associated with overcoming the company's sole purpose of maximizing value for the shareholders (Freeman, 2008). Due to introducing value creation the management framework becomes broader, while giving more realistic views on economic optimum.

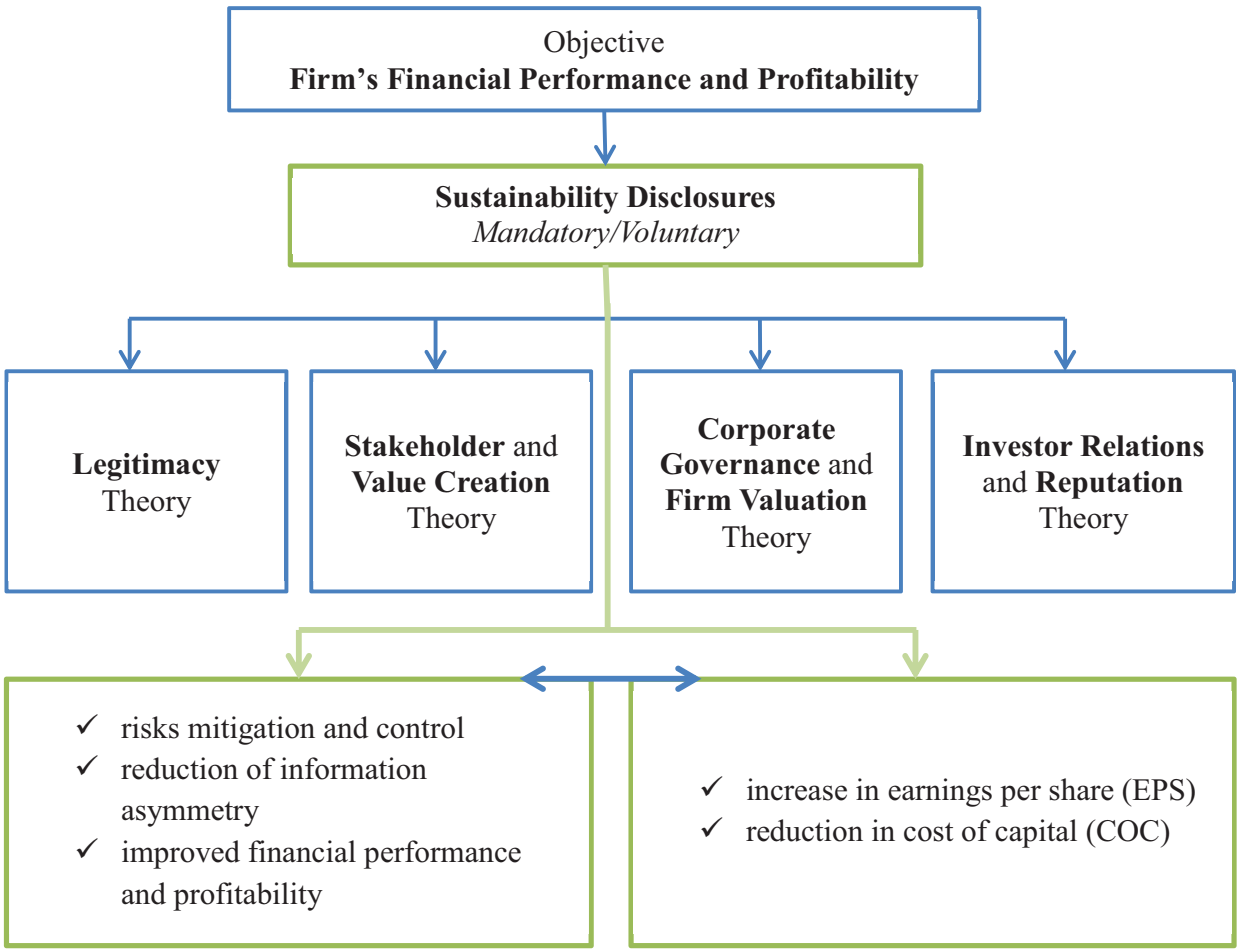
Corporate governance has been perceived as a vital area in numerous fields that incorporate financial aspects, funding, law, and administration. Higher firm's value in the market is associated with advanced corporate governance, research studies by Gompers et al. (2003) and other papers verify that in various countries. Hence, good corporate governance helps to channel private funds into profitable projects and, ultimately, make a valuable contribution to the economic development of a country (Claessens, 2006). Valuation comprises a vast blend of theories. In this connection, an important class was pioneered by Modigliani and Miller (1958), based on equilibrium conditions arguing that there are no arbitrage conditions. Another important class is based on assumptions and preferences deriving in more specific pricing restrictions. In essence, the fundamental valuation equation balances the price of a claim to the expectation of the respective investor.

Investor relations theory is a process describing the two-way communication interaction between a company and investors in order to convey a message of firm's reputation, reliability, credibility and its value in the market. Thus, many studies have been arguing upon the importance of investor relationships since they are vital for the creation of corporate reputation and also have indirect influence on financial performance (Helm, 2007); (Geller, 2014); (Ladipo & Rahim, 2013).

Considering seminal studies reviewed above, the theoretical framework can be constructed in a graphic chart as to illustrate the potential association and the road map of this research (refer to

Figure III below). Therefore, mandatory and voluntary sustainability disclosures shall lead to risk mitigation and control, information asymmetry reduction through good corporate governance and firm value in the market, through channels of legitimacy theory, stakeholder and investor relations, as well as value and reputation creation. Sustainability disclosures ought to represent a tool for better financial performance and improved profitability reflected in positive earnings per shares and decreased cost of capital.[5]

Figure III. *Theoretical Framework*



[5] Refer to "Variables Selection" section, which justifies the choice of variables for this research

III. VARIABLES SELECTION AND HYPOTHESES DEVELOPMENT

This paper aims to analyze the relationship between sustainability disclosures, financial performance and profitability of South Korean firms. *Do disclosures on sustainability really matter for firm's profitability and good financial performance in the market*? Before proceeding to the analysis, it is important to select the most relevant variables for this research, and based on that develop hypotheses.

A. Independent Variables

The degree of sustainability disclosures is estimated utilizing the content analysis approach. For instance, Murray et al. (2006) codified qualitative data from 100 largest UK companies' sustainability, CSR and other reports. They have emphasized on the importance of clear definition of sustainability disclosure practice, and identification of key words for consideration. Moreover, it is extremely important to systemize the process, emphasizing that the procedure should be consistent and be replicated by other researchers; otherwise the research has no internal and external validity. Therefore, this paper chooses computer-based content analysis tool (*QDA Miner*)[6] to minimize the measurement error and standardize the process of data collection and codification.

In order to initiate the search, it is necessary to create a decision rule for the information codification in the reports. South Korea has no legislation for mandatory sustainability information disclosure, but the government obliges firms to report on carbon emissions and energy reduction strategies and outcomes at least in firms' annual reports; hence, independent variables are presented as Mandatory Disclosure and Voluntary Disclosure variables. Moreover,

[6] QDA Miner is qualitative data analysis software for mixed-methods for qualitative data coding and analysis. Retrieved from http://provalisresearch.com/products/qualitative-data-analysis-software/

this approach should emphasize on the relationship between mandatory disclosures along with voluntary disclosure and firm's financial performance and profitability. Does it really matter to disclose non-financial information of social and environmental aspects either for mandatory or voluntary purposes?

Mandatory Disclosure (ManDis) denotes for mandatory sustainability reporting, which in Korean settings means reporting on the quantities of greenhouse gases emissions and energy consumption prescribed in the "Enforcement Decree of the Framework Act on Low Carbon", Green Growth, Article 34, Procedures for Reporting and Management of Statements (Ministry of Environment South Korea, 2012). The Enforcement Decree describes in detail what kind of information should be disclosed in any type of report, e.g. sustainability, CSR and/or annual reports. Therefore, based on this decree key words for codifying information in the reports have been identified (refer to Table III below).

Table III. *Key Words for Content Analysis*

Key words for identifying *Mandatory disclosures*			
Carbon/Green House Gases/CO2/GHG		Environment	Pollution
Energy	Quality Management	Emission	
Key words for identifying *Voluntary disclosures*			
CSR/Corporate Social Responsibility		Social	Responsibility
GRI/Global Reporting Initiative		Solar	Health
R&D/Research and Development		Waste	Ethic
Code	Employee	Resource	
Sustainability	Community	Safety	

Source: Integrated information from Gray et al., *Constructing a research database of social and environmental reporting by UK companies*, 1995; Enforcement Decree of the Framework Act on Low Carbon, Green Growth, 2012.

Voluntary disclosure (VolDis) stands for any reporting beyond mandatory, activities of which are targeted for improving social and environmental performance. This practice is considered as beyond philanthropic and as a proactive approach (see Table III).

Screening and coding of information is done through the qualitative analysis via computer program. Thus, if keywords are found, the coding procedure follows the principle of counting lines in the report containing targeted information. Therefore, the QDA Miner program is intended to codify lines, in which a keyword was mentioned, and it reports information in frequency of hits. The screening is done separately to identify two types of disclosures: mandatory and voluntary. In case of overlapping codes and frequencies, the program has an automatic tool to merge crossing information in the file. The same procedure has been applied to all reports; hence, the measurement error is minimized and carefully controlled.

B. Dependent Variables

Earnings per share *(EPS)* is usually selected as a proxy for company's profitability, as it accounts for the portion of profit allocated to outstanding shares of a common stock. It is calculated as a difference between Net Income and Dividends on Preferred Stock divided by Average Outstanding Shares.

$$EPS = \frac{Net\ Income - Dividends\ on\ Preferred\ Stock}{Average\ Oustanding\ Shares}$$ [7]

In addition, Earnings per share variable is solid and the most important indicator in determining share price. To illustrate, seminal papers by Parket & Eilbirt (1975); Sturdivant & Ginter (1977); Aupperle, Carroll & Hatfield (1985) utilize earnings per share together with Return on Equity

[7] Earnings per share is generally considered to be the single most important variable in determining a share's price. It is also a major component used to calculate the price-to-earnings valuation ratio (retrieved from "Investopedia").

(ROE) and Return on Assets (ROA) to identify potential correlation between corporate social responsibility and profitability. These studies find no statistically significant correlation between two variables, however, emphasize on the need for more research studies in different countries and industries.

The study by Parket and Eilbirt documents that 80 firms from Fortune 500, which are more responsive to corporate social reporting issues, are considered to have greater profitability (1975, p. 8). In addition, Sturdivant and Ginter analyzed 28 firms, comparing these firms to high, medium and low level of CSR reporting; hence, they found that high and medium level companies tend to perform financially better than the lowest group (1977, p. 38). Finally, Aupperle, Carroll and Hatfield emphasize on the need for risk adjustment of firm's financial performance (1985, p. 454). In fact, the higher returns for firms, focusing on sustainability are explained by better business practices, leading to above the average growth (Christoffersen, Frampton, & Granitz, 2013, p. 327).

Hypothesis 1: There is a **positive correlation** between earnings per share and *mandatory* sustainability disclosure.

Hypothesis 2: There is a **positive correlation** between earnings per share and *voluntary* sustainability disclosure.

Cost of capital *(COC)* variable is used to identify financial performance of the firm for the purpose of presenting this information to investors and stakeholders. Relatively young companies will be required to have higher risk premium, but long established companies usually should have smaller value of COC. The cost of capital is estimated as Capital Asset Pricing Model (CAPM), accounting for time value of money and risk:

$$\overline{r_a} = r_f + \beta_a(\overline{r_m} - r_f)$$[8]

where, r_f = Risk free rate

β_a = Beta of the security

$\overline{r_m}$ = Expected market return

Most of the seminal studies report negative correlation between sustainability performance and cost of capital (Ng & Rezaee, 2015); (Ghoul, Guedhami, Kwok, & Mishra, 2011); (Dhaliwal, Li, Tsang, & Yang, 2011); (Cho, Michelon, & Tanaka, 2010). For instance, the study of more than 3000 firms during 1990-2013 documents negative association between economic sustainability disclosure and cost of equity, however, only environmental and governance components contribute to this correlation (Ng & Rezaee, 2015). The ex-ante valuation of cost of capital and CSR performance of 12,915 US firms within the period from 1992 to 2007, shows that firms, which are socially more responsible have lower risk, i.e. lower cost of capital and higher firm's value (Ghoul, Guedhami, Kwok, & Mishra, 2011).

Hypothesis 3: There is a **negative correlation** between *mandatory* sustainability reporting and cost of capital.

Hypothesis 4: There is a **negative correlation** between *voluntary* sustainability reporting and cost of capital.

[8] The capital asset pricing model (CAPM) is a model that describes the relationship between risk and expected return and that is used in the pricing of risky securities (retrieved from "Investopedia").

C. Control Variables

Market Capitalization (MktCap) and ***Total Assets*** (TA) variables are proxies for company's size. These variables are in natural logarithms to smooth the data range. ***Return on Assets*** (ROA) and ***Return on Equity*** (ROE) are determinants of firm's financial performance. ***Beta*** is included as a proxy for valuation of market risk. This financial quantitative data is derived from the FnGuide database, which includes all companies' information in South Korean market. Binary variable for ***industry type*** is included to identify potential influence on the coefficient of interest in the models.

Hypothesis 5: Controlling for industry type **does not change** coefficients of interest.

IV. RESEARCH DESIGN

A. Data Specifications

This paper attempts to investigate 50 randomly selected South Korean firms listed in Korea Stock Exchange market. The pool of 1,902 listed companies in KOSPI and KOSDAQ indexes has been used for retrieving sample for this study. The availability of sustainability, CSR and annual reports for the period from 2012 to 2014 has been considered as a criterion for sampling. The company selection would only be possible if report is available on company's web-site either in English or in Korean languages. In total, 150 reports have been analyzed and codified. The data is considered panel as it encounters two dimensions: time and space. The additional criteria were considered in data collection; there should be enough information for all fifty companies in terms of reports available for three years and financial data, accordingly. Finally, to smooth out data range, positive and negative values, some variables are presented in natural logarithm format.

B. Model Specifications

The study is based on four models, the first one proxies earnings per share as firm's profitability, the second model proxies cost of capital as financial performance, the third and fourth models encounter Returns on Assets and Returns on Equity.

Model 1

$$EPS_{it} = \alpha + \beta_1 YEAR_{Dummy} + \beta_2 INDUSTRY_{Dummy} + \beta_3 ManDis_{it} + \beta_4 VolDis_{it} + \beta_5 Ln_{MktCap_{it}} + \beta_6 Ln_{TA_{it}} + \varepsilon_{it}$$

where $YEAR_{Dummy}$ is binary variable for each year from 2012 to 2014; $INDUSTRY_{Dummy}$ is binary variable for industry type (manufacturing and non-manufacturing); $Ln_{MktCap_{it}}$ is proxy for company size, Market Capitalization; Ln_{TA} is Total Assets, natural logarithm; ε is error term; EPS_{it} is earnings per share (ln, natural logarithm) for particular company *i* in particular year *t*. The coefficients of interest are β_3 and β_4.

Model 2

$$COC_{it} = \alpha + \beta_1 YEAR_{Dummy} + \beta_2 INDUSTRY_{Dummy} + \beta_3 ManDis_{it} + \beta_4 VolDis_{it} + \beta_5 Ln_{MktCap_{it}} + \beta_6 Ln_{TA_{it}} + \beta_7 Beta_{it} + \varepsilon_{it}$$

where COC_{it} is cost of capital for company *i* in year *t*, estimated by using Capital Asset Pricing Model (CAPM); $Beta_{it}$ is market risk valuation.

Model 3

$$ROA_{it} = \alpha + \beta_1 YEAR_{Dummy} + \beta_2 INDUSTRY_{Dummy} + \beta_3 ManDis_{it} + \beta_4 VolDis_{it} + \beta_5 Ln_{MktCap_{it}} + \beta_6 Ln_{TA_{it}} + \varepsilon_{it}$$

Model 4

$$ROE_{it} = \alpha + \beta_1 YEAR_{Dummy} + \beta_2 INDUSTRY_{Dummy} + \beta_3 ManDis_{it} + \beta_4 VolDis_{it} + \beta_5 Ln_{MktCap_{it}} + \beta_6 Ln_{TA_{it}} + \varepsilon_{it}$$

Following the methodological approach in Murray et al. (2006), this paper utilizes Pooled OLS or longitude data analysis for panel data set and utilizes estimation of linear regression models. Initially, research by Murray et al. included interaction term of year and type of disclosure, however these results appear to be insignificant and therefore, interaction terms are excluded from consideration in this paper. Models 3 and 4 include ROA and ROE as proxies for financial performance of the firm.

V. RESULTS

A. Descriptive Statistics

The results of descriptive statistics are presented in Tables IV and V, which summarize information for disclosure type by year and industry. The results suggest that mandatory and voluntary disclosures represent scores with minimum 4 and 10 points for mandatory and voluntary disclosures correspondingly; the maximum value score does not exceed 1000 points. The first examination of these results suggests that voluntary disclosures outweigh mandatory disclosure practice for both manufacturing and non-manufacturing firms within the entire period of three years. This may explain growing alluring practice of sustainability disclosures trend in South Korea. These outcomes are consistent with initial statistics presented in "Sustainability Reporting in South Korea" section, which documents substantial increase in sustainability reporting trend in Korea.

Table IV. *Disclosure Type and Reporting Year*

Year	Mean	SD	Min	Max	N
2012					
Mandatory Disclosure	105.94	55.89144	4	211	50
Voluntary Disclosure	243.08	125.5435	10	757	50
Total Disclosure	349.02	168.4842	14	951	50
2013					
Mandatory Disclosure	107.54	61.67962	10	290	50
Voluntary Disclosure	264.16	128.2377	9	707	50
Total Disclosure	371.7	178.1441	19	906	50
2014					
Mandatory Disclosure	102.02	63.28732	10	294	50
Voluntary Disclosure	242.82	111.7856	9	537	50
Total Disclosure	344.84	165.5931	19	831	50
Total					
Mandatory Disclosure	105.1667	60.00832	4	294	150
Voluntary Disclosure	250.02	121.6608	9	757	150
Total Disclosure	355.1867	170.087	14	951	150

It is interesting to note that mandatory sustainability reporting practice in South Korea is increasing, while voluntary disclosures are fluctuating between 2012 and 2014 years. This could be explained by the fact that related laws and acts undergo constant amendments, providing more solid and consistent purpose of sustainability reporting practice.

In addition, Table V shows that non-manufacturing sector is more responsive to sustainability reporting practice than manufacturing one. Non-manufacturing sector includes companies from financial, services, consultancy, telecommunications and farming industries. This may explain greater degree of sustainability reporting for non-manufacturing firm as they are more exposed to direct customers' relations, rather than manufacturing sector.

Table V. *Disclosure Type and Industry*

Industry	Mean	SD	Min	Max	N
Non-manufacturing					
Mandatory Disclosure	82.5625	52.70387	13	290	48
Voluntary Disclosure	215.375	106.9694	20	486	48
Total Disclosure	297.9375	150.5854	34	776	48
Manufacturing					
Mandatory Disclosure	115.8039	60.52003	4	294	102
Voluntary Disclosure	266.3235	125.1882	9	757	102
Total Disclosure	382.1275	172.7297	14	951	102

In this case, stakeholder and investor theories can explain why non-manufacturing companies are seeking for better customer-stakeholder-investor relations than manufacturing firms. Moreover, the lack of legislation obliging sustainability disclosures may be another explanation for divergence in these results.

B. Correlation Analysis

Pearson test for association between variables is presented in Table VI. The analysis is done for the whole sample and sorted by year. The interest of this research lies between the potential association between sustainability disclosures of both types and earnings per share along with cost of capital.

Therefore, one may see from the table that mandatory, voluntary and total disclosure variables are positively correlated to earnings per share at 1% significance level. Even though the correlation is positive and significant, it is still weak. The association between mandatory disclosures and cost of capital is positive and less statistically powerful at 10% significance level, and it is weak.

Table VI. *Pearson Correlation Test*

	ManDis	***VolDis***	***TotalDis***	***EPS***	***COC***	***ROA***	***ROE***	***MktCap***
VolDis	0.7210***							
TotalDis	0.8685***	0.9697***						
EPS	0.2603***	0.2230***	0.2513***					
COC	0.1392*	-0.0220	0.0334	0.0929				
ROA	-0.1488*	-0.1016	-0.1252	0.4342***	-0.0324			
ROE	-0.1852**	-0.1092	-0.1434*	0.3882***	-0.0184	0.9519***		
MktCap	0.3705***	0.2566***	0.3143***	0.8774***	0.2118*	0.2713***	0.2230***	
TA	0.2132***	0.1374*	0.1735**	0.2492***	0.2067*	-0.0964	-0.0155	0.4059***
Year								
2012								
VolDis	0.6771***							
TotalDis	0.8362***	0.9697**						
EPS	0.2132	0.1729	0.1996					
COC	0.1432	-0.0439	0.0148	0.0053				
ROA	-0.1214	-0.0796	-0.0996	0.4882***	-0.1363			
ROE	-0.1845	-0.0821	-0.1224	0.3995***	-0.0692	0.9170***		
MktCap	0.2909**	0.2142	0.2561*	0.8505***	0.1717	0.3372**	0.2786*	
TA	0.1668	0.0988	0.1289	0.2074	0.1354	-0.1356	-0.0027	0.3677***
2013								
VolDis	0.7261***							
TotalDis	0.8689***	0.9712***						
EPS	0.2323	0.1400	0.1812					
COC	0.0148	-0.1563	-0.1074	0.1804				
ROA	-0.1953	-0.1874	-0.2025	0.4196***	0.0252			
ROE	-0.2321	-0.1821	-0.2115	0.3932***	0.0200	0.9753***		
MktCap	0.3652***	0.1583	0.2404*	0.9253***	0.2904*	0.2492*	0.2270	
TA	0.1792	0.0803	0.1198	0.2820**	0.2533*	-0.0791	-0.0201	0.4401***
2014								
VolDis	0.7718***							
TotalDis	0.9032***	0.9700***						
EPS	0.3358**	0.4004***	0.3986***					
COC	0.2422*	0.1222	0.1751	0.1092				
ROA	-0.1267	0.0309	-0.0276	0.4748***	-0.0520			
ROE	-0.1462	-0.0034	-0.0582	0.4094***	-0.0584	0.9047***		
MktCap	0.4590***	0.4288***	0.4649***	0.8690***	0.2065	0.3229**	0.2244	
TA	0.2841**	0.2421*	0.2720*	0.2608*	0.2770*	-0.1129	-0.0123	0.4162***

***p < 0.01; **p < 0.05; *p < 0.1

The check for association by year shows very interesting results, appealing for further investigation. Results for year 2012 and 2013 are not significant at any level, while year 2014 shows positive and significant correlation between all disclosure types and earnings per share at

1% significance level. Moreover, the magnitude of the correlation is higher, indicating stronger positive association than in the whole sample. The same pattern is observed for the cost of capital and sustainability reporting practice, statistically significant and positive association between the two.

C. Regression Results

Model 1: Earnings per Share and Sustainability Reporting

The results of the first model (see Table VII) suggest that mandatory and voluntary disclosures are significantly correlated to earnings per share at 1% and 5% significance levels, accordingly. Controlling for industry type either manufacturing or non-manufacturing slightly or do not change coefficients of interest. Year dummies are also significant at 5% significance levels.

The coefficients for mandatory disclosure type report negative and significant results, which are different from the Pearson correlation test documenting positive association. This change in the sign or direction of association can be explained by the fact that control variables are added into regression line, accounting for the problem of Omitted Variables Bias. In this regard, the theoretical and conceptual interpretation of these results is presented in the "Discussion" session.

The results of the voluntary disclosure coefficients are consistent with Pearson correlation analysis, thus, coefficients are positive and statistically significant at 5% significance level. The R-squared suggests that about 22-25% of variation in earnings per share can be explained by the variation in mandatory and voluntary disclosures, i.e. by sustainability reporting practice.

Table VII. *Regression of EPS (ln) and Sustainability Disclosures by Type, Year and Industry*

EPS (ln)	(1) Whole Sample	(2) Industry	(3) Whole Sample	(4) Industry	(5) Whole Sample	(6) Industry
Mandatory Disclosure	-0.0328***	-0.0339***	-0.0296**	-0.0316**	-0.0268**	-0.0268**
	(0.0117)	(0.0120)	(0.0126)	(0.0129)	(0.0117)	(0.0122)
Voluntary Disclosure	0.0105**	0.0104**	0.0115**	0.0114**	0.00911*	0.00911*
	(0.00500)	(0.00504)	(0.00556)	(0.00560)	(0.00484)	(0.00485)
Market Capitalization (ln)	1.858***	1.854***			2.528***	2.528***
	(0.404)	(0.404)			(0.429)	(0.435)
Year 2014	-2.420**	-2.422**	-2.667**	-2.691**	-2.301**	-2.301**
	(1.085)	(1.094)	(1.140)	(1.154)	(1.070)	(1.077)
Year 2013	-2.413**	-2.417**	-2.550**	-2.560**	-2.369**	-2.369**
	(1.015)	(1.019)	(1.121)	(1.124)	(1.003)	(1.009)
Industry		0.597		0.813		-0.00387
		(1.043)		(1.134)		(1.106)
TA (ln)			0.472***	0.500***	-0.893***	-0.894**
			(0.138)	(0.153)	(0.321)	(0.342)
Constant	-20.78***	-20.99***	-3.133	-4.134	-10.69	-10.68
	(6.353)	(6.363)	(3.092)	(3.551)	(7.642)	(7.854)
Observations	147	147	150	150	147	147
R-squared	0.227	0.229	0.091	0.094	0.252	0.252

Robust standard errors in parentheses
*** p<0.01; ** p<0.05; * p<0.1

Model 2: Cost of Capital and Sustainability Reporting

The results of the second model presented in Table VIII show no statistically significant coefficients for mandatory disclosures at any combination. Therefore, one can see no correlation between cost of capital and mandatory sustainability reporting, though, the discussion of potential explanation is presented later in this paper (see “Discussion” section).

Table VIII. *Regression of COC and Sustainability Disclosures by Type, Year and Industry*

COC	(1) Whole Sample	(2) Industry	(3) Whole Sample	(4) Industry	(5) Whole Sample	(6) Industry
Mandatory Disclosure	0.00446	0.00403	0.00280	0.00167	0.00272	0.00139
	(0.00327)	(0.00334)	(0.00318)	(0.00325)	(0.00322)	(0.00331)
Voluntary Disclosure	-0.00296**	-0.00303**	-0.00261*	-0.00269*	-0.00257*	-0.00259*
	(0.00143)	(0.00146)	(0.00135)	(0.00138)	(0.00136)	(0.00139)
Market Capitalization (ln)	0.169**	0.170**			-0.0411	-0.0924
	(0.0796)	(0.0787)			(0.108)	(0.117)
Beta	4.047***	4.009***	3.958***	3.860***	3.965***	3.866***
	(0.180)	(0.184)	(0.197)	(0.211)	(0.198)	(0.211)
Industry		0.257		0.490*		0.536**
		(0.251)		(0.248)		(0.269)
Year 2014	-1.018***	-1.019***	-1.050***	-1.054***	-1.056***	-1.067***
	(0.287)	(0.287)	(0.278)	(0.275)	(0.279)	(0.277)
Year 2013	0.213	0.211	0.199	0.192	0.197	0.188
	(0.270)	(0.270)	(0.268)	(0.268)	(0.268)	(0.267)
TA (ln)			0.262***	0.299***	0.287***	0.358***
			(0.0689)	(0.0750)	(0.0951)	(0.114)
Constant	2.699**	2.607**	-0.590	-1.565	-0.540	-1.543
	(1.236)	(1.219)	(1.553)	(1.702)	(1.562)	(1.717)
Observations	146	146	146	146	146	146
R-squared	0.702	0.704	0.716	0.723	0.717	0.724

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

While checking the results for voluntary disclosures, one may see statistically significant coefficients at 5% significance level, describing negative association between cost of capital and voluntary sustainability reporting. This result is consistent with previous studies, which document negative correlation between non-financial reporting and cost of capital.

It is also interesting to note that 2014 reporting year shows significant and negative results, which is also another reason to theoretically and conceptually interpret in the discussion section of this paper. To emphasize, R-squared is high about 70-72% of the variation in cost of capital is explained by the variation in non-financial reporting practice.

Model 3: Return on Assets and Sustainability Reporting

Table IX. *Regression of ROA and Sustainability Disclosures by Type, Year and Industry*

ROA	(1) Whole sample	(2) Industry	(3) Whole sample	(4) Industry	(5) Whole sample	(6) Industry
Mandatory Disclosure	-0.0301***	-0.0301***	-0.0185*	-0.0188*	-0.00557	0.00174
	(0.0101)	(0.00931)	(0.0102)	(0.0102)	(0.00754)	(0.00932)
Voluntary Disclosure	0.000624	0.000623	0.000411	0.000407	-0.00524	-0.00538
	(0.00666)	(0.00661)	(0.00653)	(0.00653)	(0.00613)	(0.00605)
Market Capitalization (ln)	2.239***	2.239***			5.008***	5.260***
	(0.515)	(0.522)			(0.932)	(1.031)
Year 2014	-1.034	-1.034	-0.892	-0.895	-0.545	-0.493
	(0.942)	(0.945)	(1.038)	(1.044)	(0.738)	(0.752)
Year 2013	0.238	0.238	0.284	0.283	0.420	0.450
	(1.598)	(1.609)	(1.749)	(1.767)	(1.332)	(1.303)
Industry		0.0136		0.114		-2.680*
		(1.384)		(1.496)		(1.606)
TA (ln)			-0.0491	-0.0450	-3.690***	-4.005***
			(0.232)	(0.254)	(0.782)	(0.912)
Constant	-27.43***	-27.44***	7.404	7.264	14.26**	18.76**
	(6.858)	(6.635)	(5.935)	(6.980)	(6.832)	(8.470)
Observations	147	147	150	150	147	147
R-squared	0.193	0.193	0.027	0.027	0.480	0.505

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Return on assets usually indicates how well the company is performing financially, so that how efficient is the company to generate profits for its total assets, including investments. Thus, this measure shows financial performance of the company. The results of the regression analysis show statistically significant coefficients at 1% significance level (refer to Table IX). However, the association is negative, which is also a subject for discussion in the later section. Interestingly, the year binary variables are insignificant at all levels. In addition, controlling for industry type does not change coefficients of interest significantly.

Model 4: Return on Equity and Sustainability Reporting

Table X. *Regression of ROE and Sustainability Disclosures by Type, Year and Industry*

ROE	(1) Whole Sample	(2) Industry	(3) Whole sample	(4) Industry	(5) Whole sample	(6) Industry
Mandatory Disclosure	-0.0694***	-0.0660***	-0.0524***	-0.0495**	-0.0333**	-0.0174
	(0.0191)	(0.0181)	(0.0191)	(0.0192)	(0.0168)	(0.0185)
Voluntary Disclosure	0.00601	0.00624	0.00610	0.00615	-0.00262	-0.00293
	(0.0118)	(0.0117)	(0.0119)	(0.0118)	(0.0111)	(0.0108)
Market Capitalization (ln)	4.022***	4.032***			8.099***	8.647***
	(0.893)	(0.903)			(1.634)	(1.759)
Year 2014	-2.790	-2.783	-2.641	-2.606	-2.070	-1.956
	(1.719)	(1.725)	(1.848)	(1.865)	(1.584)	(1.571)
Year 2013	-1.470	-1.460	-1.456	-1.441	-1.202	-1.135
	(2.748)	(2.756)	(3.060)	(3.087)	(2.428)	(2.352)
Industry		-1.721		-1.222		-5.836**
		(2.430)		(2.668)		(2.822)
TA (ln)			0.220	0.176	-5.434***	-6.119***
			(0.312)	(0.362)	(1.399)	(1.557)
Constant	-47.21***	-46.60***	8.527	10.03	14.18	23.99
	(12.00)	(11.79)	(8.215)	(10.39)	(13.30)	(15.31)
Observations	147	147	150	150	147	147
R-squared	0.209	0.213	0.043	0.045	0.402	0.438

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Similarly to Return on Assets, Return on Equity measures company's financial performance. Therefore, the results presented in Table X suggest significant and negative correlation between Return on Equity and mandatory sustainability disclosures. The results of voluntary disclosure coefficients are insignificant at all levels.

VI. DISCUSSION

The link between sustainability reporting and financial performance is treated as ambiguous and can take either negative or positive values. In this regard, that was broadly discussed in the literature review part of this paper. The vast amount of studies, like that of Murray et al. (2006) or Gray et al. (1995) use the difference of share prices at the end and at the beginning of the period, as a determinant of profitability. These results document no significant association between sustainability disclosures and financial performance. Therefore, for the purpose of presenting a new innovative idea to the research in this area, this study utilizes earnings per share (EPS) as a proxy for firm's profitability. Three prominent scholars Christoffersen, Frampton and Granitz (2013) report a clear positive relationship between these two variables. On the other hand, this research presents results for clear negative association with mandatory disclosures and clear positive association with voluntary disclosures and EPS. What could be a potential explanation for this divergence?

The negative association of mandatory sustainability reporting and EPS may lie in the differences of costs and time. For example, Global Reporting Initiative indicates that investments and sustainability reporting are usually proportional to the size of company's activities and its impact on the environment, society and so forth. Hence, many companies experience a burden when doing sustainability reporting as it incurs sunk costs, which are not necessarily paid off by

other means, like reputation, legitimacy or value creation. Moreover, time is another very costly dimension of sustainability reporting, which requires the inclusion of high-level decision-making bodies. Considering these aspects altogether may at least partially explain the negative association of mandatory disclosures and EPS. First, mandatory disclosure requires certain standardized format and a set of specific indicators, which are costly to account for and present in business reports. Therefore, firms may misinterpret or omit some valuable information from the report due to associated marginal costs and lack of available data, which has a link to the firm's valuation and value creation facets. Second, imposing mandatory disclosure requires compliance to a certain timeframe, introduced by watchdog agencies for the sustainability performance and compliance. Once again, to comply with these requirements and meet the deadlines is costly, time consuming and burdensome. In turn, stakeholders and investors do not see the big difference in disclosing or not disclosing mandatory information for the public, as the amount and quality of mandatory reports are not sufficient and valuable enough as to change their decision-making processes. As a result, the profitability of a firm may be negatively affected by non-financial information reporting, though the magnitude of the effect is not strong, it is still statistically significant.

On the other hand, the effect of voluntary disclosure on EPS is significant and positive. This might be explained by the fact that disclosure of information related to social, environmental and human capital aspects may drive investor and stakeholder decisions for the company, which is more conscious about social responsibilities. In other words, the problem of information asymmetry is reduced with every high quality sustainability report published, which creates value for customers, businesses and government.

Controlling for the year of disclosure, results turned to appear statistically significant. The effect of sustainability disclosure is reflected in the following year of EPS. For this reason, this result is consistent with the study presented by Christoffersen, Frampton and Granitz (2013) concluding that the effect is recorded in the short-run period, rather than in the long-run. As this study analyzes a three year period, it documents short-run positive effect of sustainability reporting on firms' profitability.

It has been discussed that industry type is not significant in the investigation of the link between sustainability reporting and financial performance. The study by Gray et al. (1995) summarizes research findings by more than seven groups of researchers and emphasizes that industry effect is not consistent and ambiguous; hence, no statistically significant result is documented. The outcomes of this research are consistent with those studies, as one may not find statistically significant effect of industry on any type of sustainability reporting. In other words, this research paper implies that there is no effect of sustainability reporting on coefficients of profitability, controlled for the industry type.

In addition, the outcomes of models 3 and 4, while analyzing effects of disclosures on return on assets and return on equity, present no statistically significant results. This can be explained by the fact that returns on invested capital, like assets or equity are rather more long-term growth indicators, which might not capture the effect of sustainability reporting in the following year. As a result, overall company's financial performance is not influenced by the quantity and quality of non-financial information disclosures. These results are consistent with previous studies, which have been discussed above.

In contrast, cost of capital is another important measure of firm's profitability, which values risks and returns to investors and stockholders. The results of this research present a statistically significant and negative association between voluntary disclosures and cost of capital. More importantly, these results are consistent with previous studies, and support the reverse relationship of two variables, thus it is quite interesting to interpret the effect of voluntary sustainability disclosures on cost of capital. Valid questions in this matter would be: could it be the effect of risk minimization strategies? Or, is it the effect of information asymmetry reduction? In both cases, stockholders and investors psychologically and rationally are more eager to invest in companies with better non-financial information disclosure activities. However, this may have an effect of reverse causality. To elaborate this idea better, could the firm happen to disclose more information because it has something to be proud about? No doubts, low risk and high profitability are the most desired investment packages. By all means it is inconclusive to report on one-way association between sustainability reporting and cost of capital, since it could also happen to reveal two-way relationship paths. Moreover, why is there no statistically significant impact of mandatory disclosures on cost of capital? Could that be an attribute of quality and quantity of information disclosure? This might be a prospective topic for further research.

The business environment in the country usually depends on the overall economic performance of that nation. Could that be reflected in the South Korean market through the period this study is analyzing? The significance of coefficients for binary year variables indicates potentially hidden factors influencing these outcomes. First, in the period between 2012 and 2014 the South Korean market experienced a downturn in corporate performance due to overall global economic slowdown. Second, Korean economy consists of chaebols or conglomerates, which account for 85 percent. Therefore, if the overall economic performance of the country is in

downturn, would that be reflected in share earnings? The Korea Herald reports that "Economic slump undermines Korean firm's profitability."[9] During the period of 2012 and 2014 Korea stock market delivered one of the lowest returns among surveyed developed countries. This macroeconomic effect can be reflected in individual firm's profitability and financial performance within chosen period. Presumably, this is the reason why there is negative association between EPS and mandatory sustainability disclosures.

To summarize, the research ought to test these hypotheses empirically. Out of five hypotheses developed in this paper only three have been verified. Thus, there is positive correlation between EPS and voluntary sustainability disclosures; there is negative correlation between voluntary sustainability reporting and cost of capital, and controlling for industry does not change the coefficients of interest.

[9] The Korea Herald. (2015, January 19). *Economic slump undermines Korean firms' profitability*. Seoul, South Korea. Retrieved from http://www.koreaherald.com/view.php?ud=20150119000716

VII. CONCLUSION

The growing sustainability reporting trend is consistently increasing in South Korea. Positive market responses attract large corporations and smaller companies to disclose socially and environmentally sensitive information. Thus, the previously augmented question if sustainability reporting has positive implications for financial performance and profitability of firms may be approached from two perspectives with direct and indirect responses. First, the financial performance can be measured by evaluating profitability and returns on investments and capital employed. Second, firm's performance can be evaluated from non-financial perspective, like firm's reputation, image, stakeholder's relations and valuation.

This paper attempted to measure the magnitude and influence of sustainability reporting on financial indicators. In this connection, earnings per share have a positive financial impact, which point on better financial performance. Whereas, cost of capital reports a negative relation to non-financial reporting, moreover, this illustrates better performance in terms of risk mitigation. One of the main features of this study is the separation of mandatory and voluntary disclosure practices. The later one has greater effect on firm's financial performance, while mandatory disclosure implies ambiguous results that should incorporate other factors contributing to negative association between mandatory disclosures and financial performance.

In summary, this research has few important contributions to the existing literature. First, this analysis is unique in its kind and relevant for the South Korean market. Previous studies have conducted research for CSR ratings, which are secondary sources. In contrast, this research is utilizing a content analysis approach to evaluate the level of reporting from the primary sources by direct screening and coding of qualitative information using computer program. Second, the selection and use of variables is different from existing studies and results are still consistent

with these studies, making the theory of association between sustainability reporting and financial performance credible. Third, South Korean market peculiarities may partially explain the reflection of macroeconomic notions on the financial performance of firms extensively practicing sustainability reporting. Fourth, mandatory disclosures are not burdensome for large corporations, unlike in the past, as there is no question of non-disclosure. Socially active and responsible corporations are exercising voluntary reporting practice and are rewarded by market responses accordingly; this is partially explained by value creation, legitimacy and stakeholder theories.

Despite the limitations of this research, many good elements have been evaluated from these analyses, yet some of the constraints are the following. First, the sample of 50 companies is relatively small; hence it requires more firms to be investigated in order to increase reliability. Second, the period of three years from 2012 to 2014 is short and the fixed effects model cannot identify any statistically significant results. In this regard, probably a longer period of at least five to ten years is preferable. Finally, further research may lie in the grounds of the divergence between qualitative vs. quantitative sustainability reporting practices and its effect on financial performance and profitability. From the business point of view, CSR and sustainability reports should create value for firm's internal decisions, accordingly. These reports should assist in estimation and analysis of company's impacts, costs and future strategies in maximizing their profits through risks mitigation and control. Another potential area for research could be related to CSR and sustainability reporting as a tool for risks minimization and improved financial performance.

REFERENCES

Adams, C. A. (2008). A commentary on: corporate social responsibility reporting and reputation risk management. *Accounting, Auditing & Accountability Journal, 21*(3), 365-70.

Aupperle, K. E., Carroll, A. B., & Hatfield, J. D. (1985). An emperical examination of the relationship between corporate social responsibility and profitability. *Academy of Management Journal, 28*(2), 446-463.

Barth, M. E., & McNichols, M. F. (1994). Estimation and market valuation of environmental liabilities relating to superfund sites. *Journal of Accounting Research, 32*, 177-199.

Barth, M. E., McNichols, M. F., & Wilson, G. P. (1996). Factors influencing firm's disclosure about environmental liabilities. *Review of Accounting Studies, 2*(1), 35-64.

Branco, M., & Rodrigues, L. (2008). Factors influencing social responsibility disclosure by Portuguese companies. *Journal of Business Ethics, 83*(4), 685-701. doi:10.1007/s10551-007-9658-z

Brey, C., & Haavaldsen, M. (2014). *Exploring the relashionship between sustainability disclosure, financial performance and initial public offerings.* Handelshojskolen: Copenhagen Business School.

Cho, C. H., Guidry, R. P., Hageman, A. M., & Patten, D. M. (2012). Do actions speak louder than words? An empirical investigation of corporate environmental reputation. *Accounting, Organizations and Society, 37*(1), 14-25. doi:10.1016/j.aos.2011.12.001

Cho, C. H., Michelon, G., & Tanaka, Y. (2010). *Does envrionmental disclosure influence cost of capital? An empirical investigation of Japanese companies.*

Cho, E., & Park, H. (2015, November-December). Is CSR Really Profitable? Evidence from Korea. *The Journal of Applied Business Research, 31*(6), 2167-2186.

Choi, J.-S., Kwak, Y.-M., & Choe, C. (2010). Corporate social responsibility and corporate financial perfroamnce: Evidence from Korea. *Australian Journal of Management, 35*(3), 291-311. doi:10.1177/0312896210384681

Choi, T., & Jung, J. (2008). Ethical commitment, financial performance, and valuation: An empirical investigation of Korean companies. *Journal of Business Ethics, 81*, 447-463. doi:10.1007/s10551-007-9506-1

Christmann, P. (2000). Effects of "Best Practices" of environmental management on cost advantage. *Academy of Management Journal, 43*(4), 663-680.

Christoffersen, S., Frampton, C. G., & Granitz, E. (2013, July). Environmental sustainability's impact on earnings. *Journal of Business & Economics Research, 11*(7), 325-334.

Claessens, S. (2006). Access to financial service: a review of the issues and public policy objectives. *The World Bank Research Observer*.

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2011). Does it really pay to be green? Determinants and consequences of proactive environmental strategies. *J.Account. Public Policy, 30*(2), 122-144.

Climate Disclosure Standards Board. (2013). *Korea Focus: Corporate Climate Change Reporting for a Sustainable Future.* British Embassy Seoul.

Cormier, D., & Magnan, M. (2013). The economic relevance of environmental disclosure and its impact on corporate legitimacy: an empirical investigation. *Business Strategy and the Environment*, doi: 10.1002/bse.1829.

Deegan, C. (2002). The legitimising effect of social and environmental disclosures - a theoretical foundation. *Accounting. Auditing & Accountability Journal, 15*(3), 282-311.

Deloitte. (2015). *Sustainability & Compliance Trends. Five trends shaping the future.* Deloitte.

Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: the initiation of corporate social responsibility reporting. *The Accounting Review, 86*(1), 59-100. doi:10.2308/accr.00000005

Dierkes, M., & Antal, A. B. (1985). The usefulness and usage of social reporting information. *Accounting Organization and Society, 10*(1), 29-34.

EY, & Boston College Center for Corporate Citizenship. (2013). *Value of sustainability reporting.* Boston: Center for Corporate Citizenship.

Freeman, R. R. (2008). Ending the so-called "Friendman-Freeman" debate. *B.R.Agle., T. Donaldson, R.E.Freeman, M.D Jensen, R.K. Mitchell, D.J. Wood "Dialogue: Toward superior stakeholder theory", 18*(2), pp. 153-190.

Geller, G. (2014). A review and critique on the relation between corporate reputation, value creation and firm performance. *Amazon, Organizations and Sustainability, 3*(1), 7-26.

Ghoul, S. E., Guedhami, O., Kwok, C. C., & Mishra, D. R. (2011, September). Does corporate social responsibility affect the cost of capital? *Journal of Banking & Finance, 35*(9), 2388-2406.

Gray, R., & et al. (1995). Constructing a research database of social and environmental reporting by UK companies. *Accounting, Auditing & Accountability Journal*(8 (2)), 78-101.

Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate social and environmental reporting. A review of the literature and a longtitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journal, 8*(2), 47-77.

Helm, S. (2007). The role of corporate reputation in determining investor satisfaction and loyalty. *Corporate Reputation Review, 10*, 22-37. doi:10.1057/palgrave.crr.1550036

Hybels, R. C. (1995). On legitimacy, legitimation, and organizations: a critical review and integrative theoretical model. *Academy of Management Journal, Special Issue: Best Papers Proceedings*, 241-245.

Jasch, C. (2003). The use of Environmental Management Accounting (EMA) for identifying environmental costs. *Journal of Cleaner Production 11*, 667-676.

Jensen, M. C. (2001). Value maximization, stakeholder theory, and the corporate objective function. *European Management, 7*, 297-317.

KPMG International. (2013). *The KPMG Survey of Corporate Responsibility Reporting.* KPMG.

Kwak, K.-H. (2014). ESG disclosure: Legal requirement to facilitate CSR implementation by Korean companies. *KAS Journal on Contemporary Korean Affairs*, 91-107.

Ladipo, P. K., & Rahim, A. G. (2013). Corporate reputation as a strategic asset. *International Journal of Business and Social Science, 4*(2), 220-225.

Lopez, V. M., Garcia, A., & Rodriguez, L. (2007). Sustainable development and corporate performance: A study based on the Dow Jones Sustainability Index. *Journal of Business Ethics, 75*, 285-300. doi:10.1007/s10551-006-9253-8

McWilliams, A., & Siegel, D. (2001). Social Responsibility: A theory of the firm perspective. *Academy of Management Review, 26*, 117-127.

Michelon, G. (2011). Sustainability disclosure and reputation: A comparative study. *Corporate Reputation Review, 14*(2), 79-96. doi:10.1057/crr.2011.10

Milne, M. J., & Patten, D. M. (2002). Securing organizational legitimacy. An experimental decision case examining the impact of environmental disclosures. *Accounting, Auditing & Accountability Journal, 15*(3), 372-405.

Milne, M. J., Tregida, H., & Walton, S. (2009). Words Not Actions! The ideological role of sustainable development reporting. *Accounting, Auditing & Accountability Journal, 22*(8), 1211-1257.

Ministry of Environment Republic of Korea. (1995). FRAMEWORK ACT ON ENVIRONMENTAL POLICY. [Enforcement Date 23. Mar, 1995.] [Act No.4830, 22. Dec, 1994.]. 법제처 국가법령정보센터.

Ministry of Environment Republic of Korea. (2014). FRAMEWORK ACT ON ENVIRONMENTAL POLICY. [Enforcement Date 17. Jan, 2014.] [Act No.11917, 16. Jul, 2013., Amendment by Other Act]. 법제처 국가법령정보센터.

Ministry of Environment South Korea. (2012). *Enforcement Decree of the Framework Act on Low Carbon, Green Growth.* Seoul: Korea Legislation Research Institute.

Mitchel, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: refining the principle of who and what really counts. *Academy of Management Review, 22*, 853-886.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review, 48*, 261-97.

Mossin, J. (1977). *The Economic Efficiency of Financial Markets.* Lamham,MD: Lexington Books.

Murray, A., & et al. (2006). Do financial markets care about social and environmental disclosure? Further evidence and exploration from the UK. *Accounting, Auditing & Accountability Journal*(19 (2)), 228-255.

Murray, A., Sinclair, D., Power, D., & Gray, R. (2006). Do financial markets care about social and environmental disclosure? Further evidence and exploration from the UK. *Accounting, Auditing & Accountability Journal, 19*(2), 228-255.

Ng, A. C., & Rezaee, Z. (2015). Business sustainability performance and cost of equity capital. *Journal of Corporate Finance, 34*, 128-149.

O'Donovan, G. (2002). Environmental disclosures in the annual report. *Accounting, Auditing & Accountability Journal, 15*(3), 344-371.

Orlitzky, M., Schmidt, F. L., & Ryness, S. (2003). Corporate social and financial performance: A meta analysis. *Organization Studies, 24*, 403-411.

Pae, J., & Choi, T. (2011). Corporate governance, committment to business ethics, and firm valuation: Evidence from the Korean Stock Market. *Journal of Business Ethics, 100*, 323-348. doi:10.1007/s10551-010-0682-z

Pae, J., & Choi, T. (2011). Corporate governance, committment to business ethics, and firm valuation: Evidence from the Korean Stock Market. *Jorunal of Business Ethics, 100*, 323-348. doi:10.1007/s10551-010-0682-z

Park, S., & Oh, W. (2014). *The relathionship between Corporate Social Responsibility and Corporate Financial Performance in Korea.* Seoul: Hankuk University of Foreign Studies Research Fund.

Parket, R., & Eilbirt, H. (1975). Social Responsibility: The underlying factors. *Business Horizons, 18*(4), 5-10.

ROBECO SAM. (2015). *Industry Group Leaders 2015*. Retrieved from ROBECO SAM: We are Sustainablity Investing: http://www.sustainability-indices.com/review/industry-group-leaders-2015.jsp

Sturdivant, F. D., & Ginter, J. L. (1977). Corporate social responsiveness. *California Management Review, 19*(3), 30-39.

Suchman, M. C. (1995). Managing legitimacy: strategic and institutional approaches. *Academy of Management Review, 20*(3), 571-610.

Sung, J.-Y. (2014). Sustainability reporting trend in Korea. *KAS Journal on Contemporary Korean Affairs*, 27-50.

The Korea Herald. (2015, January 19). Economic slump undermines Korean firms' profitability. Seoul, South Korea. Retrieved from http://www.koreaherald.com/view.php?ud=20150119000716

Williamson, O. (1984). Corporate governance. *Yale Law Journal, 93*, 1197-1230.

APPENDICES

Appendix A

Companies List

#	Ticker	Name	Industry	Report type	Web source
1	005930	Samsung Electronics	Manufacture of Motor Vehicles and Engines for Motor Vehicles	Sustainability Report	http://www.samsung.com/uk/aboutsamsung/samsungelectronics/companyReports/companyreports_02.html
2	035420	NAVER	Data Processing, Hosting, Portals and Other Internet Information Media Service Activities	Annual Report	https://www.navercorp.com/en/ir/annualReport.nhn
3	005380	Hyundai Motors	Manufacture of Motor Vehicles and Engines for Motor Vehicles	Sustainability Report	https://csr.hyundai.com/da_400_01.do?CSR_LOCALE_PARAM=en
4	012330	Mobis	Manufacture of Parts and Accessories for Motor Vehicles and Engines	Sustainability Report	https://en.mobis.co.kr/Social/Sustainability/Report
5	055550	Shinhan Financial Group	Other Financial Intermediation	CSR Report	http://www.shinhangroup.com/en/sr/csrreport/csr_subsidiary.jsp
6	000660	SK Hynix	Manufacture of Semiconductor	Sustainability Report	https://www.skhynix.com/eng/sustain/sustainManage.do
7	051910	LG CHEM	Manufacture of Basic Chemicals	Sustainability Report	http://www.lgchem.com/global/sustainability/sustainability/sustainability-reports
8	015760	KEPCO	Production, Collection and Distribution of Electricity	Sustainability Management Report	https://home.kepco.co.kr/kepco/EN/D/C/KEDCPP004.do
9	000270	Kia Motors	Production, Collection and Distribution of Electricity	Sustainability Magazine	http://m.kia.com/worldwide/about_kia/company/kia_archives.do
10	090430	AMOREPACIFIC	Manufacture of Other Chemical Products	Sustainability Report	http://group.amorepacific.com/content/company/global/sustainability/sustainability-report.html#nohref
11	033780	KT&G	Manufacture of Tobacco Products	Sustainability Report	http://en.ktng.com/societyReport?cmsCd=CM0046
12	028260	SAMSUNG C&T	Other Specialized Wholesale	Sustainability Report	http://www.samsungcnt.com/EN/cnt/sm/207000/html.do
13	105560	KB Financial Group	Other Financial Intermediation	Sustainability	https://www.kbfg.com/Eng/Social/Su

				Report	stainabilityReport/kbfng/index.jsp
14	005490	POSCO	Manufacture of Basic Iron and Steel	Sustainability Report	http://www.poscoenc.com/eng/sustainability/sustainability_report.asp
15	051900	LGH&H	Manufacture of Other Chemical Products	CSR Report, before 2012 SR	http://www.lgcare.com/global/manage/download.jsp
16	086790	HANA FINANCIAL GR	Other Financial Intermediation	Sustainability Report	http://www.hanafn.com/eng/csr/sustainability/sustainabilityReport.do
17	066570	LG ELECTRONICS	Manufacture of Telecommunication and Broadcasting Apparatuses	Sustainability Report	http://www.lg.com/global/sustainability/communications/sustainability-reports
18	006400	SAMSUNG SDI CO.,LTD.	Manufacture of Primary Cells and Batteries and Accumulators	Sustainability Report	http://www.samsungsdi.com/sustainable-management/sustainability/report/sustainability-report.html
19	034220	LG Display	Manufacture of Electronic Components	Sustainability Report	http://www.lgdisplay.com/eng/sustainability/report#
20	021240	COWAY	Other Personal Service Activities	Sustainability Report	http://www.coway.com/coway/sustainability.asp
21	011170	LOTTE CHEMICAL Corp	Manufacture of Basic Chemicals	Sustainability Report	http://english.lottechem.com/contents/management/management_report.asp
22	001800	ORION	Manufacture of Other Food Products	Sustainability Report	http://www.orion.fi/en/Orion-group/Sustainability/sustainability-reports/
23	010950	S-Oil	Manufacture of Refined Petroleum Products	Sustainability Report	http://www.s-oil.com/en/sustainability/Report.aspx
24	004020	HYUNDAI STEEL	Manufacture of Basic Iron and Steel	Sustainability Report	https://www.hyundai-steel.com/en/sustainability/socialresponsibility/sustainabilityreportList.hds
25	086280	HYUNDAIGLOVIS	Other Services Allied to Transport Agency	Sustainability Report	http://ir.glovis.net/Eng/IR/AnnualReports.aspx
26	009540	Hyundai Heavy Industries	Building of Ships and Boats	Integrated Report	http://www.hhiir.com/EN/IRBoard/envReport.asp
27	161390	HANKOOK TIRE	Manufacture of Rubber Products	CSR	http://www.hankooktire.com/global/sustainability/csr-report/csr-download.html

28	009830	Hanwha Chemicals	Manufacture of Basic Chemicals	Sustainability Report	https://hcc.hanwha.co.kr/eng/promote/data.jsp?bbsNo=&scRptYyyy=2011&scRptSeason=&scBbsCd=A107
29	006360	GS E&C	Building Construction	Integrated Report	https://www.gsconst.co.kr/en/Management/Report2011.aspx
30	078930	GS Holdings (GS Caltex)	Activities of Head Offices, Holding Companies and Management Consultancy	Sustainability Report	http://www.gscaltex.com/eng/social/report.aspx#btnImg
31	000720	Hyundai Engineering & Construction	Heavy Construction	Sustainability Report	http://en.hdec.kr/EN/PRRoom/FileSustainability.aspx#annual
32	138930	BNK Financial Group	Other Financial Intermediation	Sustainability Report	http://eng.bnkfg.com/02/0103.jsp?dataPageNo=2&dataWhere=
33	016360	Samsung Securities	Activities Auxiliary to Financial Service Activities	Annual Report	http://www.samsungsecurities.com/investor/annual_report.do?cmd=list&MenuCode=M050201&currentPage=&AppenFileSectCd1=06&ProcYear=&x=21&y=13
34	000210	Daelim Industrial	Heavy Construction	Sustainability Report	http://database.globalreporting.org/search ; https://www.daelim.co.kr/eng/ir/AnnualReport.do
35	017670	SK Telecom	Telecommunications	Annual Report	http://www.sktelecom.com/en/social/list_persist_report.do
36	010140	Samsung Heavy Industry	Building of Ships and Boats	Annual Report	https://www.samsungshi.com/eng/Invest/ir_report.aspx
37	011070	LG Innotek	Manufacture of Electronic Components	Sustainability Report	http://www.lginnotek.com/service/csm.jsp#
38	036460	KOGAS	Manufacture of Gas, Distribution of Gaseous Fuel Through Mains	Sustainability Report	http://database.globalreporting.org/search
39	003490	KAL	Scheduled Air Transport	Sustainability Report	https://kr.koreanair.com/korea/ko/about/economic-responsibility-investor-relations.html
40	030200	KT	Telecommunications	Integrated Report	http://www.kt.com/eng/social/csr_03.jsp
41	034020	Doosan HICO	Heavy Industries and Construction	Integrated Report	http://www.doosanheavy.com/en/csr/summary/rpt.do#

42	011780	Kumho Petrochem	Manufacture of Basic Chemicals	Annual Report	http://www.kkpc.co.kr/eng/invest/library/annualList/?seq=2
43	047040	Daewoo EC	Building Construction	Sustainability Report	http://www.daewooenc.com/eng/contribution/report.asp
44	000500	GAON CABLE CO	Manufacture of Insulated Wires and Cables, Including Insulated Code Sets	Sustainability Report	http://www.lscns.com/en/intro/report.asp
45	020560	Asiana Airlines Inc.	Scheduled Air Transport	Sustainability Report	https://kr.flyasiana.com/C/en/homepage.do?menuId=005006003000000&menuType=CMS
46	170900	Donga ST	Manufacture of Medicaments	Annual Report	http://en.donga-st.com/Pass.da?viewPath=/b05/IRReport
47	008000	Toray Chemical Korea(TCK)	Manufacture of Man-Made Fibers	CSR Report	http://www.toray.com/csr/download/
48	018880	Hanon Systems	Manufacture of General Purpose Machinery	Annual Report	http://www.hanonsystems.com/En/Investors/AnnualReport
49	103140	Poongsan Corporation	Manufacture of Basic Precious and Non-ferrous Metals	Annual Report	http://www.poongsan.co.kr/eng/investor-relations/management-info/annual-report/
50	017810	PULMUONE	Farming	Annual Report	https://www.pulmuone.co.kr/pmo_company/report/report.asp

Appendix B

Descriptive Statistics

Firms' Financial Characteristics by Year

Year	Mean	SD	Min	Max	N
2012					
EPS (KRW)	11664.38	21864.01	-4932.7	136278.1	50
Cost of capital (%)	8.52	3.29	0	13.65	50
ROA (%)	4.423	5.126622	-2.18	20.54	50
ROE (%)	9.486	8.585272	-5.87	31.28	50
Market Capitalization (mill. KRW)	14.2	34.5	0	244.0	50
Total Assets (bill. KRW)	40.6	73.5	0	305.0	50
2013					
EPS (KRW)	10137.77	26623.26	-16239.15	175282	50
Cost of capital (%)	8.7	2.24	3.23	12.35	50
ROA (%)	4.6632	10.43322	-7.19	67.39	50
ROE (%)	8.1776	18.70205	-23.68	112.18	50
Market Capitalization (mill. KRW)	14.5	32.3	0	225.0	50
Total Assets (bill. KRW)	43.0	77.0	0.54	311.0	50
2014					
EPS (KRW)	8511.019	21901.26	-23279.14	135673.5	50
Cost of capital (%)	7.98	2.51	2.28	13.02	50
ROA (%)	3.5764	5.142151	-4.14	17.6	50
ROE (%)	7.1688	9.938604	-18.53	27.61	50
Market Capitalization (mill. KRW)	14.0	31.2	0.1	219.0	50
Total Assets (bill. KRW)	46.7	82.6	0.511	338.0	50
Total					
EPS (KRW)	10104.72	23445.94	-23279.14	175282	150
Cost of capital (%)	8.4	2.72	0	13.65	150
ROA (%)	4.220867	7.304414	-7.19	67.39	150
ROE (%)	8.277467	13.13973	-23.68	112.18	150
Market Capitalization (mill. KRW)	14.2	32.5	0	244.0	150
Total Assets (bill. KRW)	43.4	77.3	0	338.0	150

Firms' Financial Characteristics by Industry

Industry	Mean	SD	Min	Max	N
Non-manufacturing					
EPS (KRW)	6709.998	11331.87	-8032.95	56358.06	48
Cost of capital (%)	7.55	2.55	2.28	12.03	48
ROA (%)	4.537708	10.58279	-2.82	67.39	48
ROE (%)	10.07479	18.38376	-18.53	112.18	48
Market Capitalization (mill. KRW)	8.25	7.22	0	23.9	48
Total Assets (bill. KRW)	70.0	115.0	0.98	338.0	48
Manufacturing					
EPS (KRW)	11702.24	27260.8	-23279.14	175282	102
Cost of capital (%)	8.8	2.71	0	13.65	102
ROA (%)	4.071765	5.150164	-7.19	17.6	102
ROE (%)	7.431667	9.7559	-23.68	26.98	102
Market Capitalization (mill. KRW)	17.0	38.8	0	244.0	102
Total Assets (bill. KRW)	30.9	46.7	0	230.0	102