VALUE RELEVANCE OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE DISCLOSURE

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Value Relevance of Environmental, Social, and Governance Disclosure

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ABSTRACT: This paper investigates the impact of Environmental, Social, and Governance (ESG) disclosure by companies around the world on market value. Using a large sample of non-financial companies listed in 38 countries during the period 2008–2012, we test for value relevance by employing the modified version of the Ohlson (1995) model developed by Collins, Maydew, and Weiss (1997). We find support for the value relevance of disclosure of ESG both in aggregate form and for its individual components. These findings support the expectation of disclosure theory that disclosure of relevant information (such as ESG) has a positive impact on value. The results are robust to several alternative specifications. Consistent with the finance literature on the impact of legal origin (La Porta, Lopez de Silanes, & Shleifer, 2006; La Porta, Lopez de Silanes, Shleifer, & Vishny, 1998, 2000, 2002), the results for ESG disclosure are stronger in common-law countries. Our results provide new evidence for researchers, investors, and policy makers of the value relevance of ESG disclosure in a broad international setting. The evidence shows that globally investors benefit from the disclosure of both aggregate ESG and the individual factors and this supports regulators in pushing companies to provide additional ESG information.

Keywords: Value relevance, non-financial information, ESG.

Data availability: The data are available from public sources identified in the text.

I. INTRODUCTION

In recent years, there has been increasing use of Environmental, Social, and Governance (ESG) information by participants in capital markets. This supports the argument that traditional financial information has limited usefulness to investors as it provides only historical-oriented information on a narrow financial base that is insufficient to assess a company's ability to generate future profits (Lev & Zarowin, 1999). Therefore the objective for this study is to explore the extent to which non-financial information, such as that provided by ESG disclosure, does usefully supplement the traditional financial information.

The role of ESG information in business has undergone many changes over the course of history. Eccles and Viviers (2011), for example, report that ESG factors have been discussed in the academic literature for more than 35 years. However, it is apparent that the role of ESG disclosure has changed over time. In past decades, many have claimed that businesses have no social responsibilities and therefore they should not devote company resources to engaging in socially responsible activities (Friedman, 2007; Karnani, 2010; Reich, 2008) and because such activities do not provide a payoff (Telle, 2006), some go further and claim it is costly to shareholder value (e.g.Palmer, Oates, & Portney, 1995; Walley & Whitehead, 1994). However, more recently, commonly-held views have swung in the opposite direction, actively encouraged by public expectations and regulatory pressure, to the point where sustainability issues have assumed a central role in the management of business (Marsat & Williams, 2011; Panwar, Rinne, Hansen, & Juslin, 2006). The scope of concern has also enlarged somewhat (Mahmoudian, Nazari, & Herremans, 2012). To remain acceptable to society today, it appears that companies have to be accountable to a wider array of interests. As a result, in carrying out their activities, firms must desist from activities such as damaging the environment, harming the health of consumers, violating the rights of

employees, and should have concern for sustainability and their overall contribution to social welfare (Cruz & Wakolbinger, 2008).

Despite this current ideal view of the business-society relationship, the extent to which markets actually give favourable recognition to companies that operate in this manner remains an open question. Many studies have considered these issues, including under different labels such as corporate social responsibility (CSR), corporate social performance (CSP), socially responsible investment (SRI) and others (Gillan, Hartzell, Koch, & Starks, 2010). Nevertheless, research to date on the actual relevance of ESG information to the markets is still in the early stage of investigation. The research on the effects of ESG disclosure on the market value of companies has largely been limited to developed countries such as the US (Jo & Na, 2012; Plumlee, Brown, Hayes, & Marshall, 2010), Canada (Cormier, Magnan, & Morard, 1993), Australia (Balatbat, Siew, & Carmichael, 2012), Finland (Schadewitz & Niskala, 2010), Sweden (Semenova, Hassel, & Nilsson, 2009) and regions such as the European Union (Ammann, Oesch, & Schmid, 2013; Länsilahti, 2012). Furthermore, comparative international studies have been confined to addressing specific ESG factors such as corporate governance (Ammann, Oesch, & Schmid, 2011; Jo & Harjoto, 2011); and have used databases that included only a small proportion of global companies (Xiao, Faff, Gharghori, & Lee, 2013). Other international studies have focused on only one of the components of market value: the cost of capital (Dhaliwal, Li, Tsang, & Yang, 2011; Fulton, Kahn, & Sharples, 2012; Wang & Huang, 2013), and have used different classifications of ESG rating. The results have been mixed to a degree that calls for further investigation (Bird, Hall, Momentè, & Reggiani, 2007; Marsat & Williams, 2011), in particular on the effect of ESG disclosure on market value (reflecting both risk and cash flow) of companies globally.

This study addresses the gap by examining the value relevance of disclosure of ESG factors. Galema, Plantinga, and Scholtens (2008) state that ESG information is composed of a variety of different types of information and the effect of each of these factors on shareholder value is also diverse. Similar to Humphrey, Lee, and Shen (2012), this study therefore examines both the aggregate and individual ESG factors to provide a more comprehensive assessment. However, in contrast to Humphrey et al. (2012) who investigated the impact of ESG on financial performance of UK firms, our study investigates the effect of ESG disclosure on the market value of firms globally. Specifically, the present study assesses the effects of disclosure of aggregate ESG and individual factors on the stock price of companies globally.

We use a large sample of non-financial companies listed in 38 countries during the period 2008–2012, to investigate the value relevance of ESG disclosure worldwide. Bloomberg disclosure scores are used as the measure of ESG disclosure, which is predominantly disclosed on a voluntary basis. The book value/earnings model developed by Collins et al. (1997) from the Ohlson (1995) model is employed to assess value relevance. We find strong evidence that both aggregate ESG and the individual factors have significant positive associations with market value. The results are robust to several alternative tests. These findings support the expectation of disclosure theory that companies disclosing ESG information are valued higher (Healy & Palepu, 2001; Verrecchia, 2001).

This paper contributes to our understanding of the benefits of ESG disclosure in three ways. First we extend previous studies in terms of country coverage. Previous studies such as (Cormier et al., 1993; Plumlee et al., 2010) have focused on single countries, while previous international studies such as Länsilahti (2012) have focused only on the European region. Second, to the best of our knowledge, our study is the first to investigate the issues globally by using the ESG disclosure scores provided by Bloomberg. This is important as the Bloomberg data is comprehensive and

standardised as it is collected using a consistent methodology across national boundaries. Third, we control for common and code law institutional factors, which reduces the potential for misspecification errors arising from differences in the disclosure regimes.

The rest of this paper is organised as follows. Section two describes ESG rankings and databases. Section three presents the theoretical framework concerning the value relevance of the disclosure of both aggregate ESG and the individual factors. Section four describes the models, the data and the variables employed. Section five presents the empirical results and the analysis of the results. Section six concludes the paper and outlines the contributions, and limitations of the study.

II. ESG RANKINGS AND DATABASES

Supply on ESG information emerged during the late 1990s (Novethic Research, 2011). Since then the field has continued to grow with an increasing number of agencies providing ESG rankings. Today, the ESG information market is dynamic and characterised by a number of institutions offering a diversified range of products and services, with an increasingly broad geographic coverage – built up through partnerships and acquisitions. The ESG ranking agencies can be categorised into two groups: the agencies with limited geographic coverage, and the agencies that operate on a global scale. This section will focus primarily on the latter group. Currently there are three leading international financial service agencies, namely Bloomberg[1], MSCI[2] and Thomson Reuters[3] (Novethic Research, 2013). All three provide integrated ESG scores. Due to the

[1] In 2009, Bloomberg acquired New Energy Finance, a UK-based information provider on renewable energy and the carbon market (Novethic Research, 2013). This resulted in an enlarged number of indicators being considered in determination of ESG scores.

[2]MSCI acquired RiskMetrics in 2010 (MSCI, 2010). RiskMetrics previously acquired two leading ESG research firms, Innovest Strategic Value Advisors and KLD Research & Analytics that rate ESG disclosure scores.

[3] Thomson Reuters acquired Asset4, a 2003 born Swiss-based ESG data provider in 2009 (Integrity Research Associates, 2009).

unavailability of a common framework as a basis for ESG ratings, each agency uses its own scoring system even though the agencies refer to uniform international guidelines such as the Global Responsible Initiative (GRI), the International Labour Organization (ILO) Convention, the United Nations (UN) Global Compact, the UN Principles for Responsible Investment (PRI), the Kyoto Protocol and other international sustainability frameworks. The guidelines are usually used by the agencies as a norm base in the analysis of ESG issues. This study, however, focuses on the Bloomberg database as the source of our ESG data.

Bloomberg, http://www.bloomberg.com/, provides environmental, social, and governance (ESG) information in the form of disclosure scores that range from 0.1 to 100 and are tailored according to country, industrial sector, and other criteria. Being in the form of a score enables comparison of disclosure levels across companies, with a high score indicating a higher level of disclosure. There are separate scores for environmental, social, and governance disclosure and also an overall integrated score.

Bloomberg's ESG disclosure scores reflect three sources of information. First, Bloomberg gathers public ESG information released by the companies, such as in CSR reports, annual reports, or websites, which are mostly voluntary disclosures. Second, Bloomberg uses data provided by other reliable public sources such as the carbon disclosure project (CDP). Third, Bloomberg also sends questionnaires to the companies being rated in order to obtain additional ESG information. The process of construction of the indices is summarised by Bloomberg as follows:

> Bloomberg ESG data is collected from company-sourced filings such as Corporate Social Responsibility reports, annual reports, company websites and a proprietary Bloomberg survey that requests corporate data directly. Information compiled by Bloomberg analysts then examined, compared and classified into one of the ESG component. All of these data is also linked to the sources of information, which allows the users to verify the data. (Bloomberg, 2012).

The Bloomberg ESG disclosure scores are based on the GRI framework but the scoring system is not disclosed by Bloomberg as it is considered proprietary to Bloomberg[4].

Only a small number of studies have been published to date that make use of the Bloomberg ESG disclosure scores. Cheung and Mak (2010) investigated the relationship between CSR disclosure (measured by Bloomberg's ESG disclosure scores) and financial performance (ROA, ROE, and market return) of 57 international commercial banks in 18 countries, primarily European and from North America. The findings suggest that ESG disclosure has a neutral (or no definitive) impact on the three financial performance measures. Eccles, Krzus, and Serafeim (2011) investigated the degree of investor interest in NFI (as measured by the number of hits on the Bloomberg search tool for ESG disclosure scores) and found a high level of market interest in ESG disclosure scores. Lapinskienė and Tvaronavičienė (2009) investigated the significant drivers affecting ESG disclosure (as measured by the ESG disclosure scores) in selected European Union countries from 2006-2010 and found positive coefficients for ROA and firm size. Mahmoudian et al. (2012) examined the impact of organisational accountability controls on voluntary ESG disclosure and found that the various levels of control determine the willingness for voluntarily providing ESG disclosure.

There have been studies that have employed various other sources of ESG data including Thomson Reuters/Asset4 (Ioannou & Serafeim, 2010), MSCI/KLD (Bird et al., 2007; Marsat & Williams, 2011), Domini Social Index (Evans & Peiris, 2010), Corporate Monitor (CAER) or EIRIS (Balatbat

[4] Based on email reply from Bloomberg ESG section, Bloomberg currently captures more than 300 indicators and the number of indicators are increased every year. "To calculate ESG disclosure score, Bloomberg is taking E, S and G indicators with different weighting. Each data point is weighted in terms of importance, with data such as GHG carrying greater weight than the other industry specific or market specific fields. So the formula is not directly adding the E, S and G components together".

et al., 2012), Governance Metrics International (GMI) (Galbreath, 2013) and Sustainability Asset Management Group GmbH (SAM)[5] (Humphrey et al., 2012).

III. RELATED LITERATURE AND HYPOTHESES DEVELOPMENT

This section reviews the existing literature and develops the hypotheses for the study. Four types of disclosure affecting market value are considered in this study, namely environmental factors (E), social factors (S), governance factors (G), and the aggregate of these factors, environmental, social and governance (ESG). Each of these types is considered in turn, but first, we examine briefly the position of the present study in the disclosure literature.

In a broader context, this study relates to studies in the disclosure theory literature. Disclosure theory suggests that companies are more likely to disclose more information for a number of functional reasons. Researchers usually look at this motivation under two different perspectives: normative and positive perspectives. Clarkson, Li, Richardson, and Vasvari (2008) classify the perspectives into socio political theory and economics based theory.

In socio political theory (Gray, Kouhy, & Lavers, 1995; Guthrie & Parker, 1990; Lindblom, 1994; Patten, 2002), the company is seen as being pressured by the business environment to disclose certain information because of stakeholder demand, legitimacy status, or other political purposes. The cost of such disclosure may not necessarily bring financial benefits to the company as it is not motivated purely by financial reasons. Therefore, the theory does not provide a strong justification for disclosure to have an impact on firm value (Clarkson, Li, & Richardson, 2004).

[5] SAM is a sustainability analysis that provides ESG research used to form the Dow Jones Sustainability Index. SAM assesses more than 1000 companies around the world annually.

The economics based theory suggests that companies that disclose more information will have self-classified as a superior type of business, which is hard to copy by potentially inferior types of businesses, because of the proprietary cost of disclosure (Clarkson et al., 2004). Proprietary cost, on the one hand, provides an entry barrier to non-disclosing firms, and on the other hand, provides advantages to disclosing firms by sending a positive signal to investors. Therefore, the theory predicts a positive relationship between disclosure and market value.

Disclosure, in the context of economics based theory, is expected to result in a number of economic consequences that ultimately impact on market value. The value impact can come from a number of sources. From the company perspective, disclosure provides a means of communication between the company and relevant stakeholders, which minimises the principal-agent problem considered in agency theory (Jensen & Meckling, 1976)[6]. From the perspective of investors, disclosure provides summarised information about the potential future risks and opportunities of the company. Better informed investors, thus, have lower information risk (Healy & Palepu, 2001). The risks may include adverse selection, misevaluation, litigation, reputation, and legal. Disclosure mitigates these risks thus giving greater certainty to equity (and debt) investors. In general, disclosure reduces information asymmetry, thus reducing agency conflicts and the cost of equity capital (Artiach & Clarkson, 2011; Botosan, 1997, 2000; Chen, Chen, & Su, 2001; Derwall & Verwijmeren, 2007; Dhaliwal et al., 2011; Francis, LaFond, Olsson, & Schipper, 2004; Ng & Rezaee, 2012).

[6] Agency theory holds the view that the relationship among the individuals in an organisation is based on an agreement, where the owners of capital (the principals) hire and assign incentive-motivated management (the agent) to run the organisation on the principal's behalf (Jensen & Meckling, 1976) and the agreement serves to constrain management from pursuing their own interests which may diverge from the interest of the principals. With this notion, companies are the locus and nexus of many contractual types of relationships among internal and external members (Wolk & Tearney, 1997).

Considering the above discussion, this study, proposes two theoretical underpinnings for the prediction that NFI disclosure links to market value. First, the information asymmetry. NFI reduces information asymmetry (Akerlof, 1970) and therefore market participants will value more highly companies that have a higher level of NFI disclosure. Information asymmetry for a public company arises from the separation of ownership and control between management and shareholders. This leads to higher level of non-diversifiable risks but this can be reduced by disclosure of relevant information (El Ghoul, Guedhami, Kwok, & Mishra, 2011; Healy & Palepu, 2001). Research shows that for extreme information asymmetry, uninformed investors may have such concerns about the market price being too high or too low that they become unwilling to trade (Glosten & Milgrom, 1985). Greater disclosure reduces the uncertainty regarding the value of the company, and thus increases the level of investor confidence.

The second underpinning theory derives from the principal-agent problem. In this perspective, increased disclosure gives transparency on how the company is managed and hence builds better mutual understanding between investors and management. This may ultimately solve the principal-agent problem. Consequently, market participants will value companies higher with a higher level of NFI disclosure.

Given the need to create cost-effective management, agency theory predicts that organisations will seek to introduce mechanisms that align the interests of management with those of the principals to ensure that management actions benefit both them and the organisation. Some of these methods will include internal mechanisms such as compensation agreements tied to accounting profits to create binding relationships between managers and stakeholders (Healy & Palepu, 2001). Others are market-wide mechanisms; for example, through creating a sense of trust between the parties concerned. The latter especially can be achieved by building better communication with

stakeholders to signal good corporate management through good disclosure practice. Research suggests that the agency conflicts between company management and outside investors stemming from information asymmetry and agency conflicts can be mitigated by corporate disclosures (Graham, Harvey, & Rajgopal, 2005; Healy & Palepu, 2001; Lambert, Leuz, & Verrecchia, 2007).

This study is also located among the studies on the economic consequences of non-financial information disclosure, in particular the disclosure of ESG factors. The term sustainability has developed momentum in the last few decades, driven by changes in the business environment along with institutional and regulatory pressures. As a result sustainability factors have become a key issue for corporate governance (Panwar et al., 2006). With the initiatives taken worldwide in sustainability reporting, the trend is for increasing supply of this type of non-financial information (Ball & Grubnic, 2007; Clarkson et al., 2008; Clarkson, Li, Richardson, & Vasvari, 2011; Cohen, Holder-Webb, Nath, & Wood, 2011; Eva, Lawrence, Roper, & Haar, 2011; King & Lenox, 2001). Sustainability information (including CSR, SRI, and others) in the capital market are commonly measured by and referred to as ESG factors, as the measures that is considered by researchers as best understood and most utilised as corporate sustainability metrics (Fulton et al., 2012).

The term ESG was first used in the United Nations Environment Programme (UNEP) in 2004 and has since became popular among investment communities associated with socially responsible investment (Eccles & Viviers, 2011; Fulton et al., 2012; Lapinskienė & Tvaronavičienė, 2012). Researchers have increasingly used the term ESG to refer to a broad set of corporate activities (Derwall, 2007).

Other related terms are also used; most notably, corporate social responsibility (CSR) and sustainability (Eccles & Viviers, 2011). Others, such as integrated reporting have also gained

prominence in recent years (Robeco & Eccles, 2014). In many studies these terms are used interchangeably. For example, CSR and sustainability are used interchangeably in Dhaliwal et al. (2011); risk compliance and governance (RCG), integrated reporting, and sustainability reporting in Ng and Rezaee (2012); sustainable investing, ethical investing, and Socially Responsible Investment (SRI), are used interchangeably with CSR (Derwall, 2007). Nevertheless, the term ESG has become prominent in financial markets (Xiao et al., 2013) and mainstream in analytic tools (Bogoslaw, 2014).

The importance of ESG information for capital markets is gaining increased recognition. Major international bodies[7] have recently been involved in a global dialogue resulting in five stock exchanges and a large number of global investors declaring support for ESG practices (White, 2012). A number of capital market regulators such as in Malaysia, Thailand, China, Taiwan, and India have encouraged companies to provide better transparency through disclosure of related ESG factors (World Federation of Exchanges, 2009). In South Africa, following the King reports[8], it has become mandatory for companies listed on the Johannesburg Stock Exchange to provide integrated sustainability reports (Ackers, 2009; Ioannou & Serafeim, 2011). The King report requirement is in line with the GRI report (Sustainability partners inc, 2014) and ESG factors. This capital market recognition of ESG has motivated information services, such as Bloomberg, MSCI, and Thomson Reuters, to provide ESG ratings (Humphrey et al., 2012; Länsilahti, 2012).

[7]The international bodies include: The Global Compact; the United Nations Conference on Trade and Development (UNCTAD); United Nations Principles for Responsible Investment (UN-PRI); and the United Nations Environment Programme Finance Initiative UNEP FI).

[8] King Committee on Corporate Governance South Africa has issued three reports on corporate governance: in 1994 (King I), 2002 (King II), and 2009 (King III), which has resulted in all companies listed on the Johannesburg Stock Exchange being required to comply with the disclosure requirements or explain the reasons for non-compliance.

Similar to other sustainability measures, there is no specific definition for ESG. In its widest sense, ESG is a generic term for a subset of non-financial indicators used in capital markets to evaluate corporate sustainability. Balancing the three ESG elements is described as sustainable measures that support sustainable development, which is broadly defined as development that conserves natural resources so as to ensure that meeting the needs of the present does not compromise the ability of future generations to meet their needs. ESG information reflects the responsible corporate practices that aim to deliver higher risk-adjusted financial returns (Eccles & Viviers, 2011) and, thus, ESG summarises the additional information employed by investors to assess the risks and opportunities relating to corporate social responsibility (Bassen & Kovacs, 2008).

Embracing ESG policies entails both costs and benefits for the companies concerned. In terms of complying with the ESG agenda, companies are restricted with regard to certain activities. They are discouraged, for instance, from doing business with companies that abuse workers or exploit children. Companies may incur additional costs to maintain green operations or to invest in energy-efficient machinery. On the other hand, companies may also benefit from compliance by creating a strong positive reputation and enhancing brand loyalty, both of which help to ensure long-term survival. On balance, it is increasingly thought that favourable ESG performance contributes to financial performance, and for this reason ESG information in progressively being integrated into the process of investment analysis and decision-making (UNEP, 2007).

Clarkson et al. (2008) suggest that the literature on environmental accounting research can be classified into three groups: the value relevance of environmental information, the determinants of environmental disclosure, and the relationship of environmental disclosure to company performance. This study fits in the first category, with examination of the impact of both the aggregate ESG disclosure and each of the individual factors on market value.

In the following sub-sections we will demonstrate the ways in which ESG information can affect the value of the company. As valuation theory suggests, the price investors are willing to pay for the shares of a company is mainly driven by the expected profitability of the company, the cost of capital, and the potential of growth in the future (Charles & David, 2006). These three sub-components impact directly or indirectly on company's value and can enter the company through several channels to the individual ESG factors below. We attempt to review the literature with specific relevance to the aggregate and the individual ESG factors but we of course recognise that many of the studies quoted cover more than just one of the individual ESG factors or focus on just the aggregate.

Environmental disclosure and market value

Environmental factors are perhaps the most researched of the three elements of ESG. This is not surprising as the steady deterioration of some aspects of the environment has put increasing pressure on companies, by regulators, peers, and society as a whole to adopt sustainable operations. However, while the majority of studies on the effects of the disclosure of environmental factors on market value of companies have reported a positive relationship (Aerts, Cormier, & Magnan, 2008; Clarkson, Fang, Li, & Richardson, 2013; Clarkson et al., 2004; Connors & Silva-Gao, 2008; Cormier & Magnan, 1997; Plumlee et al., 2010), some studies have reported the relationship to be either neutral or negative (Elshahat, 2010; RARE Infrastructure & Sustainalytics, 2013).

Hassel, Nilsson, and Nyquist (2005) classify this type of research into two schools. First the competitive advantage school, which claims that an environmental effort improves investor's financial returns because of the increased competitive advantage. Second, the cost-concerned school, which argues that a company's disclosure of environmental information lowers market value because increased costs depress profits.

The first of these schools is generally based on the perceived downstream effects of a good reputation created by transparency and responsiveness to public demands. Environmental disclosure is considered to increase transparency which in turn creates a positive profile for the company (Azzone, Manzini, & Noci, 1998). Likewise, environmental disclosure is reported to enhance a firm's competitiveness due to the stimulus it provides for product innovation (Brännlund & Lundgren, 2009; Porter & Linde, 1995). This leads to the perception that the company is complying with environmental regulation and anticipating future obligations (Porter & Linde, 1995). Cutting pollution levels could potentially reduce future costs and environmental liabilities (Aerts, Cormier, & Magnan, 2007; Cormier et al., 1993; Porter & Linde, 1995). For example, Blacconiere and Patten (1994) examined the market reactions to a chemical company after a chemical leak in Bhopal, India in 1984, which resulted in 4,000 deaths and 200,000 injuries. Evidence suggests that firms with extensive environmental disclosure prior to the disaster experienced a less adverse reaction than did firms with less environmental disclosure; this is interpreted by the authors as indicating that the disclosure is assessed by investors as a positive sign of firms' managing future regulatory costs.

Using US data, Plumlee et al. (2010) examined the effect of quality (hard/soft type and positive/ neutral/negative in nature) of voluntary corporate environmental disclosure on each of the components of company value: the expected future cash flows and cost of equity capital. They conclude that improved quality of voluntary environmental disclosures relates to both components of firm value.

Similarly, in the Australian context, Bachoo, Tan, and Wilson (2013) investigated the relationship between quality sustainability reporting and firm value, through either (or both) cost of capital and expected future performance effects. They also document that quality sustainability reporting reduces the cost of equity capital and improves expected future performance.

There are also studies that improved evidence on the value relevance of environmental disclosure across time. Cormier et al. (1993) examined the relationship between pollution indices and the stock market value of Canadian companies and found a weak association. This weak relationship was interpreted by the authors as a signal that investors regard the pollution index as providing information on environmental liabilities. In a later study Cormier and Magnan (1997) showed that poor environmental performance has a negative impact on market value, which is interpreted by investors as implicitly initiating environmental liabilities. The results of the 1997 study showed a stronger association compared to the 1993 study; this improvement could be a result of the tighter regulations and better awareness investors of ESG issues. This is supported by Bird et al. (2007) who documented increasing market support for CSR information over recent years, characterised by the diversity of issues that increasingly attract the attention of investors.

Cormier and Magnan (2007) investigated the mediating impact of environmental disclosure on the relationship between company valuation and earnings in three countries – Germany, Canada, and France – to assess the impact of country-specific environmental reporting. They found a moderating effect of environmental disclosure on the stock market value of German firms, but did not find a significant influence for Canadian and French companies. The mixed results were interpreted by the authors as indicating that institutional context influences the effect of the disclosure on value.

The second of the schools noted above, the cost-concern school, appears to have rather less support in the literature. Brammer, Brooks, and Pavelin (2006) have suggested that environmental efforts increase costs and are, therefore, destroyers of shareholder value. Similarly Cheung and Mak (2010) report that the increased level of CSR disclosure can improve a firm's credibility, but it can also add to costs and thus reduce firms' profit. These studies both support the conclusions of the early study by Hughes (2000) who found a negative relationship between firm value and sulphur dioxide

emissions. Similarly with Elshahat (2010), the results of those studies suggest that environmental problems are more likely to be associated with an increase in the value of the company rather than the strengths of the environment.

However, some doubt exists concerning the exact nature of the differences between the two schools of thought. It has been argued, for instance, that the divergence of results arises not so much from actual differences as from differences in research methodology. For instance, UNEP (2007) believes that Brammer, et al.'s results were affected by the scoring system used for the environmental dimension and the length of the period over which the study was conducted. More specifically, UNEP noted that Brammer, et al.'s results cannot be reconciled with those from a similar but broader study by Derwall, Guenster, Bauer, and Koedijk (2005) which indicated that companies with active environmental focus had superior shareholder returns. Cheung and Mak (2010) have suggested that the period over which their study was conducted could have affected the results. Additionally, Patten (2002) suggests that the lack of significant results in previous studies may be due to the lack of control for other factors such as sample selection and the measure of environmental performance. Finally, it is apparent that some empirical measures are subject to significant measurement errors (Boyd, Gove, & Hitt, 1999). Examples include NFI measures of customer satisfaction, brand, and human capital measures that rely on informal survey data, and subjective conceptual frameworks (Wyatt, 2008). The inconclusive findings may also have been the result of different disclosure instruments measuring different types of disclosure.

Overall then, and despite the existence of empirical findings to the contrary, it would appear that the literature supports the existence of a positive relationship between environmental disclosure and the market value of firms. This is consistent with positive theory which predicts a value enhancing

impact of disclosure of ESG on market value through reduction of information asymmetry and agency conflicts. The first hypothesis therefore is:

***H_1**: Environmental disclosure is positively associated with company market value.*

Social disclosure and market value

Disclosure has the potential to provide transparency and disseminate information, therefore reducing information asymmetry and agency conflicts between managers and investors. Therefore, agency theory supports a positive relationship between social disclosure and market value if, indeed, social disclosure is relevant to investors. Companies are able to maintain efficiency through sustainable relationships between managers and investors, which will increase their competitiveness by avoiding agency costs. Hillman and Keim (2001) state that good relationships among key stakeholders increase intangible value, which contributes to market returns. El Ghoul et al. (2011) suggest that US firms that make clear efforts to improve employee welfare have a lower cost of equity capital.

Servaes and Tamayo (2013) studied whether CSR activities are valued higher for more consumer-aware firms and whether this impact is weaker for firms with a poor prior reputation for responsible behaviour. The findings suggest that corporate social responsibility (CSR) and firm value are positively related for firms with high customer awareness, as measured by advertising expenditures, and the relationship become weaker (either negative or insignificant) for low awareness firms. This effect is much stronger (reversed) for firms with a poor prior reputation. This evidence indicates that CSR activities improve firm value, but only under certain conditions.

Richardson and Welker (2001) investigated the relationship between financial and social disclosures and cost of equity capital in Canadian companies with year-ends in 1990, 1991, and

1992. They documented a significant negative relationship between the costs of equity capital and financial disclosure but, contrary to expectation, found a positive relationship with social disclosure. However, this positive relationship is weaker in companies with better financial performance. This indicates that although CSR disclosure does not directly affect the market value, but it may have a mediating effect on market value. The results were interpreted by the authors as reflecting potential biases in a social disclosure report; for example, where a disclosure is made by a company for promotional purposes, the social disclosure would tend to be more extensive on positive aspects and these efforts may inflate costs rather than have financial benefits. Peloza (2009) makes the obvious but significant point that the financial impact of metric-bases measuring social engagement is highly dependent on the ability of these metrics to capture all of the costs and benefits of each social initiative.

Luo and Bhattacharya (2006) tested whether the relationship between CSR and the company's market value is mediated by customer satisfaction. Overall, they found that the lower the level of customer satisfaction the lower the impact of CSR on market value. This study is in line with that of Aaker and Jacobson (2001) who showed that the attitude of customers towards the brand, which is built by using innovation and technology in creating product attributes, helps increase market value in the future.

On the other hand, some research findings suggest that increased public relations activity results in reduced investment returns (Brammer et al., 2006). That is, the benefits of social initiatives often come at the expense of the relatively large resources spent on social engagement (Brammer et al., 2006).

Another view suggests that information users need time to develop awareness of specific measures to recognise the actual benefits of each of the ESG components. Edmans (2011) suggests that, although there is a positive association between employee satisfaction and stock returns in the long run, the stock market still does not fully value intangibles and, consequently, only selected ESG factors improve stock returns. Furthermore, Bauer, Otten, and Rad (2006) found that although there is no significant overall difference between the risk-adjusted returns of ethical and conventional funds, there are differences during certain periods of time. Between 1992 and 1996, the conventional funds appear to have outperformed ethical funds, but during the period from 1997 to 2003, the two investment approaches showed similar performance. The authors conclude that a learning period is required before the market is able to truly appreciate ethical screening. This could be another explanation for the medium to long-term impact of ESG factors on firm performance, and the market price of firms as reported in other studies (Balatbat et al., 2012; CSR Europe, 2003; Maier, 2007).

The inconsistent results of previous studies may also be due to a number of social factors having no impact on stakeholders. Hillman and Keim (2001) classified social activities into two components: stakeholder management, which has a direct relationship with various stakeholders, (e.g. investor relations); and social issue participation which has no direct relationship with the stakeholders, such as avoiding involvement with tobacco, alcohol, or gambling industries. The first group is expected to have a positive financial impact on shareholder value while the second group is not expected to have any impact. Hillman and Keim (2001), therefore, investigated the impact of stakeholder management on shareholder value, and as predicted, found that better relationships with stakeholder groups leads to an increase in shareholder value.

In summary, the evidence from research studies on the impact of social disclosure on market value has been mixed. However, increasing awareness among capital market investors of the importance of social factors as an indication of potential future risk and return has prompted greater attention to these factors. This study predicts, therefore, that social disclosure has a positive impact on value. Thus the following hypothesis is proposed.

H_2: *Social disclosure is positively associated with company market value.*

Governance disclosure and market value

Major financial scandals such as Enron and Lehman Brothers have led to demands in many countries for reform of corporate governance. A large body of research has developed on the impact of governance on value. Consistent with the disclosure hypothesis, the literature linking governance measures to firm value suggests that good corporate governance is associated with higher market value (Bebchuk & Cohen, 2005; Brown & Caylor, 2006; Cremers & Nair, 2005; Gompers, Ishii, & Metrick, 2003).

Corporate governance is a broad and diverse concept. It encapsulates all the mechanisms that determine the procedure for determining the direction of the firm (Schmidt, 2003). A broad definition also indicates a lack of clarity of the concept (Webb, Pollard, & Ridley, 2006). Because of its abstract nature, corporate governance is also not easily measured, or compared between companies. It is tied to specific organisational contexts as it also involves discretion in selecting policies deemed most appropriate for specific circumstances. Therefore, despite the consensus among financial communities of the strong benefits of good corporate governance, the findings of previous studies have been inconsistent. Some studies suggest a weak to neutral relationship between governance attributes and firm market value (Bauer, Guenster, & Otten, 2004).

The value impact derives from a number of sources. For example, good corporate governance can promote high quality management that improves productivity through enhanced creativity and innovation. Good governance also promotes efficiency because it can reduce waste in the production process, and through effective monitoring reduce agency conflicts between managers and shareholders, thus avoiding the costs of conflict (Maher & Andersson, 2000). Companies with good governance also enhance shareholder rights (Gompers et al., 2003).

The positive relationship between corporate governance disclosure and market value has been found in a number of studies (Bauer et al., 2004; Beiner, Drobetz, Schmid, & Zimmermann, 2006; Drobetz, Schillhofer, & Zimmermann, 2004; Klapper & Love, 2004). Agency theory supports this results. Beiner et al. (2006) suggest that the positive relationship derived from reduction of agency problems has a positive impact on the expected future cash flows. Additionally, Lombardo and Pagano (1999) also suggest good corporate governance reduces the cost of monitoring and auditing. This is consistent with La Porta et al. (2002) who found that better legal protection for minority shareholders reduces investors' uncertainty about the outlook for corporate profits.

Researchers have found that both internal and external governance mechanisms have a positive relationship with the value of the company (Ammann et al., 2011; Bebchuk & Cohen, 2005; Brown & Caylor, 2006; Jo & Harjoto, 2012). The source of value arises either directly, such as from reduced cost of capital, or indirectly, such as through companies' internal improvements in employee and product quality that ultimately enhance shareholder value (Jo & Harjoto, 2011).

Ammann et al. (2011) investigated the relationship between firm-level corporate governance and firm value in companies across 22 developed countries over the period 2003-2007. A set of 64 individual governance attributes provided by Governance Metrics International (GMI) plus three

self-constructed corporate governance indices were analysed. The findings indicated a strong and positive relation between firm-level corporate governance and firm valuation. It was concluded by the authors that the benefits of reduced shareholders' monitoring outweighed the costs of implementing corporate governance with the result that returns to investors were higher.

Jo and Harjoto (2011) examined the effects of governance mechanisms (internal and external) on a company decision to engage in corporate social responsibility (CSR), and on the market value of companies. The study found a positive relationship between CSR engagement and internal and external governance. The impact of CSR engagement on market value was also positive, the positive impact being stronger for analyst following compared to other governance mechanisms such as board leadership, board independence, block holders' ownership, and institutional ownership.

However, Cremers and Nair (2005) and Brown and Caylor (2006) have reported that not all measures of good governance are associated with firm value. This applies especially to factors that have not been the subject of extensive study such as an "independent nominating committee". This explanation suggests that public awareness determines whether investors consider these factors to be relevant to valuation. Such findings may also be attributed to small sample size, the measurement metrics used, or possibly the relatively minor importance of the corporate governance factor studied compared to other factors. As suggested by Brown and Caylor (2009), effective corporate governance measures require broad measures including both internal and external governance mechanisms to enhance the robustness of findings.

Taken together, the strong support for the positive association between good governance and market value and the limitations of some studies – in both the measurement model and the choice of

variables, this study predicts a positive relationship between governance and market value. This leads to the next hypothesis:

***H_3**: Governance disclosure is positively associated with company market value.*

ESG disclosure and market value

Studies have documented that companies with ESG disclosure obtain various kinds of benefits that contribute to their market value. These benefits include reduction in the cost of capital (Bachoo et al., 2013; Dhaliwal et al., 2011; Plumlee et al., 2010; Richardson & Welker, 2001), reduction in the cost of debt (El Ghoul et al., 2011; Fulton et al., 2012; Goss & Roberts, 2011; Jung, Herbohn, & Clarkson, 2014), and other cost efficiencies, such as waste reduction (Heal, 2005), potential costs associated with environmental disasters, financial lawsuits, and consumer boycotts (Marsat & Williams, 2011); thus improving the overall expected future return/cash flows (Bachoo et al., 2013; Plumlee et al., 2010), which ultimately improve the overall firm value (Jo & Harjoto, 2011).

ESG disclosure can affect firm value through several channels. Companies with ESG policies have been reported as having reputation gains, thereby increasing investor confidence; efficient use of resources and thus being better able to compete; more highly motivated employees, higher productivity, innovation, and new market opportunities. All of these results are favourably rewarded by the capital markets (Guenster, Bauer, Derwall, & Koedijk, 2011). The companies may also be more likely to have superior management and more capable of running a successful business (Alexander & Buchholz, 1978; Clarkson et al., 2004). In addition, ESG disclosure increases company transparency, thus giving the company a positive profile (Azzone et al., 1998). Environmental and social engagement increases profits by reducing the cost of conflict with the community, improving relationships with regulators, increasing employee productivity, and

increasing efficiency due to reductions in the amount of waste (Heal, 2005). Investors, in particular those who are aware of the advantages of companies that are socially responsible, as listed above, are willing to pay a premium for the securities (Richardson & Welker, 2001). Similarly, CSR disclosure has been found to increase sell-side analyst forecast accuracy, which could potentially improve the liquidity of securities (Dhaliwal, Radhakrishnan, Tsang, & Yang, 2012).

ESG disclosure can also affect firms' value directly. Bird et al. (2007) investigated the relationship between a company's positive and negative corporate social responsibility (CSR) activities and equity performance. They used KLD ESG ratings for US companies included in the S&P500 index from 1991 to 2003 and focused on five distinct CSR activities separately rather than on a total CSR score for each company. Overall, they found that valuation proxies have a positive association with diversity, employee, and product strengths, but negatively relate to employee concerns. They conclude that CSR engagement does not have negative impact on market value and in fact the value impact increased over time, indicating more interest by investors in CSR issues.

A number of prior studies in the broad areas of ESG (including SRI and CSR), however, have also reported negative results. Renneboog, Ter Horst, and Zhang (2008) investigated the impact of ethics and good corporate governance on risk-adjusted return of the fund management industry using a unique data set consisting of nearly all SRI mutual funds around the world (Europe, North America, and Asia-Pacific). They found that the risk-adjusted returns of the average SRI funds in the US, the UK, and most continental European and Asia-Pacific countries strongly underperform their Fama-French-Carhart (FFC) benchmarks. These results indicate that investors pay a price for investing in SRI funds.

In the context of CSR, Gietl, Göttsche, Habisch, Roloff, and Schauer (2013) investigated the influence of the GRI sustainability reporting to market value of non-financial EUROSTOXX 600 companies and found that there is no significant effect for large and profitable companies, but the GRI A+ has a significant negative effect on firm value for smaller or less profitable companies. These results indicate the high cost of adopting the GRI A+ for smaller or less profitable companies.

In addition, Marsat and Williams (2011) investigated the relationship between the practices of corporate social responsibility (CSR) and stock price. Using the data from MSCI ESG ratings as a measure of CSR practice for 2838 companies around the world from 2005 to 2009, they found a significant negative relationship between CSR practices and company market value. This indicates that the companies do not benefit financially from CSR engagement because investors do not appear to positively assess the company's CSR behaviour, so it is not considered in the assessment process of their equity assets.

This research, therefore, is closely related to our study. However, the study by Marsat and Williams (2011) used two different proxies for the assessment of the company's market value (price-to-book and Tobin's Q) and assessed the practice of ESG in accordance with four main pillars: environmental, human capital, strategic capital, and government stakeholders. The study used companies from the MSCI World (1,500 companies), MSCI Emerging Markets (200 companies), the ASX 200 (200 companies) and FTSE 350 (275 companies) from 2005 to 2009. Our study, in contrast, uses a different data set, Bloomberg ESG disclosure scores, and the period covered is more recent (from 2008-2012). We also focus solely on the worldwide data (without particular focus on, e.g. ASX companies) and the stock price as an indicator of value (we do include Tobin's Q in our model as a control for firm performance rather than as a dependent variable).

De Villiers and Marques (2014) examined the effect of various levels of corporate social responsibility (CSR) disclosure on stock prices of the largest companies in Europe. They found that a high level of CSR disclosure relates to a higher stock price and vice versa; this result also applies to a change in the level of CSR disclosure. However, Wang and Huang (2013), who investigated the influence of corporate social responsibility (CSR) on the cost of equity capital of companies globally, found that firms with high CSR scores are significantly associated with a lower cost of equity capital but this does not apply in all parts of the world.

Fulton et al. (2012) reviewed a comprehensive literature of more than 100 academic studies in the field of sustainable investments around the world. The study considered the impact of sustainability (ESG and CSR) on the cost of capital, corporate financial performance, and fund performance. Overall, they conclude that CSR and ESG are associated with superior risk-adjusted returns.

Two investor perception surveys on ESG, have reported that 80 to 90 percent of investors believe that ESG indicators have a positive financial impact on the value of the company in the medium to long term (CSR Europe, 2003; Maier, 2007). Such findings suggest that the financial community favours companies with ESG policies. Similar sentiments were reported in the United Nations Principles of Responsible Investment (UNPRI) which believes that "environmental, social, and corporate governance (ESG) issues can affect the performance of investment portfolios (to varying degrees across companies, sectors, regions, asset classes and through time)" (Balatbat et al., 2012, p. 2). This suggests that there is a tendency among the mainstream financial community to include ESG factors when evaluating the market value of the company, which is consistent with the practitioner claims that ESG disclosure is gaining increased importance for mainstream investors (Dienel, 2009). This also indicates that research in this area is increasingly becoming more important.

In general, the majority of previous studies, particularly those conducted in more recent years, have reported that companies' voluntary ESG disclosure produces financial rewards. The final hypothesis, therefore, is:

H_4: *ESG disclosure is positively associated with company market value.*

IV. RESEARCH DESIGN

Model Specification

The objective of this study is to investigate the value relevance of ESG disclosure. Value relevance tests are usually based on a return model or a price model (Barth, Beaver, & Landsman, 2001; Ota, 2003). Both models have the same foundation, the Ohlson (1995) linear information model, but while some prior studies using both models have documented similar results (Bao & Chow, 1999; Lev & Zarowin, 1999; Sami & Zhou, 2004), others have produced conflicting results(Ely & Waymire, 1999; Francis & Schipper, 1999). This could be because each model is associated with some of its own problems such as the scale effect[9] in the price model and the accounting recognition lag[10] in the return model (Liu & Thomas, 2000; Ota, 2003). To date there has been no perfect solution to these problems (Ota, 2003). Despite the debate as to which is the better model (as discussed by Kothari & Zimmerman, 1995), this study employs the price model. Several points support the decision to use the price model. First, the model has been widely adopted by researchers (Amir & Lev, 1996; Bao & Chow, 1999; Hirschey, Richardson, & Scholz, 2001; Hughes, 2000; Lo & Lys, 2000; Sami & Zhou, 2004). In fact, the Peloza (2009) review of the impact of one of the

[9] Scale effect indicates a biased prediction of the relationship between the independent and dependent variables in the regression model, due to failure to control for the effects of scale between large and small companies.

[10] Problems arise in the return model, which uses current earnings in the regression model, where many value-relevant events are not recorded in the earnings due to the accounting principles adopted by companies such as the reliability, objectivity, and conservatism (Ota, 2003).

ESG metrics, namely the relationship between corporate social performance (CSP) and corporate financial performance (CFP), suggests that the price model dominates in this line of research for a number of reasons. These reasons include ease of comparing companies' performance over time, inter-company, sector, and geography.

Second, unlike the return model, there is empirical evidence to suggest that the estimated slope coefficient of the variable tested in the price model is unbiased (Chen et al., 2001; Kothari & Zimmerman, 1995). In addition, as suggested by Beisland (2009), regardless of the strength of the econometrics of the model specification, the chosen model should be based on the economic motivation of the study. This study, therefore, chooses the price model for investigating the relationship between companies' market value measured by the stock prices and their ESG disclosure.

Four price models are used in this study. The first three models are used to investigate the impact of disclosure of the individual ESG factors on market value. In the fourth model, the variable of interest is the aggregate ESG score. We do not include all three components in a single regression as there would be serious multicolinearity. The individual models are listed below:

$P = \alpha_0 + \alpha_1 Env + \alpha_2 BV + \alpha_3 EPS + \alpha_4 Tobin's\_Q + \alpha_5 Debt\_TA + \alpha_6 Law + \alpha_7 Social\_Progress + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 1)*

$P = \beta_0 + \beta_1 Soc + \beta_2 BV + \beta_3 EPS + \beta_4 Tobin's\_Q + \beta_5 Debt\_TA + \beta_6 Law_{it} + \beta_7 Social\_Progress + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 2)*

$P = \gamma_0 + \gamma_1 Gov + \gamma_2 BV + \gamma_3 EPS + \gamma_4 Tobin's\_Q + \gamma_5 Debt\_TA + \gamma_6 Law + \gamma_7 Social\_Progress + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 3)*

$P = \delta_0 + \delta_1 ESG + \delta_2 BV + \delta_3 EPS + \delta_4 Tobin's\_Q + \delta_5 Debt\_TA + \delta_6 Law + \delta_7 Social\_Progress + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 4)*

where,

P	=	Share price
Env	=	Environment disclosure of firm
Soc	=	Social disclosure of firm
Gov	=	Governance disclosure of firm
ESG	=	ESG disclosure of firm
BV	=	Book value per share of firm
EPS	=	Earnings per share of firm
Tobin's_Q	=	Tobin's Q of firm
Debt_TA	=	Total debt to total assets of firm
Law	=	a dummy variable takes the value 1 for common law country and 0 otherwise
Social_Prog	=	Social Progress index

Detailed definitions of all of the variables are presented in Appendix 1.

(Insert Appendix 1 here)

Variables

In testing the research question, this study employs the Collins et al. (1997) version of the Ohlson (1995) price model which expresses the market value of equity as a function of book value of equity and accounting earnings. Hence, we use three financial variables: price per share at the end of the financial period as the dependent variable of this study, book value (BV) at the end of the financial period, and earnings per share (EPS) as the measure of accounting earnings. We also include two other firm level financial variables in addition to the main variables included in the model. These variables have been identified in previous value relevance studies as impacting on company value. These variables are Tobin's Q (Ammann et al., 2011; Dowell, Hart, & Yeung, 2000; Jo & Harjoto, 2011; King & Lenox, 2001) and total debt to total assets (McGuire, Sundgren, & Schneeweis, 1988). Tobin's Q represents a market-based measure of profitability. Profitability has been identified as a driver of price (Bizcoach, 2014) and therefore it is included in our model. Total debt to total assets represents relevant risk factors that adversely impact price. However, companies that successfully utilise a degree of leverage may also have higher potential for growth, which is

preferred by some investors. Thus companies with high risk may also signal potential growth. Accordingly, we include total debt to total assets as a control variable in our models.

The main non-financial variable in the models is ESG and its components. Positive significance for the coefficient of these variables would support our hypotheses. A number of cross-country value relevance studies have suggested that country differences have persisted even after accounting harmonisation (Joos & Lang, 1994), due to, for example, their capital market size (Veith & Werner, 2010) or legal origins (Devalle, Onali, & Magarini, 2010; Hung, 2000; Veith & Werner, 2010). Wanderley, Lucian, Farache, and de Sousa Filho (2008), in fact, found that country of origin had a stronger influence than industry sector. The above studies suggest that value relevance is influenced by institutional factors such as political, cultural, legal and socioeconomic factors. Therefore, we include the common law and code law distinction to represent the legal institutional factors that are used to classify countries (La Porta et al., 1998). We code common law countries as 1, and other countries as 0. We also include year and industry variables in our model to control for year and industry effects.

To properly segregate the effect of ESG disclosure on market value from ESG performance, we also incorporate an ESG performance variable in our models, namely the country level Social Performance Index (SPI) from the Social Progress Imperative[11]. Patten (2002) argues that the unexpected results in some studies regarding the impact of ESG disclosure may be due to lack of control for ESG performance. Thus, recent studies have included control for environmental performance as it captures a dimension of firm risk and hence influences investor decisions, and ultimately market value (Al-Tuwaijri, Christensen, & Hughes, 2004; Clarkson et al., 2013).

[11] (http://www.socialprogressimperative.org/es/)

Data

The sample for this study comprises non-financial companies listed on stock exchanges around the world during the five-year period 2008-2012. This particular period has been chosen because the Bloomberg ESG disclosure scores have been available on a comprehensive basis only since 2008. Disclosures were published prior to 2008 but the data was limited in terms of both country and sector coverage. Since 2008 there have been 3000 companies globally in the Bloomberg database with ESG. A number of studies suggest that the number of companies disclosing ESG factors has grown significantly in the wake of the 2008 global financial crisis because of concern about governance (Galbreath, 2013; Karaibrahimoğlu, 2010). We sourced legal data from the Central Intelligence Agency (CIA) World Factbook[12] and the Social Progress Index (SPI) data from the Social Progress Imperative. All financial and non-financial data for the study other than Law and SPI was obtained from the Bloomberg database.

Table 1. Sample

Number of firm year observations				
Companies with ESG score (2008-2012)	***ENV***	***SOC***	***GOV***	***ESG***
All companies				42,576
Less: Financial companies				7,640
Non-financial companies				34,936
Less: Countries without 5 companies in the database				7,693
Non-financial companies in 41 countries	14,881	18,018	27,206	27,243
Less: Companies with no SPI (3 countries)	231	318	432	432
Non-financial companies in 38 countries	14,650	17,700	26,774	26,811
Less: Negative BV and missing values in all main variables	800	3,850	12,924	12,961
Number of observations	13,850	13,850	13,850	13,850
Less: Outliers based on Mahalanobis Distance at p (0.01)	2,395	2,395	2,395	2,395
Final number of observations	11,455	11,455	11,455	11,455

[12] (https://www.cia.gov/library/publications/the-world-factbook/fields/2100.html)

The sample companies for this study were selected according to the availability of Bloomberg's aggregate ESG disclosure scores, because the Bloomberg system does not allow screening on the basis of the individual components. There were six stages in the sampling procedure. The first stage selected all non-financial companies for which the Bloomberg database reported ESG disclosure scores for each of the firm years from 2008. Financial institutions were excluded from the sample because of their different nature and regulatory environment (Goodwin & Ahmed, 2006; Xiao-H. & Yu-Hong, 2008). In order to obtain strong regression results, only countries with at least five companies consistently disclosing ESG aggregate scores over the study period were included in the sample (La Porta et al., 1998). This resulted in 41 countries being included. However, three counties, Singapore, Luxembourg, and Hong Kong were subsequently removed because there is no data available on the Social Progress Index (SPI) for these countries[13].

In the next stage, all companies with negative book values and missing values for the main regression variables were removed[14]. In the final stage, all outliers as identified by the Mahalanobis Distance (MD)[15] test were excluded.

(Insert Appendix 2 Panel A here)

[13] Singapore and Luxembourg are not on the SPI list as these two countries do not meet the SPI data requirements. In order for a country to be included in the index, it must have no more than one data gap on each component. Hong Kong is not in the index because the SPI includes only UN recognised countries.

[14] However, we maintained the cases with missing values on the four instrumental variables (IV) used in the 2SLS estimation: Anti-bribery ethics policy, Ethics policy, Employee CSR training, and CSR sustainability policy. Following Francis et al. (2004), we replaced the missing values on the IVs by zero.

[15] MD is obtained by calculating the variance of each variable and the covariance between variables. More precisely, the MD is characterised by several features (Wicklin, 2012). Geometrically, MD is calculated by converting the data into standardised uncorrelated data and then computing the Euclidean distance for the converted data. To perform the MD test, this study uses the Hadimvo command in the STATA programme that classifies the MD value of multivariate data into two categories: MD below and over 25 in value. The companies scoring above 25 are omitted, as they are considered outliers.

This screening process produced 11,455 firm year observations on Environment, Social, Governance, and ESG. The sample companies were located in 38 countries on six geographical continents (Asia, Africa, North America, South America, Europe, and Oceania)[16]. Details of the sampling procedures are reported in Table 1. Appendix 2 provides descriptive statistics on ESG scores. Panel A gives a breakdown by country, panel B by year, and panel C by industry sector. Panel A shows that the countries with more than 1000 observations (or approximately 10% of the total number of observations) are China, India, Japan, and the United States (denoted by a single asterisk), whereas countries with less than 2% of the total number of observations are Colombia, Estonia, Israel, and Poland (denoted by two asterisks). Lowest maximum scores for ESG were Estonia (36.36) and Pakistan (38.84).

(Insert Appendix 2 Panel B here)

Panel B shows that the number of observations in the years 2008-2011 increased each year but there was a decline in 2012. Despite the decrease in the number of observations in the year 2012, the maximum ESG score continued to increase and the ESG maximum score occurred in 2012 (79.34). This suggests improved quality of reporting by companies across the world.

(Insert Appendix 2 Panel C here)

Panel C shows that the highest number of observations were for Industrials, 3,558 observations (31.09% of total observations), followed by Basic Materials, 2,332 observations (20.38%), and then by the two consumer industries: Non-cyclical, 1,981 observations (17:31% time), and Cyclical,

[16] (http://www.worldatlas.com/cntycont.htm)

1,626 observations (14:21%). The rest of the industries were under 5%, and the lowest was Diversified, 112 observations (0.98%) of the total observations.

V. RESULTS

Descriptive statistics

Panel D provides descriptive statistics of the main variables in this study. The table reports the mean, median, standard deviation, the minimum, and the maximum of the variables. The table shows that environmental scores range from 0.78 to 85.27 with mean value 23.11; social scores range from 3.51 to 94.74 with mean value 26.30; governance scores range from 3.57 to 85.71 with mean value 47.37; and the aggregate ESG scores range from 3.31 to 79.34 with mean value 29.47. The data indicates that, on average, the disclosure level of ESG and its individual components within our sample companies is at the lower end of scale but with the governance scores being, on average, the highest. We also report the mean and median for the financial variables (P, BV, EPS, Tobin's_Q and Debt_TA) and the non-financial variables (Law and Social_Prog).

(Insert Panel D here)

Panel E presents the Pearson correlation matrix for all the main variables included in the study. All the ESG disclosure variables are positively related to the dependent variable, P. The table also shows that among the ESG variables, the governance factor has the strongest positive correlation with price ($r=0.300$, $p<0.001$), followed by aggregate ESG ($r=0.275$, $p<0.001$), environmental factor ($r=0.218$, $p<0.001$) and finally, the weakest variable is the social factor ($r=0.213$, $p<0.001$).

(Insert Panel E here)

Primary Tests

This study tests four hypotheses to investigate the impact of the disclosure of the aggregate ESG and the individual components, the environmental, social, and governance factors on market value. To control for potential endogeneity of these four ESG factors, we apply Two-Stage Least Squares (2SLS) and apply robust regressions that compute Huber-White robust estimates of the standard errors to control for heteroskedasticity. We initially estimated the regressions by OLS. The Hausman test for endogeneity was only suggestive of endogeneity but we switched to 2SLS as the OLS estimates of the coefficient on book value was implausibly less than one across all four regressions. Furthermore, Vanstraelen, Zarzeski, and Robb (2003) suggest that good quality companies (particularly in terms of global reach and size) tend to disclose more non-financial information which ultimately affects the value of the company; thus estimates of this effect may be inflated or biased. This indicates that the link between disclosure and value may not only from disclosure to value but also from value to disclosure. If so, then the disclosure variables are endogenous and estimates of the coefficients by OLS could be biased. We estimated the ESG and Env, Soc, and Gov variables using the following instruments: variables on the company's anti-bribery ethics policy, ethics policy, employee CSR training, and CSR sustainability policy, which we expected would affect disclosure but not value.

(Insert Table 2 here)

The results of estimation of the model by 2SLS are reported in Table 2. In contrast, to the OLS results, the 2SLS estimates were plausible in all regressions. Table 2 shows that the coefficients of ESG and its component are positive and significant with coefficient for *Env* = 0.0945428, $p<0.001$; Soc = 0.0649485, $p<0.001$; *Gov* = 0.1754835, $p<0.001$; ESG = 0.1003971, $p<0.001$ and the regressions all have a high adjusted R^2. More precisely, a one-point increase in the Env, Soc, Gov,

and ESG disclosure indexes results in ceteris paribus, price increases of $0.09, $0.06, $0.17, and $0.10 respectively. From the perspective of investors, this positive coefficient throughout the ESG components suggests the value added of ESG disclosure on market value. The coefficients of the control variables (BV, EPS, Tobin's_Q, Debt_TA, Law, and Social_Prog) are all significant and, as expected, positive in sign. The results thus suggest a sound model specification.

The governance component shows the strongest values (0.17) while social (0.06) has the lowest among the three components. The results obtained are consistent with prior studies in closely related areas such as the literature examining the economic impact of disclosure of corporate social responsibility (CSR). Those studies have found firms with CSR disclosure have positive economic performance (Al-Tuwaijri et al., 2004) through reduced cost of equity capital (Bachoo et al., 2013; Dhaliwal et al., 2011; Hirschey et al., 2001; Plumlee et al., 2010) and increased future expected cash flows (Bachoo et al., 2013; Plumlee et al., 2010), which ultimately improve the overall firm value (Jo & Harjoto, 2011).

(Insert Table 3 and 4 here)

We also ran two separate 2SLS regressions, for observations within common law countries only and within code law countries only and the results are presented in Table 3 and Table 4 respectively. Both Table 3 and Table 4 show that all of the coefficients of ESG and its component from both data sets are still positive and significant. The results show that in common law countries (*Env* = 0.0956014, p<0.001; *Soc* = 0.0693728, p<0.001; *Gov* = 0.1663981, p<0.001; *ESG* = .0.098729, p<0.001), while in the code law countries (*Env* = 0.0626252, p<0.001; *Soc* = 0.0733443, p<0.001; *Gov* = 0.1928794, p<0.001; *ESG* = 0.091294, p<0.001).

The significance of the difference between the coefficients on ESG and Env, Soc, and Gov in the common and code law regressions was tested using the Chow test. In each case the difference was significant at 1% level. However, the higher value for ESG in the common law regressions is actually the result of a higher value for Env in the common law countries but lower coefficients on each of Soc and Gov.

To further check the stability of the results for common and code law countries, we also re-ran the regressions after trimming observations in common law countries falling outside the range of total assets from USD (thousands) 10.17 to 370942.3, which is the ranges of total assets of companies from code law countries; this process resulted in eliminating 62 observations to retain 11,393 observations. The results (not reported) were qualitatively similar to the data set run on 11,455 observations, with environmental factors being stronger in common law countries and social and governance factors stronger in code law countries. The results thus strongly support all hypotheses 1 to 4 and are stronger in common law countries for environmental factors while social and governance factors are stronger in code law countries.

Robustness tests

(Insert Table 5 here)

Our robustness tests ranged from conducting rank regressions[17] for the full set of data to regressions on a number of treated data sets. The results of the rank regression are (reported in Table 5) are similar in direction and significance but, as the variables ranked, the coefficients do not have the

[17] Rank regression approach gives equal weight to each data point, thus reducing the extremes in the observations, therefore rank regression is used to ensure the results are not driven by the choice of tests in use (Sievers, Mokwa, & Keienburg, 2011).

same intrinsic meaning. The treated data sets were formed by elimination of years affected by the GFC, excluding 2012; by elimination of countries with only a few companies in the data set and countries with many companies in the data sets; and elimination of South Africa as it has strong mandatory requirements for disclosure. However, due to space constraints, the detailed results of these tests are not reported in this paper.

The effects of the GFC were tested by running regressions excluding firstly 2008 and secondly 2008 and 2009. In addition, considering there is a significant drop in the number of companies disclosing ESG globally in 2012 compared to prior periods, we also ran a regression excluding 2012. The effect of the extremes in the number of companies in each country were tested for by running regressions firstly excluding Columbia, Estonia, Israel, and Poland; secondly China, India, Japan, and US; and thirdly by excluding both sets of countries. Finally we re-ran the regressions excluding South Africa from the data set. In all cases the results were qualitatively similar to those obtained in the main tests.

VI. CONCLUSION

The purpose of this study was to investigate the relationship between disclosure of ESG information and market value using a global data set comprising companies from 38 countries over the period 2008 to 2012. We measure ESG disclosure by Bloomberg ESG disclosure scores. Four hypotheses are tested using the Collins et al. (1997) version of the Ohlson (1995) model on aggregate ESG and the three individual components of ESG scores. We find a significant positive relationship between the variables of interest and market value. Thus ESG disclosure, both as the aggregate and the individual level, is value relevant. Our results are consistent across alternative estimation procedures and robustness tests. Our results have significant implications for regulators and the investment community because it would appear that investors could benefit from additional ESG

disclosure as an input to important investment decisions. However, the question of how much more is left open. Although the results of previous studies are mixed, our results are consistent with results of the more recent studies thus supporting the notion that environmental, social, and governance information is gaining increasing importance for investors.

Our study contributes to the literature on value relevance of ESG disclosure. We use a new data set and include controls for institutional differences and ESG performance. Previous studies have focused on particular countries or regions; this is the first study identifying market value using stock price on a global data set from Bloomberg.

There are limitations in the research design that we need to acknowledge. First, we employ global data and our sample companies come from a variety of different institutional settings. While we endeavour to control for these differences using legal origin, a number of our sample companies are multinationals and therefore do not reflect the operation of national boundaries in terms of legal traditions; thus legal origin may not be the most suitable control variables for such companies. Second, our study is the first global study that uses Bloomberg ESG disclosure scores as a proxy for ESG disclosure, and our results have not been tested against alternative data provided by alternative providers of ESG type scores. Comparison of results obtained across alternative data sets is work for future research.

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Appendix 1: Variable Definition

(Bloomberg Field Codes are in Parentheses)

Variable Name	*Measure*	*Description*
P	Price per share	Last price for the security as provided by the exchange (PX_LAST).
Env	Environmental disclosure score	Proprietary Bloomberg score based on the extent of a company's environmental disclosure as part of Environmental, Social and Governance (ESG) data. The score ranges from 0.1 for companies that discloses minimum amount of ESG data to 100 for those that disclose every data point collected by Bloomberg. Each data point is weighted in terms of importance, with data such as Greenhouse Gas Emissions carrying greater weight than other disclosures. (ENVIRONMENTAL_DISCLOSURE_SCORE)
Soc	Social disclosure score	Proprietary Bloomberg score based on the extent of a company's social disclosure as part of Environmental, Social and Governance (ESG) data. The score ranges from 0.1 for companies that discloses minimum amount of social data to 100 for those that disclose every data point collected by Bloomberg. Each data point is weighted in terms of importance, with workforce data carrying greater weight than other disclosures. The score is also tailored to different industry. In this way each company is only evaluated in terms of the data that is relevant to its industry sector. (SOCIAL_DISCLOSURE_SCORE)
Gov	Governance disclosure score	Proprietary Bloomberg score based on the extent of a company's governance disclosure as part of Environmental, Social and Governance (ESG) data. The score ranges from 0.1 for companies that disclose minimum amount of governance data to 100 for those that disclose every data point collected by Bloomberg. Each data point is weighted in terms of importance, with board of director's data carrying greater weight than other disclosures. The score is also tailored to different industry sectors. In this way, each company is only evaluated in terms of the data that is relevant to its industry sector. (GOVERNANCE_DISCLOSURE_SCORE)
ESG	Environmental, social and governance disclosure score	Proprietary Bloomberg score based on the extent of a company's Environmental, Social, and Governance (ESG) disclosure. The score ranges from 0.1 for companies that disclose a minimum amount of ESG data to 100 for those that disclose every data point collected by Bloomberg. The sum is a weighted average of the three component scores. However, it should be noted that Bloomberg includes values for ESG when there is no value for one or more of the components. We use only cases when there are values on each of the three components.

		(ESG_DISCLOSURE_SCORE)
BV	Book value per share	Total Common Equity / Number of Shares Outstanding. (BOOK_VAL_PER_SH)
EPS	Earnings per share	Net Income Available to Common Shareholders divided by the Basic Weighted Average Shares outstanding. (IS_EPS)
Tobin's_Q	Tobin's Q	(Market Cap + Liabilities + Preferred Equity + Minority Interest) / Total Assets. (TOBIN_Q_RATIO)
Debt_TA	Leverage	Total amount of debt of an equity divided by its total assets. (TOT_DEBT_TO_TOT_ASSET)
Law	Common law dummy	A dummy to represent country clusters using common law (1) and code law (0). (https://www.cia.gov/library/publications/the-world-factbook/fields/2100.html)
Social_ Prog	Social Progress	Social Progress Index offers a rich framework for measuring the multiple dimensions of national social progress, benchmarking success, and catalyzing greater human wellbeing (http://www.socialprogressimperative.org/data/spi)

Appendix 2: Descriptive Statistics

Panel A: Sample observations by country and ESG scores

No	Country	Number of Observation	Percentage	ENV Mean	SOC Mean	GOV Mean	ESG Mean	ESG Min	ESG Max
1	Australia	504	4.40	13.54	22.50	50.05	24.10	9.92	62.04
2	Austria	44	0.38	26.74	34.56	44.80	32.76	11.16	54.13
3	Belgium	33	0.29	30.09	37.63	53.30	37.24	10.33	57.02
4	Brazil	230	2.01	30.87	57.62	42.41	39.84	5.37	72.31
5	Canada	267	2.33	18.64	25.47	52.88	28.17	8.68	61.98
6	Chile	43	0.38	29.07	41.12	36.79	33.70	14.46	52.07
7	China*	1454	12.69	10.71	24.58	46.64	22.29	8.68	47.11
8	Colombia**	11	0.10	16.98	51.67	36.52	29.67	15.7	43.39
9	Denmark	74	0.65	22.04	28.18	42.85	28.30	8.68	58.68
10	Estonia**	17	0.15	13.45	16.20	25.31	16.84	6.61	36.36
11	Finland	154	1.34	33.21	35.65	53.32	38.44	10.74	79.34
12	France	223	1.95	32.83	44.35	54.74	40.61	11.46	73.14
13	Germany	174	1.52	28.48	35.44	40.47	32.89	9.09	73.55
14	Greece	56	0.49	31.22	42.19	41.77	36.25	3.31	71.07
15	India*	1204	10.51	12.68	10.36	41.76	18.86	9.5	60.74
16	Indonesia	37	0.32	15.50	27.50	44.01	24.92	9.5	46.28
17	Ireland	60	0.52	23.99	27.83	56.16	32.34	13.64	58.68
18	Israel**	18	0.16	19.89	27.77	42.65	27.01	10.74	48.76
19	Italy	112	0.98	37.99	43.73	50.31	42.19	10.33	73.55
20	Japan*	3,585	31.30	31.42	23.25	43.56	32.30	7.44	57.85
21	Malaysia	73	0.64	11.90	23.33	51.80	23.83	13.22	46.69
22	Mexico	64	0.56	29.67	44.24	40.15	35.53	9.5	57.85
23	Netherlands	110	0.96	26.34	34.94	53.62	34.68	14.46	66.53
24	New Zealand	32	0.28	16.15	23.46	47.65	25.16	14.05	44.63
25	Norway	77	0.67	23.29	35.97	43.80	31.02	15.7	57.85
26	Pakistan	68	0.59	10.13	19.45	40.91	19.45	10.74	38.84
27	Philippines	25	0.22	17.36	22.49	47.35	25.51	8.68	46.69
28	Poland**	22	0.19	22.19	25.11	32.54	25.28	10.33	42.98
29	Portugal	37	0.32	29.52	41.88	49.37	36.92	14.88	69.42
30	South Africa	229	2.00	23.56	39.49	55.02	34.59	11.98	57.02
31	South Korea	50	0.44	20.72	35.99	50.75	31.27	15.70	56.61
32	Spain	89	0.78	39.72	51.14	49.69	44.72	10.74	77.27
33	Sweden	160	1.40	28.15	36.80	52.25	37.76	13.64	68.60
34	Switzerland	100	0.87	24.31	29.56	54.82	32.60	12.40	68.60
35	Thailand	26	0.23	23.85	23.75	49.86	29.84	13.22	50.83
36	Turkey	37	0.32	20.09	33.85	35.37	26.87	10.74	45.87
37	UK	853	7.45	20.35	32.40	54.77	31.15	6.61	68.18
38	US*	1,103	9.63	22.41	26.47	56.58	31.28	6,61	78.01
	Total	11,455	100	23.10	26.29	47.37	29.47	3.31	79.34

*denote countries < 2%
** denote countries >10%

Panel B: Sample observations by year

Distribution by Year								
Year	*Number of Observation*	*Percentage*	*ENV Mean*	*SOC Mean*	*GOV Mean*	*ESG Mean*	*ESG Min*	*ESG Max*
2008	2,070	18.07%	22.72	24.72	44.56	28.24	0.78	68.99
2009	2,258	19.71%	23.70	26.22	45.68	29.38	6.61	78.10
2010	2,479	21.64%	24.02	27.19	48.31	30.39	6.61	73.55
2011	2,735	23.88%	22.84	27.33	49.42	30.05	7.85	77.27
2012	1,913	16.70%*	21.99	25.45	48.27	28.89	6.61	79.34
Total	11,455	100%	23.10	26.29	47.37	29.47	3.31	79.34

*Denote a decrease in the number of companies' disclosing ESG factors compared to prior years.

Panel C: Sample observations by industry

Distribution by Industry								
Industry Sector	*Number of Observations*	*Percentage*	*ENV Mean*	*SOC Mean*	*GOV Mean*	*ESG Mean*	*ESG Min*	*ESG Max*
Basic Materials	2,332	20.38	23.33	24.38	46.41	28.92	6.61	71.07
Communications	423	3.70	18.89	27.89	49.59	28.11	7.02	57.02
Consumer, Cyclical	1,626	14.21	23.13	25.18	47.30	29.21	7.02	73.55
Consumer, Non-cyclical	1,981	17.31	24.78	29.45	49.23	31.53	3.31	78.10
Diversified	112	0.98	19.39	26.42	49.12	27.93	13.64	55.37
Energy	383	3.35	18.85	27.57	48.64	27.80	5.37	73.97
Industrial	3,558	31.09	22.76	23.93	46.02	28.42	6.61	68.06
Technology	557	4.86	23.10	25.64	50.19	29.97	6.61	72.73
Utilities	483	4.22	25.44	42.07	47.97	34.57	8.68	79.34
Total	11,445	100%	23.10	26.29	47.37	29.47	3.31	79.34

Panel D: Descriptive Statistics of variables (N = 11,455)

Variables	*P*	*Env*	*Soc*	*Gov*	*ESG*	*BV*	*EPS*	*Tobin's _Q*	*Debt _TA*	*Law*	*Social_ Prog*
Mean	12.72	23.11	26.29	47.37	29.47	8.05	0.74	1.38	0.24	0.38	75.90
Median	5.77	17.83	22.81	46.43	26.86	4.78	0.30	1.15	0.23	0.00	84.00
SD	16.47	15.97	16.31	9.59	12.14	9.19	1.30	0.71	0.17	0.49	13.04
Min	0.02	0.78	3.51	3.57	3.31	0.01	-4.61	0.34	0.00	0.00	42.00
Max	107.35	85.27	94.74	85.71	79.34	64.83	8.58	5.83	0.82	1.00	88.00

P is the price of a share of firm*; Env* is the *e*nvironment disclosure of firm*; Soc* is the social disclosure of firm*; Gov* is the governance disclosure of firm*; ESG* is the ESG disclosure of firm*; BV* is the Book value per share of firm*; EPS* is the earnings per share of firm*; Tobin's_Q* is the Tobin's

Q of firm*; Debt_TA* is the leverage of firm*; Law* is a dummy variable takes the value 1 for common law country and 0 otherwise; Social_Prog is the Social Progress of firm.

Panel E: Descriptive Statistics of variables (N = 11,455)

Variable(s)	*P*	*Env*	*Soc*	*Gov*	*ESG*	*BV*	*EPS*	*Tobin's_Q*	*Debt_TA*	*Law*	*Social_Prog*
P	1.0000										
Env	0.218***	1.0000									
	(0.0000)										
Soc	0.213***	0.568***	1.0000								
	(0.0000)	(0.0000)									
Gov	0.300***	0.277***	0.447***	1.0000							
	(0.0000)	(0.0000)	(0.000)								
ESG	0.275***	0.932***	0.796***	0.519***	1.0000						
	(0.0000)	(0.0000)	(0.0000)	(0.0000)							
BV	0.765***	0.259***	0.141***	0.152***	0.254***	1.0000					
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)						
EPS	0.793***	0.145***	0.185***	0.252***	0.207***	0.628***	1.0000				
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)					
Tobin's_Q	0.228***	-0.125***	0.109***	0.190***	-0.019**	-0.172***	0.157***	1.0000			
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0452)	(0.0000)	(0.0000)				
Debt_TA	-0.143**	-0.026***	0.025***	-0.015	-0.013	-0.223***	-0.136***	-0.130***	1.0000		
	(0.0000)	(0.0056)	(0.0066)	(0.1184)	(0.1712)	(0.0000)	(0.0000)	(0.0000)			
Law	0.077***	-0.261***	-0.149***	0.276***	-0.180***	-0.129***	0.097***	0.164***	-0.040***	1.0000	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)		
Social_Prog	0.337***	0.364***	0.209***	0.197***	0.358***	0.404*	0.217***	-0.152***	-0.160****	-0.180***	1.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	

Note: Coefficient p-values applied two-tail
P is the price of a share of firm*; Env* is the *e*nvironment disclosure of firm*; Soc* is the social disclosure of firm*; Gov* is the governance disclosure of firm*; ESG* is the ESG disclosure of firm*; BV* is the Book value per share of firm*; EPS* is the earnings per share of firm*; Tobin's_Q* is the Tobin's Q of firm*; Debt_TA* is the leverage of firm*; Law* is a dummy variable takes the value 1 for common law country and 0 otherwise; *Social_Prog* is the Social Progress of firms.

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 2: 2SLS regression analysis

$P = \alpha_0 + \alpha_1 Env + \alpha_2 BV + \alpha_3 EPS + \alpha_4 Tobin's\_Q + \alpha_5 Debt\_TA + \alpha_6 Law + \alpha_7 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 1)*

$P = \beta_0 + \beta_1 Soc + \beta_2 BV + \beta_3 EPS + \beta_4 Tobin's\_Q + \beta_5 Debt\_TA + \beta_6 Law_{it} + \beta_7 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 2)*

$P = \gamma_0 + \gamma_1 Gov + \gamma_2 BV + \gamma_3 EPS + \gamma_4 Tobin's\_Q + \gamma_5 Debt\_TA + \gamma_6 Law + \gamma_7 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 3)*

$P = \delta_0 + \delta_1 ESG + \delta_2 BV + \delta_3 EPS + \delta_4 Tobin's\_Q + \delta_5 Debt\_TA + \delta_6 Law + \delta_7 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 4)*

Variable(s)	***Model 1 Env***		***Model 2 Soc***		***Model 3 Gov***		***Model 4 ESG***	
	Estimates (p value)	***z-stat.***	***Estimates (p value)***	***z-stat.***	***Estimates (p value)***	***z-stat.***	***Estimates (p value)***	***z-stat.***
Env	.0945428 (0.000)	6.05						
Soc			.0649485 (0.000)	6.30				
Gov					.1754835 (0.000)	6.94		
ESG							.1003971 (0.000)	6.46
BV	.9914528 (0.000)	56.41	1.004364 (0.000)	57.65	.9922914 (0.000)	56.72	.9954737 (0.000)	57.11
EPS	4.779838 (0.000)	36.23	4.746585 (0.000)	35.84	4.724398 (0.000)	35.82	4.755349 (0.000)	36.03
Tobin's_Q	6.426689 (0.000)	40.49	6.110259 (0.000)	37.45	5.908706 (0.000)	34.58	6.248647 (0.000)	39.39
Debt_TA	.0777114 (0.000)	19.30	.0768595 (0.000)	18.89	.0752202 (0.000)	18.43	.0768043 (0.000)	19.05
Law	3.348039 (0.000)	18.43	3.060153 (0.000)	19.76	1.714231 (0.000)	8.37	3.06628 (0.000)	19.73
Social_Prog	.0869779 (0.000)	12.03	.103198 (0.000)	18.94	.0863048 (0.000)	12.73	.0907462 (0.000)	13.88
Intercept	-20.39622 (0.000)	-41.37	-20.58472 (0.000)	-41.62	-24.59397 (0.000)	-32.66	-20.22235 (0.000)	-43.14
Year effects	Yes		Yes		Yes		Yes	
Industry effects	Yes		Yes		Yes		Yes	
Adj.R^2	**0.8236**		**0.8230**		**0.8209**		**0.8248**	
N	**11,455**		**11,455**		**11,455**		**11,455**	

Note: Coefficient p-values are two-tail and based on asymptotic Z-statistic robust to heteroskedasticity. *P* is market value of the firm at the end of the financial year. *Env, Soc, Gov* & *ESG* are the proprietary Bloomberg score based on the extent of the company's aggregate and individual components of Environmental, Social and Governance (ESG) disclosure. *BV* is book value of the firm at the end of the financial year. *EPS* is earnings per share of the firm at the end of the financial year. *Tobin's_Q* is a net result of market capitalization plus liabilities, preferred equity and minority interest divided by total assets at the end of that financial year. *Debt_TA* is a leverage variable measured by total debt divided by total assets at the end of the financial year. Law is a dummy variable to represent country clusters using common law (1) and code law (0). *Social_Progr* is index for measuring the multiple dimensions of national social progress, benchmarking success, and catalyzing greater human wellbeing. N is the number of firms. All other variables are defined in Appendix 1. For parsimony, the indicator variables on year and industry dummies have been included but the coefficients have not been reported.

Table 3: 2SLS Regression analysis for common law samples

$P = \alpha_0 + \alpha_1 Env + \alpha_2 BV + \alpha_3 EPS + \alpha_4 Tobin's\_Q + \alpha_5 Debt\_TA + \alpha_6 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 1)*

$P = \beta_0 + \beta_1 Soc + \beta_2 BV + \beta_3 EPS + \beta_4 Tobin's\_Q + \beta_5 Debt\_TA + \beta_6 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 2)*

$P = \gamma_0 + \gamma_1 Gov + \gamma_2 BV + \gamma_3 EPS + \gamma_4 Tobin's\_Q + \gamma_5 Debt\_TA + \gamma_6 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 3)*

$P = \delta_0 + \delta_1 ESG + \delta_2 BV + \delta_3 EPS + \delta_4 Tobin's\_Q + \delta_5 Debt\_TA + \delta_6 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 4)*

Variable(s)	***Model 1 Env***		***Model 2 Soc***		***Model 3 Gov***		***Model 4 ESG***	
	Estimates (p value)	***z-stat.***	***Estimates (p value)***	***z-stat.***	***Estimates (p value)***	***z-stat.***	***Estimates (p value)***	***z-stat.***
Env	.0956014 (0.000)	3.84						
Soc			.0693728 (0.000)	3.88				
Gov					.1663981 (0.000)	5.08		
ESG							.098729 (0.000)	4.06
BV	1.131072 (0.000)	32.10	1.146881 (0.000)	32.42	1.118035 (0.000)	31.51	1.134356 (0.000)	32.22
EPS	4.770442 (0.000)	21.70	4.857173 (0.000)	22.34	4.849113 (0.000)	22.57	4.805808 (0.000)	22.07
Tobin's_Q	6.539589 (0.000)	27.61	6.511578 (0.000)	27.12	6.434007 (0.000)	26.70	6.512935 (0.000)	27.34
Debt_TA	.0842114 (0.000)	12.92	.00868504 (0.000)	13.05	.0836305 (0.000)	12.89	.0849984 (0.000)	13.01
Social_Prog	.0653369 (0.000)	9.72	.0493959 (0.000)	5.43	.0277102 (0.000)	2.49	.0545844 (0.000)	6.83
Intercept	-15.38305 (0.000)	-26.03	-14.46223 (0.000)	-24.18	-19.27556 (0.000)	-18.67	-15.62013 (0.000)	-25.84
Year effects	Yes		Yes		Yes		Yes	
Industry effects	Yes		Yes		Yes		Yes	
Adj.R^2	**0.8364**		**0.8325**		**0.8352**		**0.8358**	
N	**4,387**		**4,387**		**4,387**		**4,387**	

Note: Coefficient p-values are two-tail and based on asymptotic Z-statistic robust to heteroskedasticity. *P* is market value of the firm at the end of the financial year. *Env, Soc, Gov* & *ESG* are the proprietary Bloomberg score based on the extent of the company's aggregate and individual components of Environmental, Social and Governance (ESG) disclosure. *BV* is book value of the firm at the end of the financial year. *EPS* is earnings per share of the firm at the end of the financial year. *Tobin's_Q* is a net result of market capitalization plus liabilities, preferred equity and minority interest divided by total assets at the end of that financial year. *Debt_TA* is a leverage variable measured by total debt divided by total assets at the end of the financial year. *Social_Prog* is index for measuring the multiple dimensions of national social progress, benchmarking success, and catalyzing greater human wellbeing. N is the number of firms. All other variables are defined in Appendix 1. For parsimony, the indicator variables on year and industry dummies have been included but the coefficients have not been reported.

Table 4: 2SLS Regression analysis for code law samples

$P = \alpha_0 + \alpha_1 Env + \alpha_2 BV + \alpha_3 EPS + \alpha_4 Tobin's\_Q + \alpha_5 Debt\_TA + \alpha_6 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 1)*

$P = \beta_0 + \beta_1 Soc + \beta_2 BV + \beta_3 EPS + \beta_4 Tobin's\_Q + \beta_5 Debt\_TA + \beta_6 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 2)*

$P = \gamma_0 + \gamma_1 Gov + \gamma_2 BV + \gamma_3 EPS + \gamma_4 Tobin's\_Q + \gamma_5 Debt\_TA + \gamma_6 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 3)*

$P = \delta_0 + \delta_1 ESG + \delta_2 BV + \delta_3 EPS + \delta_4 Tobin's\_Q + \delta_5 Debt\_TA + \delta_6 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ .....*Model 4)*

Variable(s)	***Model 1 Env***		***Model 2 Soc***		***Model 3 Gov***		***Model 4 ESG***	
	Estimates (p value)	***z-stat.***	***Estimates (p value)***	***z-stat.***	***Estimates (p value)***	***z-stat.***	***Estimates (p value)***	***z-stat.***
Env	.0626252 (0.000)	3.08						
Soc			.0733443 (0.000)	5.70				
Gov					.1928738 (0.000)	5.28		
ESG							.091294 (0.000)	4.52
BV	.939769 (0.000)	46.01	.9367416 (0.000)	46.26	.9262743 (0.000)	45.07	.9363684 (0.000)	46.05
EPS	4.594172 (0.000)	27.48	4.451208 (0.000)	26.44	4.44598 (0.000)	26.47	4.538108 (0.000)	27.12
Tobin's_Q	6.455987 (0.000)	26.35	6.263156 (0.000)	25.67	6.11598 (0.000)	24.60	6.361312 (0.000)	26.08
Debt_TA	.0704877 (0.000)	13.67	.0642934 (0.000)	12.16	.065161 (0.000)	12.24	.0672903 (0.000)	12.92
Social_Prog	.1335751 (0.000)	7.82	.1755673 (0.000)	19.34	.1760527 (0.000)	19.45	.1424009 (0.000)	11.98
Intercept	-22.14585 (0.000)	-19.88	-25.23074 (0.000)	-26.82	-31.8385 (0.000)	-17.90	-23.64642 (0.000)	-25.93
Year effects	Yes		Yes		Yes		Yes	
Industry effects	Yes		Yes		Yes		Yes	
Adj.R^2	**0.8184**		**0.8201**		**0.8187**		**0.8197**	
N	**7,068**		**7,068**		**7,068**		**7,068**	

Note: Coefficient p-values are two-tail and based on asymptotic Z-statistic robust to heteroskedasticity. *P* is market value of the firm at the end of the financial year. *Env, Soc, Gov* & *ESG* are the proprietary Bloomberg score based on the extent of the company's aggregate and individual components of Environmental, Social and Governance (ESG) disclosure. *BV* is book value of the firm at the end of the financial year. *EPS* is earnings per share of the firm at the end of the financial year. *Tobin's_Q* is a net result of market capitalization plus liabilities, preferred equity and minority interest divided by total assets at the end of that financial year. *Debt_TA* is a leverage variable measured by total debt divided by total assets at the end of the financial year. *Social_Prog* is index for measuring the multiple dimensions of national social progress, benchmarking success, and catalyzing greater human wellbeing. N is the number of firms. All other variables are defined in Appendix 1. For parsimony, the indicator variables on year and industry dummies have been included but the coefficients have not been reported.

Table 5: Rank regression analysis

$P = \alpha_0 + \alpha_1 Env + \alpha_2 BV + \alpha_3 EPS + \alpha_4 Tobin's\_Q + \alpha_5 Debt\_TA + \alpha_6 Law + \alpha_7 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 1)*

$P = \beta_0 + \beta_1 Soc + \beta_2 BV + \beta_3 EPS + \beta_4 Tobin's\_Q + \beta_5 Debt\_TA + \beta_6 Law_{it} + \beta_7 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 2)*

$P = \gamma_0 + \gamma_1 Gov + \gamma_2 BV + \gamma_3 EPS + \gamma_4 Tobin's\_Q + \gamma_5 Debt\_TA + \gamma_6 Law + \gamma_7 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 3)*

$P = \delta_0 + \delta_1 ESG + \delta_2 BV + \delta_3 EPS + \delta_4 Tobin's\_Q + \delta_5 Debt\_TA + \delta_6 Law + \delta_7 Social\_Prog + Year\ effects + Industry\ effects + \varepsilon$ ..... *(Model 4)*

Variable(s)	***Model 1 Env***		***Model 2 Soc***		***Model 3 Gov***		***Model 4 ESG***	
	Estimates (p value)	***z-stat.***	***Estimates (p value)***	***z-stat.***	***Estimates (p value)***	***z-stat.***	***Estimates (p value)***	***z-stat.***
Env	.0752616 (0.000)	13.13						
Soc			.0459826 (0.000)	8.97				
Gov					.0154294 (0.000)	5.22		
ESG							.0648995 (0.000)	11.74
BV	.8936498 (0.000)	196.29	.8992091 (0.000)	200.70	.8990421 (0.000)	199.55	.8948281 (0.000)	197.16
EPS	.0968108 (0.000)	21.47	.0975668 (0.000)	21.55	.0983918 (0.000)	21.67	.0974546 (0.000)	21.57
Tobin's_Q	.472660 (0.000)	158.01	.4658544 (0.000)	150.13	.4680351 (0.000)	149.07	.4678346 (0.000)	154.79
Debt_TA	.0596157 (0.000)	22.89	.060461 (0.000)	22.97	.0615528 (0.000)	23.35	.0596181 (0.000)	22.84
Law	909.4699 (0.000)	18.70	861.0426 (0.000)	17.74	693.4302 (0.000)	14.23	871.0523 (0.000)	18.04
Social_Prog	..0340369 (0.000)	15.52	.0346375 (0.000)	15.83	.0357361 (0.000)	16.05	..033119 (0.000)	15.09
Intercept	-11720.67 (0.000)	-99.06	-11661.72 (0.000)	-98.13	-11457.77 (0.000)	-99.94	-12384.33 (0.000)	-84.25
Year effects	Yes		Yes		Yes		Yes	
Industry effects	Yes		Yes		Yes		Yes	
Adj.R^2	**0.9512**		**0.9508**		**0.9505**		**0.9511**	
N	**11,455**		**11,455**		**11,455**		**11,455**	

Note: Coefficient p-values are two-tail and based on asymptotic Z-statistic robust to heteroskedasticity. *P* is market value of the firm at the end of the financial year. *Env, Soc, Gov* & *ESG* are the proprietary Bloomberg score based on the extent of the company's aggregate and individual components of Environmental, Social and Governance (ESG) disclosure. *BV* is book value of the firm at the end of the financial year. *EPS* is earnings per share of the firm at the end of the financial year. *Tobin's_Q* is a net result of market capitalization plus liabilities, preferred equity and minority interest divided by total assets at the end of that financial year. *Debt_TA* is a leverage variable measured by total debt divided by total assets at the end of the financial year. Law is a dummy variable to represent country clusters using common law (1) and code law (0). *Social_Prog* is index for measuring the multiple dimensions of national social progress, benchmarking success, and catalyzing greater human wellbeing. N is the number of firms. All other variables are defined in Appendix 1. For parsimony, the indicator variables on year and industry dummies have been included but the coefficients have not been reported. All financial data (except ratios) are expressed in thousands of US dollars.