

**ISTANBUL COMMERCE UNIVERSITY**  
**GRADUATE SCHOOL OF FINANCE**  
**MASTER'S IN INTERNATIONAL FINANCE**

**THE RELATIONSHIP BETWEEN THE ESG  
PERFORMANCE AND FINANCIAL PERFORMANCE  
OF ENVIRONMENTALLY SENSITIVE INDUSTRIES;  
A COMPARISON BETWEEN EMERGING AND  
DEVELOPED MARKETS**

**Master's Thesis**

**Nasruzzaman NAEEM**

**200014658**

**Istanbul, 2021**

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## ABSTRACT

The purpose of the thesis is to investigate whether the ESG performance of the corporations from environmentally sensitive industries has any effects on their financial performance. Additionally, this thesis investigates how the financial value and the impact of the ESG performance on the corporate financial performance of environmentally sensitive corporations differs between developed and emerging countries. The sample of this thesis consists of 383 unique environmentally sensitive corporations where 305 corporations belong to developed countries and 78 corporations are from emerging countries. The ESG performance scores and financial performance data of a period of 10 years have been collected from the Thomson Reuters Eikon database and panel regression analyses have been carried out to evaluate the impact of the ESG performance of these corporations on their financial performance. Our findings show that the overall ESG performance of the environmentally sensitive corporations has a significantly positive relationship with the return on equity (ROE) and Tobin's Q which supports the stakeholder theory instead of the shareholder theory. The results of our study also present that, the overall ESG performance of the environmentally sensitive corporations from developed countries has a significantly positive impact on the ROE and Tobin's Q whereas the ESG performance score of the environmentally sensitive corporations from emerging countries does not have any significant relationship with any of the financial performance measurements used. Our findings suggest that the impacts of the ESG performance of the environmentally sensitive corporations over the financial performance are stronger in the developed countries than the emerging countries. The findings also reveal that the ESG controversies score has a positive relationship with the market valuation or Tobin's Q and the impact is more significant in the emerging market context. This study adds a better understanding of the ESG-financial performance relationship of the environmentally sensitive corporations and the value-creating ability of ESG operations and initiatives from both developed and emerging countries' legal and economical contexts.

**Keywords:** ESG performance, environmentally sensitive industry, financial performance, stakeholder's theory, shareholder theory.

## ÖZET

Bu tezin amacı, çevreye duyarlı sektörlerden şirketlerin ESG performansının finansal performansları üzerinde herhangi bir etkisinin olup olmadığını incelemektir. Bu tez aynı zamanda, çevreye duyarlı şirketlerin ESG performansının finansal değeri ve kurumsal finansal performans üzerindeki etkisinin gelişmiş ülkelere gelişmekte olan ülkelere nasıl farklılaştığını da araştırmaktadır. Bu çalışmanın örneklemini, gelişmiş ülkelere ait 305 ve gelişmekte olan ülkelere 78 şirket olmak üzere, çevreye duyarlı 383 şirket oluşturmaktadır. Thomson Reuters Eikon veri tabanından 10 yıllık ESG performans skorları ve finansal performans verileri toplanmış ve bu kurumların ESG performanslarının finansal performanslarına etkisini değerlendirmek için panel regresyon analizleri yapılmıştır. Bulgularımız, çevreye duyarlı şirketlerin genel ESG performansı paydaş teorisi yerine hissedar teorisini destekleyen sermaye getirisi (ROE) ve Tobin's Q getirisi ile anlamlı pozitif bir ilişki olduğunu göstermektedir. Çalışmamızın sonuçları gelişmiş ülkelerdeki çevreye duyarlı şirketlerin genel ESG performansının ROE ve Tobin's Q üzerinde önemli ölçüde olumlu bir etkiye sahip olduğunu, buna karşın gelişmekte olan ülkelerdeki çevreye duyarlı şirketlerin ESG performans puanının kullanılan finansal performans ölçümlerinden herhangi biri ile önemli bir etkisinin olmadığını ortaya koymaktadır. Bulgularımız, çevreye duyarlı şirketlerin ESG performansının finansal performans üzerindeki etkilerinin gelişmiş ülkelerde gelişmekte olan ülkelere göre daha güçlü olduğunu göstermektedir. Bulgular ayrıca, ESG tartışmaları puanının piyasa değerlemesi veya Tobin's Q'su ile pozitif bir ilişkisi olduğunu ve etkinin gelişmekte olan piyasa bağlamında daha önemli olduğunu ortaya koymaktadır. Bu çalışma, çevreye duyarlı şirketlerin ESG-finansal performans ilişkisinin ve ESG operasyonlarının ve girişimlerinin değer yaratma kabiliyetinin hem gelişmiş hem de gelişmekte olan ülkelerin yasal ve ekonomik bağlamlarından daha iyi anlaşılmasını sağlamaktadır.

**Anahtar Kelimeler:** ESG performansı, çevreye duyarlı endüstri, finansal performans, paydaş teorisi, hissedar teorisi.

## **PREFACE**

First of all, I am grateful to Almighty Allah for giving me the strength to successfully finish this thesis.

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## **ABBREVIATIONS**

**ESG:** Environmental, Social and Governance.

**CSR:** Corporate Social Responsibility

**GRI:** Global Reporting Initiatives

**PRI:** Principals for Responsible Investment

**ROA:** Returns on Assets

**ROE:** Returns on Equity

**ROCE:** Return on Capital Employed

**PE:** Price to Earnings

**LN:** Natural logarithm

**ESGC:** ESG Combined Score

**EC:** European Commission

# **1. INTRODUCTION**

The introduction chapter includes a brief discussion and background of the environmental, social and governance or ESG. Further, the research questions of this thesis are introduced with a discussion of the problem. Further the purpose, scope and the contributions of this study are also presented in this chapter.

## **1.1 Background**

Corporate sustainability as well as corporate social responsibility has been one of the major concerns and increasingly important both for the researchers and industries in the past few years. Corporate social responsibility (CSR) is the combination of voluntary initiatives and operations by a corporation for its stakeholders including suppliers, customers, regulators, investors and the surrounding society (Malik, 2015). ESG is an extension to the CSR which refers to environmental, social and governance related initiatives by the corporations. In addition, the term ESG defines corporate sustainability very well as it contains all the major measures of corporate sustainability of companies (Dufwa & Hammarström, 2015; Schaltegger & Synnøstvedt, 2002). Environmental, social, and governance, broadly familiar as ESG factors are one of the fastest-growing trends around the world and most discussed among investors, creditors, managers and academic researchers throughout the past few years recognizing the importance of environmental sustainability and socio-economic stability of countries. Along with a rising global population and an extremely high threat of climate change, the modern world is facing various environmental and social issues now. To meet up these challenges sustainable initiatives or sustainability related activities which could also be ascertained as corporate sustainability are very essential for the businesses nowadays specially where success of the business lies in the sustainability management (Peylo, 2012). At present, many companies are focusing on sustainability initiatives such as waste management, cutting carbon emission, strengthening operational abilities (Eccles & Serafeim, 2013) and so on but to attain the goal of corporate sustainability the sustainability

strategies should be in favor of the all stakeholders and it should improve the value of the corporation at the same time.

The stakeholder theory (Freeman, 1984) works as the main motivation behind the CSR and ESG initiatives which states that corporations should not focus only on the value creation for the owner or shareholders rather they must consider the interest of all the stakeholders involved. However, the stakeholder theory is opposed by the shareholder theory (Friedman, 1982) which claims that the principal function and objective of the firm is to maximize the wealth of the shareholders and firm profit. The shareholder policy does not support investments in the sustainable initiatives whereas the stakeholder policy claims investments in the sustainable activities are worth value-creating (Langeland & Ugland, 2019).

Because of growing social awareness, public demand and legislations sustainable and responsible investment is a global trend now. According to the record (KPMG, 2019), the total value of the sustainable investment around the world was about 30 trillion USD in 2018 which has shown an increase of 34% in just two years. ESG which is generally merged with sustainable investment is one of the core issues of concern both for the companies and investors. During 2016-2019 there was a total growth of 34% in the sustainable and ESG investment across the all the markets (KPMG, 2019).

In today's business world, to be successful and to survive a company must emphasize on the growth potentiality and ability to gain profit. In addition, the investment decisions of the companies are mainly made based on the estimation of economic returns in order to maximize the revenue and shareholders' wealth. The impact of ESG or investments in sustainable activities on the financial value creation could possibly be explained by either shareholder expense theory or value enhancing theory (María Miralles-Quirós et al., 2018). According to the shareholder expense theory, investments in the social and sustainable activities may drive up the overall costs and may bring firm financial disadvantages for the firm which may lead to lower stock price. On the other side, value enhancing theory states that, the inclusion of strategies and operations like ESG and CSR in the corporate policies and operations could be more beneficial for a firm by certain means and it also helps to maximize the wealth of the owners or shareholders in the long run.

The impacts of ESG activities over the financial performance of corporations have been at the center of debate in the academic and corporate research for past few years and a great number of research have been done on how ESG performances effect the financial performance of a company. The studies have reported both significantly positive, negative, and mixed results. A meta-analysis combining 2200 research articles on the relationship between ESG and corporate financial performance from different regions concludes that greater number of the studies have revealed positive association of ESG and corporate financial performance where the positive effect of ESG performance remains constant over the period (Friede et al., 2015). The study also reports that ninety percent of the researches on the interrelation between ESG and financial performance have revealed a non-negative interrelation (Friede et al., 2015). There are also mixed findings in terms of the effect of the pillars of ESG on the financial performance of the corporation (PEIRO et al., 2013; Ramić, 2019). Nevertheless, the results of the research from developed and emerging markets are mixed. ESG initiatives are valued more positively by the markets in developed countries even though the companies from emerging markets have more satisfying ESG scores (Ting et al., 2019). Contrarily, some studies have reported negative interrelation between financial performance and ESG performances of the firms both from developed markets (Sjögren & Wickström, 2019.; Velte, 2017) and developing markets (Duque-Grisales, 2019.; Landi & Sciarelli, 2019). Additionally, some of the research also reported insignificant relationship of ESG performance with the financial performance for the companies from developing and developed markets (Ahlklo & Lind, 2018; Atan et al., 2019; Sahut & Pasquini-Descomps, 2015). However, the number of studies on ESG-financial performance relationship focusing on the corporations from emerging countries are considerably lower than the studies on the corporations from developed countries (Alshehhi et al., 2018). It can be said that the differences in the findings could be due to the variation of methodology used, period and source of data collected, and distinctness in the business structure and practices of developed and emerging markets (Eriksson & Asgodom, 2019; Khanna & Palepu, 2010).

The moral and social responsibilities of the companies towards community are well beyond of only maximizing financial profit as suggested by the ESG and CSR principals (Berman et al., 1999). Again, the socially responsible initiatives can improve financial performance

and foster business interest (Rowley & Berman, 2000). Companies from almost all sectors around the globe have engaged themselves in different ESG initiatives and actions. Specially, companies which are belongs to environmentally sensitive industries like energy, mining, metals, construction, chemical industries are spending a great amount in the environment management to alleviate the environmental issues made though their business operations. Besides, at present environmentally sensitive companies also have a considerable amount of costs from the social activities and governance initiatives. Despite of being increasing researched the impact of ESG activities of the environmentally sensitive companies alone on their financial performance is scarce. There are insufficient studies to understand the strengths and weaknesses of the ESG initiatives taken by the environmentally sensitive companies which would be great asset to the prevailing ESG literature. In addition, it would be interesting to investigate in between emerging countries market and developed countries market where ESG performances are valued most and how significantly ESG initiatives are affecting the corporate financial performance of the environmentally sensitive corporations in these markets.

Based on the background observation and prevailing ESG literature gap this thesis will aim to investigate the answers to the following research questions:

*Research question 1: How does ESG performance effect the financial performance of the environmentally sensitive corporations?*

*Research question 2: How does the effect of the ESG performance of environmentally sensitive corporations on their financial performance differ from developed countries to emerging countries?*

Necessary empirical evidence and analysis will be used to investigate the answers to the research question. In this thesis, ESG scores from the Thomson Reuters database will be used as the empirical variable for ESG performance. Different stock market and accounting data from Thomson Reuters database and DataStream will be used as the measure to evaluate the financial performances of the companies. The empirical analysis also includes control variables where necessary to exclude the biasness. Due to the complexity as to how ESG performance and corporate financial performance might be related, the relationship between

ESG and financial performance will be examined based on accounting-based performance and market-based performance as well.

## **1.2 Purpose of the Thesis**

The purpose of the thesis is to analysis the association between ESG performance and financial performance of corporations from environmentally sensitive industries and investigate both emerging and developed market companies to find out how and where ESG performance matter and valued most. The thesis also aims to investigate which pillar of the ESG initiatives affect the overall financial and market valuation of the environmentally sensitive firms both in developed and emerging market. This thesis aims to make contribution to the emerging literature regarding ESG and corporate sustainability by studying the relationship between ESG activities and financial performance and valuation of environmentally sensitive industries from the developed and emerging economies markets.

## **1.3 Scope of the Thesis**

The scope of this thesis will be limited to the listed companies from the environmentally sensitive industries in the stock markets of emerging and developed countries. This study will only include environmentally sensitive corporation such as energy, mining, metals, construction, chemical companies. Furthermore, this thesis will also be limited to the study of those environmentally sensitive companies from emerging and developed economies market who have both ESG performance and financial data available on the Thomson Reuters Eikon and DataStream database. Only the companies which can meet up the data availability criteria will only be included in the study for empirical analysis. The timeframe of the empirical analysis will be ten years (2009-2018). The detailed description of sample selection, variables to be used for analysis and sources of data will be discussed in the chapter four.

## **1.4 Contribution of the Thesis to the Academic Research and Industry**

Corporate sustainability measures and ESG initiatives has been very important both for the firms and investors as these initiatives can play crucial part in the risk management and have the potentiality to retain and increase firm value. The relationship of ESG operations with financial performance as well as the importance and effectiveness of the corporate



sustainability has been a major topic of research in both academic and industrial research field. This thesis contributes to the greater discussion on the relationship of ESG performance with financial performance by providing more insight in the sustainable initiatives and ESG performance. Companies belong to environmentally sensitive industries such as chemical, mining, heavy machineries, metals, energy, construction industries are in the greater position to create more environmental pollution as they use natural resources in the manufacturing process more than other conventional firms. Environmentally sensitive companies are believed to have strong environmental and societal impact thus are more capable of resolving problems of sustainability (Halme & Huse, 1997). This thesis investigates the impacts of ESG or sustainability initiatives of these companies from emerging and developed economies and contributes to the academic discussion on the financial impact of ESG. Prior studies did not analyze the overall impact of ESG activities of environmentally sensitive companies on their financial performance. Additionally, there is a gap in the previous studies how the ESG performances of environmentally sensitive industries affect the financial performance and valuation in both emerging and developed countries market as well as where ESG initiatives are valued most. Therefore, this thesis addresses the academic gap and contribute to the ESG literature by investigating the relation of ESG performance with the financial performance of environmentally sensitive corporations from both developed and emerging countries market. As regulations, law, demand of the people and the culture play a vital role in the business practice, data used in this thesis from different emerging and developing countries have made the study more interesting. This cross-country analysis will also be helpful for the regulators and international investors to understand the markets and business cultures. Moreover, the long timeframe used in the empirical investigation alleviates the risk to time-based biasness like economic recession or climate change and allows to observe the output of ESG initiatives over the time.

Since environmentally sensitive corporations have more intense scrutiny than other traditional companies and so the market reaction to their ESG initiatives might vary. This thesis presents a picture of ESG practices of environmentally sensitive corporations in different emerging and developed countries market how their ESG performance affecting the valuation of those companies which might be helpful for the socially responsible investors

to take investment decision. This thesis contributes to both ESG literature and sustainable finance literature which would serve the benefit to all the practitioner of ESG, regulators, law makers, institutional and individual investors, and all other stakeholders of the environmentally sensitive corporations.

## **1.5 Structure of the Thesis**

This chapter discusses the background and purpose of the thesis in order to create the base for the thesis. The rest of the study is arranged as following: in Chapter 2, definitions of all the concepts relevant to the thesis and applicable theories are discussed to build the theoretical framework of the thesis. Followed by a comprehensive literature review related to this study has been presented in Chapter 3. Hypothesis for this thesis has also been presented in the Chapter 3 in the light of the theories and previous literature. The research design, empirical models, and study methodology has been discussed in the Chapter 4 along with sample selection and data collection process along with detailed description of variables. Chapter 5 presents the descriptive statistics, model reliability and validity checks, and empirical findings of the study. The empirical findings have also been discussed broadly in the Chapter 5. Finally, the whole thesis has been summarized in the Chapter 6 with some possible recommendations. Chapter 6 concludes with the limitation of this study and some suggestions for future studies.

## **2. THEORETICAL BACKGROUND**

This chapter covers a brief history as well as the definitions of the terms and factors related to ESG. The theoretical background of this thesis has also been discussed in this chapter.

### **2.1 Corporate Social Responsibility and Corporate Sustainability**

Corporate social responsibility is one of the most popular and broadly used concept in the modern business world and academic research. The origins of the concept what is known as corporate social responsibility of the companies today have a broad history, but it is mainly a result of the 20th century, which came into practice since early 1950s (Carroll, 2009). Evidence of business practices towards social responsibility can also be traced from late 1800s. In general, CSR is the voluntary contribution of the corporations towards the society for greater societal betterment. However, the phrase CSR has been interpreted and explained by many scholars and researchers in a variety of ways. According to Carroll (1999), corporate social responsibility is “The social responsibility of business that encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time (Carroll, 1979, p. 500)”. CSR has been explained by the EC (Arvidsson, 2010) as "a concept by which companies decide voluntarily to contribute to a better society and a cleaner environment by going beyond compliance and investing more into human capital, the environment and the relations with stakeholders". CSR is a term that refers to the practices, attitude, obligations and moral commitments of the company towards the community which are beyond to the requirements of law and relations (Turner et al., 2019). CSR is a wide-ranging concept, and the initiatives and practices of CSR activities vary according to the theme or industry of the particular company. Firms aims to resolve the issues through the CSR activities which are directly aligned with their business operation and the society where the business is operated (Sjögren & Wickström, 2019). For instance, companies which are environmentally sensitive might aim to minimize the adverse environmental impact made by their business operation through the CSR initiatives whereas firms which are considered as socially sensitive aims to compensate the society more by their CSR activities (María

Miralles-Quirós et al., 2018). CSR initiatives are equally valuable and important both for the society and for the corporations. Corporations are expected not to escape from its responsibilities towards the society and people where they are operating their business and that is why today corporations are adopting and practicing various CSR strategies and initiatives to retain the brand value as socially responsible in the market. The socially responsible image helps the corporation to increase their customer value as well as financial performance. The relationship of CSR performance and strategies with financial performance and valuation of corporations has been heavily researched in the academic research field throughout the past few decades as well.

Sustainability is one of the major concerns of 21<sup>st</sup> century within the global framework. From environmental, societal, cultural to business sustainability issues holds major and important place in the debates. Deloitte (1992) has defined corporate sustainability as “adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today, while protecting, sustaining, and enhancing the human and natural resources that will be needed in the future.” To elaborate, corporate sustainability is all the initiatives and actions a corporation takes to ensure all the needs and rights of all the stakeholders without negotiating the rights and needs of potential future stakeholders. For a business, sustainability is known to be capable of surviving or responding to evolving environmental and social conditions (Seuring & Müller, 2008). Further, in finance sustainability refers to the practice of investments considering the critical issues of factors such as ESG. According to the literature and practice the dimensions of corporate sustainability can be divided into 3 major parts as; economic sustainability, environmental sustainability and social sustainability (Dyllick & Hockerts, 2002; Rajesh, 2020).

The ESG initiatives and performance is the most widely accepted evaluation frameworks for measuring the sustainability activities by the firms. The inclusion of ESG activities in the corporation’s annual report as sustainability initiatives is approved and encouraged by the Global Reporting Initiatives (GRI) as well. Besides, having more than 100 indicators the environmental, social and governance (ESG) includes all the major dimensions of corporate sustainability. The increasing awareness regarding the sustainability has raised the importance of ESG initiatives and investments among the investors and firms from every

part of the world. The possible threats of global warming and risks from the climate change has increased the focus of investors towards the environmental, social and governance strategies taken by the companies (Ng et al., 2020), specially the companies from environmentally sensitive industries. There are many database agencies such as Thomson Reuters, MSCI, Sustainalytics, FTSE Russell, are working with sustainability and ESG data because of the growing demand for ESG data.

## **2.2 Environmental, Social, and Governance (ESG) Factors**

In general, ESG refers to the measurement tool to evaluate the corporate sustainability broadly known as the environmental, social and governance related operations of the firms. The rapid changes in the global climate and various societal risks have made the investors and firms more conscious about the corporate sustainability. The ESG scores and index is widely accepted and used as a metaphor for the firm's sustainability and CSR related performances (Whitelock, 2019). ESG is the accumulated performance of three different pillars. The term "E" represents the pollution and environmental management related initiatives by the corporation. The pillar "S" states the activities of the firm regarding the community engagement and social works, relationship with the staff of the corporation and interaction with both internal and external stakeholders. "G" relates to the management laws, strategies and governing regulation and policies for the company itself. The scope of the ESG initiatives and practice is broad ranging. There are hundreds of measurement tool for reporting the ESG activities in the annual report suggested by Global Reporting Initiative (GRI). According to (PRI, 2018), ESG assists the investor to ensure a durable long-term return and manage the risks in a better way. The growing interest on ESG among investors and public expresses that, ESG issues related activities are very much essential and important for the corporation also the corporations should consider the risk and potentiality of the sustainability and social responsibilities (Murphy & McGrath, 2013). Companies from almost every industry and from every corner of the world now are including ESG performance in their annual reports and announcing their ESG strategies and initiatives accordingly. In 2018 alone the net inflows in the ESG strategies around the world was 78 billion US dollar (KPMG, 2019). The practice of ESG operations has been popular among the companies both in developed and emerging economy countries market. Besides,

responsible investments also have significantly close association with ESG. However, still there is a gap of ESG initiatives and performance data provided by the companies in their annual reports which be a hinderance to understand the actual scenario of sustainability practices.

The concept ESG has derived from the concept of CSR and socially responsible investment. Today the topic ESG is consists of a large variety of initiatives and strategies that might not be directly linked with the typical financial analysis of the companies but still might have significance in the financial performance. Early back in 1970s, the initial practices of similar concept can be noticed when a number of investors expressed their interest and questioned the reporting of company's environmental and social activities (Richardson, 2009). The concept ESG was introduced and came in the front for the very first time in 2006 by remarkable study "Who Cares Win". The Principal of Responsible Investment (PRI) was approved and emphasized by the United Nations (UN) in 2006 considering the morality and social responsibility of the investments and business practices. In addition, a report named "Freshfield Report" by UNEP/FI in 2006 regarding the association of financial valuation with ESG issues showed the significance and relevancy of ESG. Since then, ESG has come into practice and today corporations are revealing the social responsibility and sustainability as ESG initiatives and practices. The institution Global Reporting Initiative (GRI) works on the issues and criteria of ESG disclosure. As by 2018, 80 percent of the biggest companies around the world use GRI standard for ESG disclosure to report their corporate sustainability and social responsibilities related operations (Kell, 2018). Day by day the demand and popularity of ESG activities and disclosure is also increasing among the investors in all over the business world. The academic studies and research relating the ESG performance with financial growth and market valuation on different industry and region context has also been accelerating and strengthening the significance of ESG performance and operation for both companies and investors.

### **2.3 ESG Pillars and Factors**

The concept ESG has three pillars namely Environmental, Social, and Governance. All of the pillars have similar importance and significance in the aspect of corporate sustainability

and social responsibility of the corporations. The scope, contexts, and the factors of measurement of these three pillars are as discussed below.

### **2.3.1 The Environmental Pillar of ESG**

The change in the global climate and sustainability of the natural resources has been a major issue of concern throughout the past few decades. The potential environmental threats and issues of business operations are one of important areas of research in the business and finance literature as well now. There is an increasing risk of disruption in the natural flow of the ecosystem, potential risk of increase in global warming and environmental pollution impacted by the operations of the corporations from environmentally sensitive industries. The noticeable changes in the global climate and environment have gained growing interest and concern of the investors and society which implies that the companies should minimize their adverse impact on the environment and retain the ecological sustainability (Féres & Reynaud, 2012). Protection of the natural environmental assets and avoiding the ecological pollution might be caused by various operations and activity of the business refers to the environmental performance of corporations. Environmental sustainability refers to the fact that the natural resources should not be used in a way that cannot be regenerated again (Crowther, 2008). The Rio Declaration on Environment and Development has emphasized on the significance on the environmental aspect of corporate social responsibility (Declaration, 1992) and since then it is practiced broadly by the companies throughout the world. The environmental performances also effect the financial performance of the company. A company can achieve comparative advantage by using and managing the natural resources in a sustainable way. Being more environment friendly would also help the corporation to achieve a better market valuation and good brand image. There are bunch of studies on the impact of environmental activities and operations over the financial performance and valuation (Albertini, 2013; Manrique & Martí-Ballester, 2017) showing the positive association of corporate environmental performance with financial performance. However, the effect of environmental operations and activities on the corporate financial performance might not be the same in the emerging and developed countries market context as the culture of business practices and regulations are different in the developed countries from the emerging countries (Manrique & Martí-Ballester, 2017).

The environmental pillar of ESG includes both negative and positive externalities as well as the impacts of environmental operations and activities of the company. The environmental disclosure of ESG consists of how the company uses and manages the natural resources for its business operations. The environmental aspect also focuses on the pollution management strategies of the companies. The environmental pillar of ESG deals with and reports issues such as CO<sub>2</sub> emission, biodiversity impact reduction, NO<sub>x</sub> and SO<sub>x</sub> emission, ozone-depleting substances, waste management and recycling, toxic gases and chemical reduction, use of renewable energy, water pollution management and so on. The environmental score of a corporation reveals the ecofriendly and sustainable environmental strategies taken and implemented by the corporation.

### **2.3.2 The Social Pillar of ESG**

The social pillar refers to the combination of all the operations and activities a company takes in to build up the relationship community and contribute to the greater society. Being an organization of the society, every business has some responsibilities towards the wellbeing of the society. The scope of the social responsibilities is also broad. The strategies and operations of the social pillar of ESG are not only limited to the shareholders and internal stakeholders but it also includes the external stakeholders such as the suppliers, government, the overall society. Contribution to the welfare of both internal and external stakeholders helps the firm to get more engaged with the society. Additionally, as per the stakeholder theory being socially responsible might also increase financial performance as well as the market value of the corporation. The relationship of the social performance with financial performance of corporations has been heavily researched by the academic researchers.

The social pillar of ESG includes performances and strategies related to the rights and values of the workforce inside the company, ensuring the health and safety of the employees, diversity of the staffs, relationship with the suppliers, promoting basic human rights, company's commitment and responsibility towards the society, responsible marketing and taking the responsibility of own products and so on.



### **2.3.3 The Governance Pillar of ESG**

A good governance is always much important and one of the key issues to be successful for every corporation. Generally, governance refers to the managerial structure and strategies of a company. Corporate governance defines the decision hierarchy of the company, financial and non-financial data reporting approaches, ensure transparency of the business operations and rights of the common stockholders. Effective corporate governance is a continuous process that involves implementing policies and legislation with continual review and adjustments, with a view to minimizing the effect of issues regarding to the management of the corporation and in order to gain the trust of the investors and shareholders (Sjögren & Wickström, 2019). The aspect and scope of the corporate governance is quite broad as the owners and investors both are concerned about good corporate governance. Shareholders and investors are more interested in knowing about the governance related policies of a corporation as it reveals the compensation policies and other managerial decisions and policies. Failure in adopting and maintaining good corporate governance strategies could affect the financial performance of the corporation in a negative way (Solomon, 2010; Tirole, 2006). At present, companies from all around the world are focusing more on the importance of the good governance and including their corporate governance related information in the ESG disclosure. Nevertheless, effects and practice of the corporate governance might vary according to the regions based on the business cultural, policies and regulations (Solomon, 2010).

The governance pillar of the ESG includes company's strategies and information about the managerial hierarchy and CEO, structure of the corporation's board, rights of the members in board of directors, diversity in the board of directors, audit and transparency related information, compensation strategies, taxation strategies, rights of the shareholders, relationship with the owners and investors, stakeholder engagement and CSR strategies, etc.

### **2.3.4 ESG Rating and ESG Investing**

ESG rating or ESG score is known as the measurement tool for the ESG activities or performance of a company. Because of the growing interest and demand of ESG data and information in public as well as among the investors ESG rating has become more important

for the business organizations. There are some well-known data providers who are collecting ESG data from different markets and providing ESG ratings of the companies. ESG ratings are now more easily accessible because of the increasing market demand while more market data providers are getting themselves engaged in supplying ESG rating and data to the investors every day. The most popular and widely known ESG ratings providers are Thomson Reuters (previously known as Asset4), Kinder Lydenberg Domini & Co (KLD), Sustainalytics, Bloomberg sustainability rating, EIRIS Ltd, Innovest, and some other regional and international ESG rating providers. Among them KLD and Innovest have been merged together which is known as MSCI ESG rating at present (Escrig-Olmedo et al., 2019). However, each rating providing agencies are using different methodologies for rating the ESG performances of the companies which are often incompatible. The ESG rating supplying agencies use different measures, definitions and indicators for measuring the corporate sustainability and CSR of corporations which stipulates that for the ESG rating providers there is absence of generally agreed “common approach” and it makes the comparison between the rating supplying agencies more difficult (Dorfleitner et al., 2015). To calculate the ESG score or ESG rating of a corporation the rating agencies mainly depends on the ESG disclosure as reported by the corporations in their annual reports. The ESG rating agencies initially set up some indicators which are used to measure and score the performance of each three pillars of the ESG. Afterwards the score of environmental, social and governance scores are combined to find out the overall ESG performance score or rating of the company. For the data providing agencies the annual reports and the information provided in the ESG disclosure in the yearly reports by the companies are so important as they solely depend on these reports to create the ESG score and rating for a company. For creating the ESG score, depending on the nature of business the rating organizations use both negative and positive screening (Lumivirta, 2020). Because of using different measurement and screening process the ESG scores and rating of a same corporation created by different rating providers might not be homogenous. However, the ESG scores provided by Bloomberg and the ESG scores of Thomson Reuters are closely connected whereas the Bloomberg and Thomson Reuters scores are not much linked with the MSCI ESG (KLD) scores (Dorfleitner et al., 2015). In the academic research the most used ESG scores or ratings are from the Thomson Reuters, MSCI (KLD), Bloomberg and in some cases ESG scores provided by

country wise ESG data suppliers. Although the ESG rating and performance data is more widely available now than the past decade, there are some criticisms regarding how the ESG scores are being created. Firstly, there is no homogenous methodology or framework for calculating the ESG scores as different rating organizations use their own to rate the ESG performances of the corporations (Avetisyan & Hockerts, 2017) and thus a corporation might receive different overall ESG score from different rating providers. Furthermore, researchers reported that, as the ESG rating is based only on the data and information disclosed voluntarily by corporations and there is lack of application of ESG measurement framework within the companies, there is issues of transparency, legitimacy, lack of proper view of sustainability and chances of biasness in the ESG ratings and scores (Dorfleitner et al., 2015; Escrig-Olmedo et al., 2019; Whitelock, 2019). The ESG rating providers are working on meeting up the challenges and preferences of all the stakeholders of ESG scoring and rating but the efficiency of ESG ratings and the effectiveness of assessing sustainability still is matter of debate (Escrig-Olmedo et al., 2019).

ESG investing which is also a part of socially responsible investing which is getting popular day by day. There are several strategies for ESG investing, among them stock screening is the most popular and commonly used strategy for ESG investing. In ESG investing the investors do both positive and negative screening of the stocks according to their criteria. Negative screening of the stocks refers to the exclusion of the stocks of corporations belong to certain industries that do not match with the value and norm principal of the investors while positive screening is the inclusion of stocks in the portfolio whose activities and value match with the choices of the investor. Considering the ESG performances and integrating the ESG factors of the corporation is another widely used ESG investment strategies. Investors are interested and tend to invest in the companies which have higher ESG rating and better value as socially responsible. Investments based on sustainability theme or impact investing are also considered as a part of ESG investment. Furthermore, choosing and investing in the “best-in-class” companies in terms of ESG rating is considered as a popular ESG investing strategy. Research has revealed that portfolios with ESG investment have shown better financial performance (Lumivirta, 2020) and companies with high ESG rating are performing better than the companies with low ESG rating which has made investors

more conscious about the ESG investing. Besides, researchers reported that the investments on corporate social responsibility and corporate sustainability can serve as an insurance in the crisis moment and can perform better during market crisis or financial insecurity (Lins et al., 2017). At present, the growing awareness of global sustainability is encouraging the institutional and individual investors towards sustainable and responsible investing such as ESG investing.

## **2.4 Theoretical Perspective of ESG performance**

From a theoretical point of view, the shareholder theory and the stakeholder theory discuss and oppose each other on the value creating and value enhancing ability of the non-financial strategies and operations like ESG. Following theories clarify the theoretical perspective of the ESG initiatives and performance.

### **2.4.1 Shareholder Theory**

The shareholder theory was introduced by the noble laureate economist Milton Friedman (Friedman, 1962) where he states that, the principal responsibility and main obligation of a corporation is to maximize the profit of the corporation and thus increase the value of the shareholder. According to shareholder theory, corporations should only focus on maximizing the value and profit and the operations that are purely concerned with the wellbeing of their shareholders (Friedman, 1970). Friedman argues that, socially responsible initiatives are the responsibility of the shareholders individually not a responsibility of the corporation but again the shareholder theory does not prohibit the initiatives for socially responsible activities as long as it is financially beneficial for the corporation (Smith, 2003). The ESG initiatives are generally taken and controlled by the management of the company which might not always meet the interest of the shareholders. If the ESG activities and operations fail to increase the profit of the corporation and value of the shareholders, it goes against the primary goal of the firm as per the shareholder theory. Shareholder's theory states that, corporate practices like ESG initiatives raises the nonfinancial costs of a company which might bring the company in a disadvantageous position economically might decrease the value of the company in the stock market (María Miralles-Quirós et al., 2018). Studies that found negative relationship of corporate sustainability performance with financial performances supports the shareholder's expense theory. Dedication to sustainability and being socially responsible

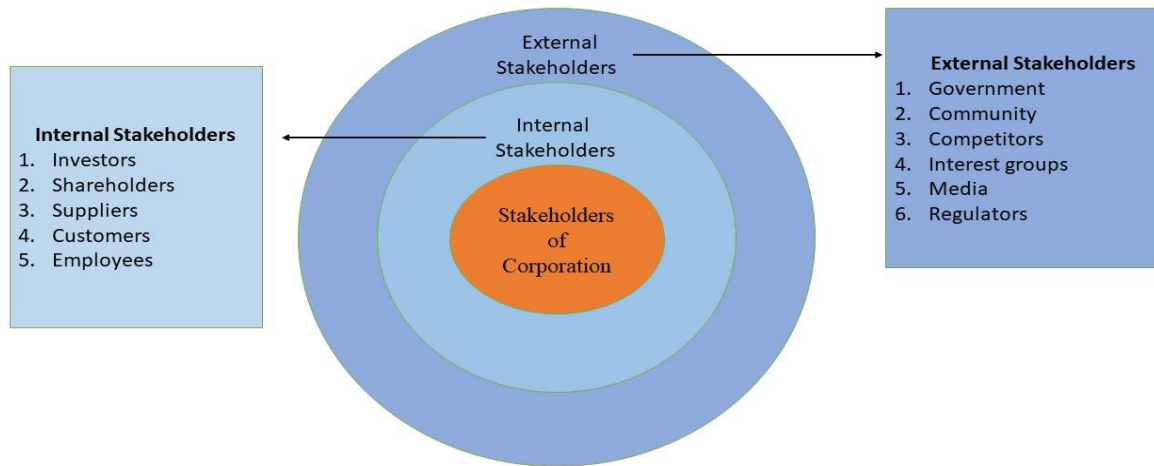
might increase the investment costs which may not include the shareholder's best interest (Barnea & Rubin, 2010; Marsat & Williams, 2014). Researchers supporting shareholder theory argue that, socially responsible operations have negative association with the financial performance of the company (Friedmann, 1962) and initiatives such as ESG activities can turn into a waste and misuse of the shareholder's profit and wealth (Smith, 2003). This thesis examines the relationship of the ESG performance and financial performance of environmentally sensitive corporations around the world in order to find out where ESG operations and expenses of environmentally sensitive companies defends the shareholder theory or the ESG initiatives of these companies can bring financial reward for the shareholders.

#### **2.4.2 Stakeholder Theory**

The shareholder theory has been criticized and opposed by Freeman (1984) where he proposed the stakeholder theory. According to stakeholder theory, for longer existence and sustainability of the business a company must not separate the social responsibilities from the regular business operations (Freeman, 1984). A corporation should mitigate the adverse environmental impact it has as well as should optimize the social wellbeing and should aim for addressing the interests of all of its stakeholders not solely interests of the shareholders or owners (Freeman, 1984). Everyone who has stake in the corporation is the stakeholder of the corporation. The number of stakeholders cannot be defined but the level and number of stakeholders might differ in accordance with the structure and environment of the business organization. The stakeholders could be separated into two groups based on their interaction and impact on the overall business operation of the corporation (Clarkson, 1995; Freeman, 1984). The primary stakeholders are given more importance as they are connected with the company directly and have greater impact. The secondary group of stakeholders have no direct involvement in the business operation of the company but have the ability to influence in the long run. Better stakeholder management brings in competitive advantages and boosts up the efficiency in overall management which can help to increase the financial value and stability of the firm. Researchers reported that better association and understanding with stakeholders might affect the corporate financial performance positively (Carroll & Shabana,

2010). Figure 1 displays the most common primary or internal and secondary or external stakeholders of a business organization.

**Figure 1:** Stakeholders of a corporation



**Source:** Clarkson (1995), A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review*, 20(1), 92–117.

Sustainability and socially responsible activities like ESG can create both good reputation of the company among all the stakeholders and bring more competitive advantages. ESG activities are now considered more consciously by the investors as these activities benefit all the stakeholders and represents the ethics, morality, and responsibility of a company. Supporters of the stakeholder theory claim that, socially responsible initiatives of the companies such as ESG operations have a positive impact on the valuation and financial performances. This study examines how the ESG performances of environmentally sensitive firms create value and affect the corporate financial performance both in emerging and developed markets.

### **2.4.3 Value Enhancing Theory**

The value enhancing theory states that, inclusion of sustainable and socially responsible strategies like ESG practices help the company to gain more competitive advantages and ensure sustainable returns for the shareholders. The theory argues that strategies, and practices such as CSR or ESG not only increase the operational and managerial efficiency of the corporation but also raises the market value and financial performance of the company. Moreover, ESG operations assists the corporation to build and maintain good relationship with the external stakeholders. The value enhancing theory suggests that corporate social and sustainable performances have a positive association with financial performances of corporations. Studies have reported positive interrelation of ESG performance with financial performance of corporations from different industries and markets contexts supporting the value enhancing theory (Charlo et al., 2017; Eccles et al., 2014; María Miralles-Quirós et al., 2018). There are some academic studies which reported mixed results regarding the value creation ability of ESG operations as well (Kengkathran, 2018; Orlitzky et al., 2003). This thesis analyzes the ESG performance of environmentally sensitive corporations from emerging as well as developed countries with a view to find out where does the corporate social and sustainable initiatives are valued most and how do they affect the financial performance and market valuation of these corporations.

### **2.4.4 Legitimacy Theory**

The legitimacy theory is another essential theory which describes the importance and obligations for disclosing corporate information like ESG operations of the companies. According to the literature, the practice of reporting environmental and social performances of the companies are primarily and most widely based on the legitimacy theory (Deegan, 2002). Legitimacy theory suggests that, for a sustainable survival a company must do the business by keeping harmony with the standards and values of society (Dowling & Pfeffer, 1975). Generally, the term legitimacy refers to laws, regulations and ethical practices procured from the values, beliefs, and norms of a society. Legitimacy theory discusses how a company develop and execute the ESG strategies and policies as well as the CSR or ESG reporting obligation and processes taken by a company. According to (O'Donovan, 2000), legitimacy theory for a business organization is "a perception or assumption, held by a

corporation's conferring publics, that the actions of the corporation, in response to issues/events the corporation has identified as possibly threatening its reputation or existence, are desirable, proper or appropriate within the socially constructed system of norms, values, beliefs and definitions of the corporation's conferring publics." A corporation must abide by the laws and legislations as well as should respect the cultural and social values and norms of the society where it carries on the business operation. Corporation integrate information like ESG initiative encouraged by the "social contract" a corporation has with the community. Legitimacy theory defines the purposes behind the various ESG activities and initiatives that a company takes in. Inclusion of ESG performance in the annual report enables the stakeholders to get known about the activities of the company more and thus it strengthens the relationship of stakeholders with corporation. ESG disclosure expresses a corporation's engagement in the sustainability and socially responsible activities. Inability of the corporations to disclose their ESG performance and operations in the right way and thus to legitimize their presence in the community might cause a negative relationship of ESG performance with the corporate financial performance (Sjögren & Wickström, 2019). The legislations and the socio-cultural norms and values are not the same in emerging and developed countries markets. Besides, companies from environmentally sensitive industries might face some extra obligations to disclose more information regards to the environmental pillar of ESG. This thesis studies how the ESG information and performance from the ESG disclosure of the environmentally sensitive companies affect their financial performance.

## **2.5 Financial Performance Measurement**

The financial performance measurements measure and compare a corporation's financial condition, monetary performance, growths and assist the decision makers to set goals and profit-making strategies. Financial performance measurements indicate how effectively and efficiently a corporation uses its resources and managing the costs in order to generate maximum revenue for the shareholders. A corporations' financial performance in a given year can be measured through accounting-based and market-based measurement tools. The accounting-based performance measurements like ROA, ROE, ROCE ratios assesses profitability and operational efficiency of a corporation in a given period. On the other side, market-based performance measurements like Tobin's Q, PE measures the current valuation



of the corporation in the market. The accounting-based financial performance measures could reveal whether the advantages of investing in the expenditures such as ESG operations outweigh the costs. Additionally, analyzing the financial performance of the corporation through market-based measurement metrics would describe if better ESG performance score can contribute to higher market valuation for a corporation. The financial data collected from annual financial reports of corporations are used to measure the financial condition or financial performance of the corporation. Previous studies have used both accounting-based as well as market-based financial performance measures to investigate the effect of ESG operation costs and effects of ESG performance score over the financial performance of the corporations.

## **2.6 Relationship Between ESG Performance and Financial Performance**

At present corporations from almost all the sectors from all around the world are implementing and including ESG strategies and performance report in their annual reports because of the growing interest from the investors and stakeholders. The shareholders and potential investors are not only eager to know about the sustainability and socially responsible activities of the company but also, they want to know how these ESG activities are affecting the financial performances and wealth creation of the companies. The above-mentioned theories hold that strategies and initiative like ESG affects the market valuation and the financial performances either in a positive or in a negative way. The principal goal of a business organization is creation of wealth and profit maximization which suggests that all the activities and operations of the business organization must be focused on maximization of profit and value of the shareholders. However, in 21<sup>st</sup> century business organizations must consider the issue of sustainability for the future generation, ecological stability and efficiency, responsibilities, and duties towards the community. ESG performances holds the summary of sustainable and socially responsible initiatives of a corporation and it is important to examine how the ESG performances related with the corporate financial performance and with market valuation as shareholders or investors are curious to know how these investments in the ESG strategies bring the return. There is quite extensive number of studies which support and oppose the theories mentioned above and reports mixed, negative and positive association of ESG performance with the company's valuation and financial

performance using different methods. Being one of the most important and crucial for the sustainable world it would be very interesting to find how the ESG performances of companies from environmentally sensitive industries affect their financial performance and market valuation and how the effect of ESG performance of same industry differ from developed to emerging countries market. The next chapter presents a detailed review from the literature on ESG performance and the relationship of financial performances.

### **3. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

In this chapter, the previous studies and their findings on the ESG and ESG-financial performance relationship. Besides, the theoretical background of the ESG strategies is discussed to support the hypothesis formation.

#### **3.1 Literature Review**

The implementation of ESG strategies and initiatives causes the corporation a considerable amount of expenses. It is so important for both investors and the corporation to know if the non-financial expenditures like ESG investments bring any financial benefit for the corporation. According to stakeholder theory (Freeman, 1984) investment in ESG puts the corporation in a comparatively advanced position in the market and bring about better financial performances whereas the shareholders theory (Friedman, 1970) opposes this stand arguing that socially responsible activities are not the responsibility and goal of a corporation. In addition, the value enhancing theory states that ESG operations enhance the value and financial performances of a corporation which is supported by a group of researchers while the shareholder's expense theory argues that ESG expenditures bring economic disadvantage for a corporation rather than affecting the financial valuation in a positive way. ESG performance reflects the sustainability of the corporation also it is considered as the most effective measurement to measure the corporate social responsibilities of a corporation. ESG ratings or scores help the investors to make investment decisions specially the investors who are more interested in socially responsible investing. Today corporations are disclosing more information about their ESG initiatives but because of shortage of proper information and data provided by the corporations the ESG rating providers often face difficulties to assess the sustainability performance of the corporations in an accurate way through the ESG scores or ratings (Langeland & Ugland, 2019). Because of the growing popularity of environmental sustainability and social awareness the stock value of the corporation tends to get affected by the ESG related information of that corporation. A large number of studies have been carried out by academic researchers on the association of ESG operations and financial performances in last few years. Researchers have analyzed the ESG performances of different industries

from different markets by using data from different sources and by implementing various methodologies in order to find out the effect of ESG performances on market valuation as well as on the financial performances. The findings of the past studies reported positive as well as negative relationship of ESG activities with financial performance, some studies reported neutral or no relationship while some of the studied claimed there is insignificant relationship between financial performance and ESG performance of the corporations. There is a lot of variation in the findings can be noticed regarding how the ESG operations are affecting the stock valuation and the financial performances according to the sample industries and the country taken as the sample for the analysis.

The very first academic research on the link between corporation's social responsibility with its financial performance can be traced back in early 1970's when Moskowitz (1972) examined and compared the socially responsible firms and found positive correlation of the stock returns with social responsibility performances of the firms. Besides, Bragdon & Marlin (1972) argued that, corporations can still maximize the profits by minimizing the environmental pollutions. On the contrary, the study by Vance (1975) is the first one which reported negative association between the market valuation and CSR operations of the corporations. The contradiction grew up further on the relationship of CSR with financial performance as Abbott & Monsen (1979) reported insignificant impact of CSR performance over the corporation's financial performance and valuation. The contradicting findings of the early studies have built up the base for the further studies on how socially responsible and sustainable performances for corporation affect the financial performance and valuation which have been extended over the past years.

One of the substantial studies on the relationship between corporate financial performance and social responsibilities of corporations was conducted by Friede et al. (2015) who examined 2200 previous studies on this subject through a meta-analysis and reported that a large portion of the studies have found positive impact of socially responsible operations over the corporate financial performance which stays firm over the periods of time. Similarly, Orlitzky et al. (2003) conducted a meta-analysis consisting of fifty two previous studies regarding the association of CSR with the financial performances of the corporations and Margolis et al. (2007) also did a meta-analysis consisting of 167 studies on similar topic

where they have found a positive and significant association of CSR operations with the corporate financial performance as claimed by the sample studies. Alshehhi et al. (2018) conducted a content analysis of 132 existing studies on how sustainability scores and performances are affecting the financial performance of the corporations and reported that almost seventy eight percent of the prevailing research have claimed positive linkage of corporate sustainability related performance with market valuation and financial performance where a very few studies have reported negative or insignificant association. In the literature of ESG the researchers have analyzed both accounting-based and market-based financial performances against the ESG performances of the corporations.

In their study, Bhaskaran et al. (2020) have investigated the ESG activities and corporate financial performance of 4887 corporations from the global market and reported a positive link of ESG operations with the corporation's performance. The authors found that, ESG strategies and initiatives support in creating market and financial values for the corporation along with contributing to the welfare of both external and internal stakeholders. De Lucia et al. (2020) analyzed the effect of ESG performances of 1038 public companies in the European region on their financial performances through machine learning regression models and found that ESG performances of the companies affect the corporate financial measures positively. The authors suggest that developing and implementing of effective ESG strategies and sustainability policies can make a greater contribution to corporation's financial performance and creating more value for the corporation. Cek & Eyupoglu (2020) in their study found that the ESG performance and activities of the corporations listed in S&P500 have influenced the economic performance of the companies in a significant way. Moreover, sustainable corporate strategies and initiatives such as ESG have the potentiality to generate long term shareholders value. M. Yu & Zhao (2015) investigated how sustainability activities of the corporations are valued by the market and found a positive link of sustainability performance with market valuation of the corporations. The outcomes of the study support the value enhancing theory which claims that sustainability related expenses contribute to the long-term value creation for the corporations. Besides, the authors argued that corporations located in the countries with better investment environment and disclosure policy have the most positive impact of sustainability practices on market value of the corporations. Another

comprehensive study was conducted by Ramić (2019) where the author analyzed the association of ESG performance with corporate financial performance of listed corporations worldwide and found that ESG performance affect the profitability and owner's equity of the corporations in a positive and significant way. Ionescu et al. (2019) investigated the link of ESG performance with financial performance of the global travel and tourism industry and found a positive interrelation of ESG activities with the financial performance. PEIRO et al. (2013) examined the impact of ESG ratings on financial performance of the US corporations and found the existence of correlation between ESG activities and economic performance of the firms where the effective ESG strategies help the firms to achieve better financial outcomes. The study also reported that, in the USA the firms with lower ESG rating performed better than the firms having higher ESG rating from the same industry. One more research on the effect of ESG activities on valuation of the corporations from USA conducted by Fatemi et al. (2018) reveals that, strong and stable ESG performance boost the value of the corporation whereas deficiencies in the ESG strategies might reduce the value of it. The authors also found that there is an important role of ESG reporting in alleviating the detrimental influence of the adverse operational impacts of the corporation and in some cases the disclosure might suppress the beneficial impact of the ESG strengths of the corporation. Statman & Glushkov (2009) in their research found that, investing in the socially responsible stocks provides the investors with competitive advantages over the regular stocks. The authors claimed that, investing in the stocks of the corporations with high ESG score brings in more advantages for the investor over the traditional investors. Pătări et al. (2012) investigated how sustainability performance of the energy companies around the world contribute to the market value and financial performance where they found that sustainable and socially responsible strategies and activities affect the corporate financial performance as well as market valuation of these corporations in a positive way. Besides, results of this study reject the shareholders theory as the expenses of sustainability and socially responsible activities of the energy corporation have been paid by the market and could create value for the shareholders.

A considerable number of studies focusing on how sustainability and socially responsible performances of the firms are valued in different countries of the world are also present in

the ESG literature. According to Galbreath (2013) who studied the impact of ESG over the financial performances of Australian companies, ESG activities positively affect the firm performance in Australia. Velte (2017) examined the impact of ESG operations and activities on corporate financial performance of corporations in Germany and found positive relationship of ESG performance with the profitability of the German corporations. However, the author found no impact of ESG strategies and operations on the market valuation of the corporations. The impact of ESG ratings of Italian corporations was studied by Clementino & Perkins (2020) where they found that positive impacts of ESG ratings for the Italian corporations and the better sustainability and socially responsible performances of the corporations have a positive relationship with ESG rating. María Miralles-Quirós et al. (2018) analyzed the impact of ESG initiatives and strategies on the market valuation of the Brazilian corporation by using Ohlson's valuation model and ESG score provided by Thomson Reuters. The results of their study states that, the activities and initiatives related to ESG are positively valued in the Brazilian market. Laskar et al. (2017) in their study, examined how corporate sustainability performances affect financial performance of corporations from India and Japan and reported a positive association of ESG performance with financial performance for corporations located in both countries. They also reported that, the effects of ESG performance over the financial performance is greater for the corporations located in Japan than the corporations in India. Similarly, in different studies Dalal & Thaker (2019) and Chelawat & Trivedi (2016) have found that, better corporate financial performance of Indian corporations is positively linked with their ESG strategies and performances. The authors also reported in their studies that ESG performances are related and valued positively in the Indian markets. In their study, Zhao et al. (2018) revealed that the financial performance of the power generation firms of China is positively related with the ESG performance. The study reports that ESG activities and operation of the corporations have an significant influence in the decision making of the investors in China. Yoon et al. (2018) examined the relationship between the value of the Korean corporations and their ESG performance using Ohlson's valuation model and found a positive relationship of market valuation of the Korean companies with their ESG operations and activities. Besides, the authors reported that, the influence of the ESG performance on the stock prices of the corporations might vary according to the industry and attributes of the corporations.

The effect of social responsibility along with corporate sustainability performance over the market valuation of the listed corporation in Hong Kong was investigated by Lo & Kwan (2017) where they found that ESG operations and activities are valued positively by the markets and investors in Hong Kong. The ESG strategies and initiatives also affects the financial performances of the corporations significantly and positively as reported by Tarmuji et al. (2016) who analyzed the link of ESG scores with the financial performance of listed corporations from Malaysia and Singapore. Yen-Yen (2019) who also studied the Malaysian market found an association of ESG performance score with the market valuation of the corporations. The author states that disclosing non-financial information like ESG operations decreases the informational asymmetries of the investors in a positive way and let the investors to make the right decision and contribute to improved market valuation of the corporation thereby. Yawika & Handayani (2019) analyzed the association of ESG performance with corporate financial performance of corporation from high ranked industries in Indonesia and found that, the ESG practices of the Indonesian companies are positively related with their financial performance. However, the authors reported that not all the pillars of the ESG but only the performance of the governance pillar has influence over the economic performance of the corporations in Indonesia. In their study Mohammadi et al. (2018) examined how initiatives and activities related to corporate sustainability affect the value of the listed companies from Iran and the results show that the sustainability efforts of the corporations are valued positively in the Iranian market. Besides, they found that corporate sustainability initiatives have positive association with profitability of the listed corporations in Iran.

The relationship ESG performance and corporate financial performance of financial institutions and banks has also been studied by different researchers beside other conventional industries. Shakil et al. (2019) reported that the ESG activities of the banks from developing countries have positive link with corporate financial performance of those banks which firmly supports the value creation and stakeholder theory. Miralles-Quirós et al. (2019) studied the impact of ESG performance of banks from 31 different countries and found that, the environmental and governance activities and operations from the ESG strategies of the bank affect the valuation and financial performance of the banks in a positive



way but the social activities from the ESG initiatives have a reverse correlation with the value creation for the owners. Similarly, Brogi & Lagasio (2019) also reported that the environmental strategies and initiatives from the ESG activities of the banks in the USA have positive impact with the profitability of the banks. However, the general overview from the investors of the capital markets on the association between ESG operations and corporate financial performance of different industries is impartial inconsistent with the classical economic theory (Friede et al., 2015).

On the other hand, Marsat & Williams (2011) in their study, investigated how ESG strategies and activities contribute to the value maximization of the corporation. They have analyzed the ESG operation scores and market valuation of 9000 corporations worldwide and found that investors and the market do not value the ESG performance in a positive way. The authors also claimed that, the costs of the ESG activities are considered as greater by the market than the advantages of those ESG activities. Sjögren & Wickström (2019) studied the impact of ESG activities on financial performance of the corporations from European region and found that the ESG initiatives and strategies do not have a positive association rather the ESG performance scores are associated with corporation's financial performance in a negative way. The study of Duque-Grisales (2019) examined the association ESG initiative and strategies with the financial performance of the corporations from South American countries and reported that the overall ESG performance and the performance of each pillar of the ESG initiatives both have significantly negative association with corporate financial performance of the corporations in South American countries namely Mexico, Brazil, Colombia, Peru and Chile. The effect of the ESG initiatives on market valuation of the companies from USA, UK and Switzerland was analyzed by Sahut & Pasquini-Descomps (2015) where the authors found the ESG performance has impact on the company's market valuation in the UK only among the three countries and the relationship is negative. The study of Landi & Sciarelli (2019) did not found any positive association of ESG activities with the market valuation and corporate financial performance of the corporations in Italian market. They also reported that, even though the Italian corporations tend to more sustainable and socially responsible since the sub-prime mortgage crisis, being socially responsible and sustainable is not significantly considered by the Italian investors in making the investment

decisions. Dufwa & Hammarström (2015) investigated the impact of sustainability and socially responsible performance of the corporations from basic material industry in European region over their corporate financial performance and found negative impact of ESG performance on their financial performance and market valuation. The results of their study are against the stakeholder and the value enhancing theory as the ESG activities of the basic material industry in the Europe could not bring greater advantages for the corporations. Langeland & Ugland (2019) found that the ESG performance of the Nordic corporations affect the profitability of the corporations negatively. In spite of continues increase of investments on the ESG operations by the Nordic corporations, they had a negative association of the returns on assets with their ESG activities. Lopez-de-Silanes et al. (2020) conducted an extensive cross-country analysis on financial value of ESG operations and found that the financial performances of the corporations were not affected by the ESG ratings. The negative findings of the above-mentioned studies represent and supports the shareholder's expense theory and the shareholder theory which claim that investing in activities like ESG increases costs for the corporation without any potential advantages and do not contribute to the maximization of the shareholder's wealth.

Nevertheless, few studies on the ESG-corporate financial relationship have reported insignificant or no association of ESG performance with the financial performance and market valuation of the corporations. Ahlklö & Lind (2018) investigated the link of ESG activities with financial performance and valuation of the corporations from Nordic market where they found that the overall ESG performance of the corporations do not have any significant association with financial performance or valuation in Nordic market. Similarly, another study conducted by Afrooz & Kruusman (2019) on the Nordic market found no significant interrelation of overall ESG ratings with movements in share price of the corporations in Nordic region. Eriksson & Asgödom (2019) in their study, examined the effect of ESG strategies and operations over the market valuation of the US corporations and found insignificant link of ESG performance with the valuation of the companies. The results could not conclude whether investing in the ESG initiatives raises or reduces the value of the corporations listed in the S&P 500. Additionally, Kuiper & Adrián (2020) did not find any evidence of correlation of corporate sustainable and socially responsible performance with

share price and returns of the listed companies in the S&P500. Hedqvist & Larsson (2020) studied the impact of ESG activities on financial performance of the corporations from Sweden and UK and could not find any significant correlation. Although the results showed an association with one of the variables the author suggested that is not enough to conclude the overall relationship of corporate financial performance with the ESG performance. Another study by Lumivirta (2020) on the ESG investment performance concluded that, the ESG investment portfolios could not show any greater performance than the conventional investment portfolios in the European market. Atan et al. (2019) investigated how ESG operations and activities affect the financial performance and valuation of the Malaysian corporations and found that, the overall ESG performance or the performance of any particular pillar of the ESG initiatives have an insignificant relationship with the market valuation as well as with the profitability of the Malaysian corporation. The Malaysian market did not seem to differentiate and value the socially responsible and sustainable companies than any other conventional companies. However, the results present positive and significant interrelation of cost of capital of Malaysian corporations with overall ESG ratings. Academic researchers have also examined the impact of each pillar of the ESG initiatives over the market valuation and financial performance of the corporations from different industries and regions and reported mixed findings. Studies reporting mixed results indicate the necessity of more specific and deep investigation on the value relevancy of ESG initiatives and activities.

The impact of ESG disclosure or reporting of ESG activities on corporate financial performance of the corporations has also been a topic of debate among the academic and business researchers since last decade. Pled & Iatridis (2012) conducted an investigation on how the ESG reporting influence the financial performance of the environmentally sensitive corporations in the USA and found that the ESG reporting has negative association the with the cost of equity of the corporations. The results represent that, corporations usually reveal a good amount information regarding their ESG strategies and activities with a view to enhance the expectations of investors, which will then improve corporate credibility, and ultimately reduce the cost of equity. Kengkathran (2018) reported that, ESG disclosure or ESG reporting has both negative and positive link with the profitability of the energy

corporations in the ASEAN market. However, motivations for disclosing data and information about the ESG activities are strongly affected by the regulation criteria of the country or region where the corporation operate it's business (Lokuwaduge & Heenetigala, 2017). Alsayegh et al. (2020) argued that the environmental sustainability and socially responsible operations of the firms in the Asian market are positively associated with the ESG reports disclosed by the respective corporations. The final outcome of their analyses supports both stakeholder and legitimacy theory as the findings say that, integrating and disclosing more information regards to the ESG strategies and operations helps the corporation to be more cost-efficient and increases the sustainability of the corporation.

The corporations having environmentally sensitive business operation play a vital role in retaining the ecological sustainability. These corporations are likely to face stricter laws and regulations from the environment protection agencies and social pressure because of their nature of business operation (María Miralles-Quirós et al., 2018). According to the literature corporations from industries like energy, mining, metals, construction, chemical are considered as environmentally sensitive based on their production and operation nature. Because of the liabilities to sustainability of environment as well as growing interest of the interested parties environmentally sensitive corporations disclose more information about their sustainability and socially responsible initiatives than the corporations from non-sensitive industries and the ESG reporting of these environmentally sensitive corporations are valued highly in the market than the traditional corporations (Mohammadi et al., 2018). Pătări et al. (2012) found positive link of social responsibility and sustainability performance with financial and market performance of the energy corporations which are mostly considered sensitive for the environment worldwide. Pled & Iatridis (2012) also reported that, environmentally sensitive corporations disclose high quality information related to their ESG activities even though it affects their cost of equities in a negative way. Previous studies report that, the corporations with environmentally sensitive business operation tend to implement and report more data regards to their operations to protect the environment and social sustainability as these corporations are more likely to face the lawsuits for endangering the ecological harmony. According to Garcia et al. (2017) in the emerging economy markets the corporations belong to the sensitive industries have better corporate sustainability and

socially responsible performance as compared to the corporations from the non-sensitive industries. However, the authors also reported that corporations reporting the best ESG performance could also be less profitable at the same time. Additionally, corporations from the industries which are creating more environmental pollution seems to contribute less to the strategies and initiatives regarding the social issues (Bhaskaran et al., 2020). Yoon et al. (2018) found that, ESG strategies and initiatives contribute less to the value creation of the corporations from sensitive industries than the corporations from non-sensitive industries. On the other hand, Eriksson & Asgodom (2019) could not find any conclusive result regarding how the value creating effect of ESG performance varies between the sensitive and conventional corporations. In an effort to regain their substantive, ethical and cognitional legitimacy, corporations from environmentally sensitive industries are encouraged to willingly include substantially greater quantities of information about their environmental and socially responsible operations and initiatives in the annual reports (Lim et al., 2010). Considering the fact that, the environmentally sensitive industries disclose greater quantity and level of ESG information we assume that these companies have stronger effect of ESG performance on their market valuation and overall financial performance.

There are several on the value relevance of ESG in developed countries market in the ESG literature whereas there are limited of number of research focused on emerging countries market. Nevertheless, there are very few studies which examined the effect of ESG strategies and operations over the valuation and financial performance of the corporations from both developing and developed economies market. Ting et al. (2019) conducted a comprehensive study to analyze the impact of socially responsible and sustainable performance on financial performance of 4886 corporations from emerging and developed countries. They have found that the overall ESG performances of the corporations from both emerging and developed countries have significant and positive impact over market valuation and financial performance of the corporations. The authors have also reported that, corporations from the developing country have greater ESG reporting score than the corporations from developed countries. Manrique & Martí-Ballester (2017) analyzed the impact of strategies and operations regarding the environmental pillar of ESG only over the corporate financial performance of the corporations from developed and emerging economies market and found

positively significant linkage of corporate environmental initiatives with the financial performance in both developed and emerging markets. The results showed that the effect of environmental strategies and operations over the corporate financial performance was better for the corporations located emerging markets than developed markets. Besides, corporations with improved environmental practice while the economic crisis period gained better corporate financial performance. Likewise, in their study E. P. Yu et al. (2018) reported that ESG performance has the ability to create value for the corporations where they have examined the impact of ESG transparency over financial performance of the corporations from 47 different markets of developing and developed economies. Kulakova (2018) studied the data of the corporations from five different regions and markets to examine how the ESG activities and operations affect the market valuation of the corporations and found that, ESG performance score has positive linkage with valuation of the corporations located in Asian and Easter European region only. The findings also say that the environmental responsibility of the corporation is valued more than social or governance activities by the investors in the African region. According to Friede et al. (2015) from the existing literature on ESG-financial performance relationship there is a larger proportion of positive outcomes from the studies focused on North American markets than the studies from Asian and European markets while few studies showed stronger link of ESG with the market and financial performance of the corporations from emerging countries' markets in comparison to the developed countries' markets.

The diversified findings of the existing research on ESG-corporate financial performance relationship resulted from the varieties of methodology, different sustainability measurements and ESG ratings used by the researchers. This thesis will investigate the ESG activities and performance ratings of the environmentally sensitive corporations to see whether the corporate sustainability and socially responsible operations of the environmentally sensitive industries support the shareholder theory or the stakeholder theory. This thesis also aims to investigate whether ESG strategies and initiatives of the environmentally sensitive corporations can create value for the shareholders consistent with the value enhancing theory or these ESG initiatives cause extra cost for the corporation as claimed by the shareholder theory. Further, this study will investigate and compare the impact

and value creating ability of ESG activities of the environmentally sensitive corporations located in developed and emerging countries market. Besides, this thesis aims to examine whether improved and high quality ESG performance of the environmentally sensitive corporations from both developed and emerging countries market contribute to better market valuation and financial performance in accordance with good management theory. Following Table 1 represents a summary of the previous relevant studies.

**Table 1:** Literature Review at a glance

<b>Authors &amp; Study</b>	<b>Geographical scope</b>	<b>Period</b>	<b>Sample observed (Companies)</b>	<b>ESG Performance Measure</b>	<b>Financial Performance Measures</b>	<b>Findings/ Relationship</b>
Statman & Glushkov (2009) The Wages of Social Responsibility	The USA	1991-2006	-	KLD Research & Analytics (KLD),	CAPM, three factors benchmark of Fama and French & four-factor benchmark of Carhart	The benefit of preferring stocks of corporations with a strong social responsibility record
Marsat & Williams (2011) CSR and Market Valuation: International Evidence	Worldwide	2005-2009	9000	MSCI ESG Data	Tobin's Q, Price to Book ratio	Negative
Pätäri et al. (2012) Does Sustainable Development	Global Energy Industry	2000,2005 &2009	150	Dow Jones Sustainability Index (DJSI) &	Sales growth, Increase in personnel %, Operating profit	Positive

Foster Value Creation? Empirical Evidence from the Global Energy Industry				Thomson One Banker database	margin %, ROA, ROE, ROIC, Market capitalization	
Pled & Iatridis (2012) Corporate social responsibility reporting: evidence from environmentally sensitive industries in the USA	USA	2005-2011	557	Annual reports & ESG disclosures	Cost of Equity	Negative relationship of disclosure with cost of equity.
Albertini (2013) Does Environmental Management Improve Financial Performance? A Meta-Analytical Review	Global	1975-2011	52	CEM indicators (EMVs, EPVs, and EDVs)	Corporate Financial Performance indicators	Positive
Galbreath (2013) ESG in Focus: The Australian Evidence	Australia	2002-2009	300	Sustainable Investment Research Institute (SIRIS) database of ASX 300	ROA, Total Revenue	Positive
PEIRO et al. (2013) Influence of the Environmental, Social and	US Companies	2006-2010	958	ESG Scores from Thomson Reuters database	ROA, EBITDA Margin	Mixed



Corporate Governance Ratings on the Economic Performance of Companies: An overview						
Dufwa & Hammarström (2015) Corporate Sustainability and the Financial Implications for the European Basic Materials Industry	European basic material industries	2003-2013	94	Thomson Reuters Asset4	Tobin's Q, ROA	Negative
Friede et al. (2015) ESG and financial performance: aggregated evidence from more than 2000 empirical studies	International	1970-2015	2200	Previous Studies	Previous Studies	90% of studies reported nonnegative ESG–CFP relationship.
Sahut & Pasquini-Descomps (2015) ESG Impact on Market Performance of Firms: International Evidence	Switzerland, the USA, and the UK.	2007-2011	200	The ESG news score is calculated by evaluating the quantity of positive and negative news gathered on the Internet.	five factor linear market model derived from Carhart's model (Carhart, 1997).	Only Significant (Negative) in the UK

Yu & Zhao (2015) Sustainability and firm valuation: an international investigation	International (Mostly US firms)	1999-2011	2554	Dow Jones Sustainability Index (DJSI)	Tobin's Q	Positive
Chelawat & Trivedi (2016) The business value of ESG performance: the Indian context	Indian Market	2008-2013	93	The NSE CNX Nifty 100 companies	ROCE, Tobin's Q	Positive
Tarmuji et al. (2016) The Impact of Environmental, Social and Governance Practices (ESG) on Economic Performance: Evidence from ESG Score	Malaysia & Singapore	2010-2014	80	Thomson Reuters ESG Score	Economic Performance	Positive
Garcia et al. (2017) Sensitive Industries Produce Better ESG Performance: Evidence from Emerging Markets	BRICS countries	2010-2012	365	ESG Scores from Thomson Reuters database	ROA, Systematic risk index, the firm's financial leverage index, the firm's free cash flow, market capitalization.	Negative
Laskar et al. (2017) Corporate Sustainability Performance and	Japan & India	2009-2014	63	Reports (GRI Framework)	Market to Book Ratio	Positive

Financial Performance: Empirical Evidence from Japan and India						
Lo & Kwan (2017) The Effect of Environmental, Social, Governance and Sustainability Initiatives on Stock Value – Examining Market Response to Initiatives Undertaken by Listed Companies	Hong Kong	2010-2012	48	HSCSI, FTSE4Good Global Index (FTSE4Good) and Dow Jones Sustainability Asia Pacific Index (DJSIAP)	cumulative abnormal returns (CARs)	Positive
Lokuwaduge & Heenetigala (2017) Integrating Environmental, Social and Governance (ESG) Disclosure for a Sustainable Development: An Australian Study	Australia		30	ESG Disclosure	/	The motivations for ESG reporting are heavily impacted by reporting laws.
Manrique & Martí-Ballester (2017) Analyzing the Effect of Corporate Environmental Performance on Corporate Financial	Developed and developing countries	2008-2015	2982	Environmental data & score from Asset4 (Thomson Reuters)	ROA, Tobin's Q	Significantly Positive

Performance in Developed and Developing Countries						
Velte (2017) Does ESG performance have an impact on financial performance? Evidence from Germany	Germany	2010-2014	412	Thomson Reuters ESG Score	ROA, Tobin's Q	Positive Impact on ROA, No effect on Tobin's Q
Ahlklo & Lind (2018) E, S or G? A study of ESG score and financial performance	Nordic Stock Market	2014-2018	267	ESG scores from Bloomberg Terminal and Sustainalytics.	ROA, Tobin's Q, Yearly Stock Return	No significance (except environmental )
Alshehhi et al. (2018) The Impact of Sustainability Practices on Corporate Financial Performance: Literature Trends and Future Research Potential	International	2002-2017	132	Existing Literature	Existing Literature	78% of research articles revealed positive relationship
Aouadi & Marsat (2018) Do ESG Controversies	Global (58 countries)	2002-2011	4000	ESG controversies score from (Asset4)	Tobin's Q, ROA	Positive

Matter for Firm Value? Evidence from International Data				Thomson Reuters		
E. P. Yu et al. (2018) Environmental, social and governance transparency and firm Value	47 developed and emerging countries	2012-2016	1996	Bloomberg ESG Disclosure Score	Tobin's Q, ROA	Positive
Fatemi et al. (2018) ESG performance and firm value: The moderating role of disclosure	US Firms	2006-2011	1640	KLD Research and Analytics as the proxy for ESG activities	Company's Value, ROA	Positive
Kengkathran (2018) A Literature Review on the Impact of Environmental, Social and Governance (ESG) Disclosure on Financial Performance of Energy Companies in ASEAN	ASEAN countries market	Literature Review		ESG Reports & Disclosures	ROA, ROE, Net Profit Margin	Mixed (Both positive & negative)

Kulakova (2018) The impact of Environmental, Social and Corporate Governance (ESG) practices on the financial performance of companies in emerging and frontier markets	35 emerging and frontier markets. (5 regions)	2016-2017	166	East Capital's (EC) proprietary ESG scorecard	Tobin's Q	Positive
María Miralles-Quirós et al. (2018) The Value Relevance of Environmental, Social, and Governance Performance: The Brazilian Case	Brazilian Market	2010-2015	276	Thomson Reuters ESG Score	Ohlson's valuation model	Positive
Mohammadi et al. (2018) Corporate sustainability disclosure and market valuation in a Middle Eastern Nation: evidence from listed firms on the Tehran Stock Exchange: sensitive industries versus	Iran	2010-2015	98	Annual Reports of the companies	Market valuation (Share value) & Ohlson Model	Positive

non-sensitive industries						
Yoon et al. (2018) Does ESG Performance Enhance Firm Value? Evidence from Korea	R.P Korea	2010-2015	705	Korean Corporate Governance Service (KCGS) ESG Score	Ohlson's valuation model	Positive
Zhao et al. (2018) ESG and Corporate Financial Performance: Empirical Evidence from China's Listed Power Generation Companies	China	10 years	20	PSR-AHP index	ROCE	Positive
Afrooz & Kruusman (2019) The effect of the ESG score on stock price jumps- a quantitative Study on Nordic Countries	Nordic Market	2008-2017	105	Thomson Reuters Eikon	Number of Stock Price Jumps	No significant Relationship
Atan et al. (2019) The Impacts of Environmental, Social, and Governance Factors on Firm	Malaysia	2010-2013	54	Bloomberg ESG database	ROE, Tobin's Q and WACC	Insignificant relationship except WACC with Combined ESG score

Performance: Panel Study on Malaysian Companies						
Dalal & Thaker (2019) ESG and Corporate Financial Performance: A Panel Study of Indian Companies	Indian Market	2015-2017	65	NSE 100 ESG Index's ESG rating	ROA, Tobin's Q	Positive
Duque-Grisales (2019) Environmental, Social and Governance (ESG) Scores and Financial Performance of Multilatinas: Moderating Effects of Geographic International Diversification and Financial Slack	Brazil, Chile, Colombia, Mexico, and Peru.	2011-2015	104	Thomson Reuters ESG Score	ROA	Negative
Eriksson & Asgodom (2019) Perspectives of ESG performance; A study of ESG performance effect on firm value in the U. S	USA	15 years (2002-2017)	427	Thomson Reuters ESG Score	Tobin's Q	Insignificant



Ionescu et al. (2019) The impact of ESG factors on market value of companies from travel and tourism industry	International	2010-2015	73	ESG scores from RobecoSAM database	Ohlson's valuation model	Positive
Landi & Sciarelli (2019) Towards a more ethical market: the impact of ESG rating on corporate financial performance	Italy	2007-2015		ESG Assessment by Standard Ethics Agency	Compound Abnormal Return	Negative
Langeland & Ugland (2019) ESG rating and financial performance in the Nordic market	Nordic Market	2006-2018	139	Thomson Reuters ESG Score	ROA	Significantly Negative
María Miralles-Quirós et al. (2019) ESG Performance and Shareholder Value Creation in the Banking Industry: International Differences	International (31 countries)	2010-2015	166	Thomson Reuters ESG Score	Tobin's Q, ROA	Positive

Ramić (2019) Relationship between ESG performance and financial performance of companies: an overview of the issue	Global	2005-2015	7000	Thomson Reuters ESG Score	Tobin's Q, ROE, ROA	Mixed
Shakil et al. (2019) Do environmental, social and governance performance affect the financial performance of banks? A cross-country study of emerging market banks	Emerging Markets	2015-2018	93	Thomson Reuters ESG Score	ROA, ROE	Positive (Environmental & social not governance)
Sjögren & Wickström (2019) A study of ESG's contribution to firm performance	21 different countries of the European Region.	2008-2017	586	Thomson Reuters ESG Score	as a firm's Year over Year change in Revenue	Negative
Ting et al. (2019) Corporate Social Performance and Firm Performance: Comparative Study among Developed and Emerging Market Firms	Developed (3569) and Emerging (1317) Markets Companies	2014-2018	4886	ESG Scores from Thomson Reuters database	ROE, Price to Earnings ratio and Tobin's Q	Significantly Positive

Yawika & Handayani (2019) The Effect of ESG Performance on Economic Performance in the High-Profile Industry in Indonesia	Indonesia	2015-2017	387	Company Disclosure (Probability Sampling)	ROA, EBITDA, Market to Book value Ratio	Positive
Yen-Yen (2019) The value relevance of ESG disclosure performance in influencing the role of structured warrants in firm value creation	Malaysian Market	2012-2017	795	Bloomberg database.	Tobin's Q	Positive
Brogi & Lagasio (2019) Environmental, social, and governance and company profitability: Are financial intermediaries different?	US listed companies	2000-2016	3476	MSCI ESG KLD STATS ESG Score	ROA	Positive
Alsayegh et al. (2020) Corporate Economic, Environmental, and	Asian Firms	2005-2017	1244	Bloomberg ESG Disclosure score & ESG score from Thomson	EES Corporate sustainability performance (ECN, ENV, SOC) (Thomson Reuters)	Positive (environmental & social)

Social Sustainability Performance Transformation through ESG Disclosure				Reuters DataStream		
Bhaskaran et al. (2020) Environmental, Social and Governance initiatives and wealth creation for firms: An empirical examination	Global	2014-2018	4887	ESG Scores from Thomson Reuters database	Tobin's Q, ROA, ROE, Total Return (1-year cumulative return)	Positive
Cek & Eyupoglu (2020) Does environmental, social and governance performance influence economic performance?	S&P500	2010-2015	372	Thomson Reuters ESG Score	Economic performance of the corporation	Positive
Clementino & Perkins (2020) How Do Companies Respond to Environmental, Social and Governance (ESG)	Italy		57	Reports, Scores Review		Positive Influence

ratings? Evidence from Italy						
De Lucia et al. (2020) Does Good ESG Lead to Better Financial Performances by Firms? Machine Learning and Logistic Regression Models of Public Enterprises in Europe	Public Enterprises in Europe	2018-2019	1038	ESG Scores from Thomson Reuters database	ROA, ROE, Net Income	Positive
Hedqvist & Larsson (2020) ESG or Financial Performance – Does It Have to Be a Choice? - A Regression Analysis of Thomson Reuters ESG scores and Financial Performance in Sweden and the UK	The UK and Sweden	2015-2018	150	Thomson Reuters DataStream	ROA, Retention ratio, Operating Cash Flow, Debt to Equity ratio	Positive (Limited)
Kuiper & Adrián (2020) The effect of ESG on stock prices-An	S&P500	2015-2017	484	Thomson Reuters Eikon	Stock prices	No correlation between stock returns and price

event study on the S&P 500						
Lopez-de-Silanes et al. (2020) ESG PERFORMANCE AND DISCLOSURE: A CROSS-COUNTRY ANALYSIS	USA, UK, France, Switzerland, Japan & Australia.	2015-2018	4084	Bloomberg ESG disclosure scores and Sustainalytics ESG rankings.	Tobin's Q, Annual Total Return	Little or no impact on financial performance
Lumivirta (2020) The returns of Socially Responsible Investment: A study of ESG Investment performance	European Market	2005-2018	1379	ESG Scores from Thomson Reuters database	Fama-French six-factor model	No outperformance by any ESG-sorted portfolios.
Ng et al. (2020) Sustainability in Asia: The Roles of Financial Development in Environmental, Social and Governance (ESG) Performance	Asia	2013-2017	210	ESG provided by the Bloomberg terminal	FDI, economic development, trade openness and financial development index.	Positive

The Hypotheses of this thesis made based on the theories and previous literature are discussed in the following section.

### 3.2 Hypothesis Development

As according to world commission on environment and development and existing literature corporations from energy, mining, metals, construction, chemical, paper industries are considered sensitive for the environment based on their business operation and their impact on the environment. The environmentally sensitive corporations face stricter and higher standards of regulations and requirements regarding ESG reporting. The corporations from environmentally sensitive industries are anticipated to implement and report large number of ESG strategies and operations in order to satisfy these requirement as well as to gain recognition and acceptance by the investors and the interested parties in the society as described in the legitimacy theory. It is quite obvious that environmentally sensitive corporations need to meet stricter obligations regarding the environmental and social sustainability issues which might make their ESG activities more expensive than the corporations from non-sensitive corporations. Environmentally sensitive corporations with better corporate sustainability and better socially responsible initiatives are expected to have better valuation and recognition by the stakeholders. However, because of the environment unfriendly business operations, corporations belong to these industries might find it difficult to build a reputation as ESG oriented corporation and to strengthen the relationship with the stakeholders (Dufwa & Hammarström, 2015). In this study we expect that, higher ESG performance of the environmentally sensitive corporations leads to better financial performance.

To investigate the financial performance of the corporations we will examine the link of ESG performance with the profitability, operating efficiency, and market valuation of the corporation. In accordance with the prior studies the financial performance will be analyzed through both accounting and market-based performance. Based on the literature and theories observation we hypothesize that:

***Hypothesis 1<sub>A</sub>: The overall ESG performance of the corporations from environmentally sensitive industries affects their profitability and market valuation.***

***Hypothesis 1<sub>B</sub>: The overall ESG performance of the corporations from environmentally sensitive industries has no effect on their profitability and market valuation.***

The practice and implication of ESG has been much popular in the developed countries over past two decades. However, the demands and interests on ESG activities and investment are also growing rapidly since last few years among the developing countries. Although there are institutional frameworks for ESG disclosure in both developing and emerging countries, there is lack of proper regulations, penalties for violating ESG reporting criteria or incentives for the ESG initiatives in the emerging countries. The developed countries are more concerned regarding the ecological sustainability and social rights where the corporations belong to environmentally sensitive industries face more pressures and regulations from the governments and other interested parties to include ESG strategies in their regular business strategies. Integrating ESG strategies can bring advantages, production and operation efficiencies for the corporations located in the developed countries as well. Whereas corporations from emerging countries face comparatively weak regulations and less pressure from the interested parties and government to integrate and disclose sustainability and socially responsible initiatives. The corporations in the emerging countries are required to invest comparatively little amount in the ESG operations as the development of the ESG practice is still in the beginning stage in these countries while being in the advanced stage of ESG practice the corporations from developed countries need to invest huge amount of money in the ESG strategies (Manrique & Martí-Ballester, 2017). Private corporations in the emerging markets are now getting themselves engaged in greater ESG practices voluntarily apart from the obligations from the governments alike the corporations from developed markets which indicates that they are gaining some sort of financial benefit from such voluntary ESG practices (Yoon et al., 2018). Emerging markets have lots of potentiality in improved ESG performance as (Ng et al., 2020) reported that ESG performance has positive link with the financial development and financial development of countries stimulus the improvement of ESG performance in those countries. In this study, we would like to investigate the potential difference in how the ESG performances of environmentally sensitive industries are valued in emerging and developed countries. We will examine the ESG-corporate financial performance relationship of the environmentally sensitive



corporations headquartered in both emerging and developed countries' market and will compare which markets value the corporate sustainability performances in a greater way. We hypothesize that:

***Hypothesis 2<sub>A1</sub>: ESG performance of the corporations from environmentally sensitive industries in the developed countries' markets affects their profitability and market valuation.***

***Hypothesis 2<sub>A2</sub>: ESG performance of the corporations from environmentally sensitive industries in the developed countries' markets has no effect on their profitability and market valuation.***

***Hypothesis 2<sub>B1</sub>: ESG performance of the corporations from environmentally sensitive industries in the emerging countries' markets affects their profitability and market valuation.***

***Hypothesis 2<sub>B2</sub>: ESG performance of the corporations from environmentally sensitive industries in the emerging countries' markets has no effect on their profitability and market valuation.***

***Hypothesis 2<sub>C</sub>: The impact of ESG performance on corporate financial performance of corporations from environmentally sensitive industries in the developed countries' markets is stronger and greater than in the emerging countries' markets.***

***Hypothesis 2<sub>D</sub>: The impact of ESG performance on corporate financial performance of corporations from environmentally sensitive industries in emerging countries markets is stronger and greater than in the developed countries markets.***

The strategies and initiatives related to the corporate environmental performance of ESG are so much crucial for the corporations from environmentally sensitive. Investors and interested stakeholders pay extra attention to the environmentally sustainable operations of these industries. Efficient and effective environmental strategies and operation can bring in competitive advantages for the corporation while increasing productivity efficiency of the corporation (Porter & Van der Linde, 1995). According to (Albertini, 2013) corporate

environmental strategies and operations have positive impact on the corporate financial performances and represents a win-win situation. We expect that as the environmentally sensitive corporations seem to spend a considerable amount of money on the environmental strategies and operation, the environmental performance has positive effect on corporate financial performance of these corporations. The difference in the impact of environmental measurements of the environmentally sensitive corporations on their financial performance and valuation in emerging and developed countries markets will also be checked. So, we hypothesize:

***Hypothesis 3<sub>A1</sub>: The environmental performance of the corporations from environmentally sensitive industries affects their profitability and market valuation.***

***Hypothesis 3<sub>A2</sub>: The environmental performance of the corporations from environmentally sensitive industries has no effect on their profitability and market valuation.***

***Hypothesis 3<sub>B1</sub>: The environmental performance of the corporations from environmentally sensitive industries in the developed countries markets affects their profitability and market valuation.***

***Hypothesis 3<sub>B2</sub>: The environmental performance of the corporations from environmentally sensitive industries in the emerging countries markets affects their profitability and market valuation.***

The social recognition and good stakeholder relationship depend on effective social sustainability management. For corporations specially belonging to the environmentally sensitive industries strategies and operations related to social sustainability and social responsibility are so important to gain goodwill attention and get engaged with the stakeholders. According to the value enhancing and stakeholder theory successful relations with all stakeholders increases a corporation's financial performance and market valuation. In this study, we expect that the social performance of the environmentally sensitive corporations from both developed and emerging countries market can improve their financial

performance by getting positive identification from their stakeholders. Our next hypothesis is:

***Hypothesis 3<sub>C1</sub>: The social performance of the corporations from environmentally sensitive industries affects their profitability and market valuation.***

***Hypothesis 3<sub>C2</sub>: The social performance of the corporations from environmentally sensitive industries has no effect on their profitability and market valuation.***

***Hypothesis 3<sub>D1</sub>: The social performance of the corporations from environmentally sensitive industries in the developed countries markets affects their profitability and market valuation.***

***Hypothesis 3<sub>D2</sub>: The social performance of the corporations from environmentally sensitive industries in the emerging countries markets affects their profitability and market valuation.***

According to the previous studies, good corporate governance is recognized and valued in a positive way in both emerging and developed market conditions (Cek & Eyupoglu, 2020; María Miralles-Quirós et al., 2018; Ting et al., 2019). Weaker governance strategies and initiatives affect the firm performance, valuation and return in a negative way (Giroud & Mueller, 2011). Better corporate governance also ensures the shareholders rights and transparency of the corporation. Based on past studies we also expect that environmentally sensitive corporations with better corporate governance performance have improved financial performance both in emerging and developed countries market. Therefore, the next hypothesis is:

***Hypothesis 3<sub>E1</sub>: The corporate governance performance of the corporations from environmentally sensitive industries affects their profitability and market valuation.***

***Hypothesis 3<sub>E2</sub>: The corporate governance performance of the corporations from environmentally sensitive industries has no effect on their profitability and market valuation.***

***Hypothesis 3<sub>F1</sub>: The corporate governance of the corporations from environmentally sensitive industries in the developed countries markets affects their profitability and market valuation.***

***Hypothesis 3<sub>F2</sub>: The corporate governance of the corporations from environmentally sensitive industries in the emerging countries markets affects their profitability and market valuation.***

Furthermore, being part of environmentally sensitive industry a corporation's financial performance could also be affected by the controversial news or negative news related to the ecological and corporate sustainability or social responsibility of that corporation. Previous studies of (Aouadi & Marsat, 2018; Ting et al., 2019) analyzed the effect of controversial news and ESG related scandals of the corporations from around the world using the ESG controversies score from Thomson Reuters ESG database and reported positive relationship of ESG controversies score with market value and financial performance of corporations. In another study (Langeland & Ugland, 2019) who also used ESG controversies score from Thomson Reuters reported insignificant impact of ESG controversies score on financial performance of corporations from Nordic market. This study aims to investigate whether these ESG controversies scores has any significant impact on financial performance and do investors in the market respond to negative publicities or scandals mostly related to the ESG initiatives and performance of the environmentally sensitive corporations. We also aim to observe how the ESG controversies score impacts financial and market performance of environmentally sensitive corporations both from developed and emerging countries and how the impact of ESG controversies on financial performance vary from developed to emerging countries' market. So, we hypothesized that:

***Hypothesis 3<sub>G1</sub>: ESG controversies of the corporations from environmentally sensitive industries affect their profitability and market valuation.***

***Hypothesis 3<sub>G2</sub>: ESG controversies of the corporations from environmentally sensitive industries have no effect on their profitability and market valuation.***

***Hypothesis 3<sub>H1</sub>: ESG controversies of the corporations from environmentally sensitive industries in the developed countries markets affect their profitability and market valuation.***

***Hypothesis 3<sub>H2</sub>: ESG controversies of the corporations from environmentally sensitive industries in the emerging countries markets affect their profitability and market valuation.***

Thomson Reuters as a ESG data providing agency provides ESG controversies score for the corporations which represents if the corporation had any controversies or scandals related to ESG activities or operations in a given year. This thesis will use ESG controversies score extracted from Thomson Reuters ESG database in order to observe the impact of ESG controversies of environmentally sensitive corporation over their financial performance.

## 4. DATA DESCRIPTION AND METHODOLOGY

This chapter discusses the sample selection process and research methodology of this thesis. The descriptions of the data and variables as well as the sources of the data used have also been presented below in the chapter. Following that, the regression analysis models to test the hypothesis of this thesis are discussed.

### 4.1 Data Source

This thesis uses the ESG performance scores provided by Thomson Reuters Eikon database to evaluate the relationship of ESG performance and financial performance of environmentally sensitive corporations. The ESG performance scores provided by the Thomson Reuters, the most popular ESG score databases used by both academic and business researchers. The Refinitiv ESG score assesses a corporation's ESG operation and performances using publicly available data of those corporations. The sector under which the corporation doing business and the country where it is located also plays a significant role in the ESG performance scoring process. The Thomson Reuters ESG analytic platform currently collects and evaluates close to 500 firm-level ESG parameters, for the measurement and scoring of ESG performances of the firms (*Refinitiv*, 2021). Thomson Reuters ESG scoring also use 186 most relevant measures and contents relative to the sectors and industries to measure and evaluate the corporate social and sustainability performance of the corporations. Being one of the biggest ESG databases the Thomson Reuters ESG database covers data of almost seventy percent of the global market capital. The database contains ESG scores of about 9000 listed corporations worldwide. Besides, Thomson Reuters ESG database provides ESG scores based on different business sectors, industries by covering the corporations from almost all the regions around the globe. The overall ESG score is aggregate of three different pillars of ESG namely environmental, social and governance. Each pillar of ESG is scored differently based on ten different ESG performance topics. A percentile rank score approach is used by the Thomson Reuters to determine a final score for each corporation through assessing the 186 measures between the corporations (*Refinitiv*, 2021).

The structural breakdown of the overall ESG score provided by Thomson Reuters ESG database is as following Table 2.

**Table 2:** Structural breakdown of the aggregate ESG Score

	Individual Pillars	Weight in Total ESG Score
ESG Score	Environmental	34%
	Social	35.5%
	Governance	30.5%
Total		100.00%

Source: Environmental, Social and Governance (ESG) Scores from Refinitiv (*Refinitiv*, 2021).

The analysts of the Thomson Reuters collect ESG data from the publicly available annual reports, website of the corporations, stock exchange filings, news, NGO websites, and CSR reports to construct ESG score for the corporations. The Thomson Reuters ESG scores are calculated through a percentile rank grading system where the minimum ESG score of a corporation can be 0 and maximum possible ESG score is 100. Likewise, the score of individual pillars of ESG as Environmental, Social and Governance varies from minimum score of 0 to maximum 100. Thomson Reuters uses 186 different parameters while collecting ESG data and information from the annual disclosure of the companies which are used for constructing pillar scores and overall ESG score for the companies. In order to become more impartial and objective, Thomson Reuters follows groupwise benchmarks and materiality matrix which helps to score the corporations in a fairer way based on the sectors or industries. The use of wide range of ESG parameters and information as well as following unbiased algorithmic process for constructing ESG score for the corporations has made the Thomson Reuters ESG score more dependable and widely acceptable. Table 3 below pictures the categorical breakdown the measurement metrics used in the ESG score by Thomson Reuters.

**Table 3:** Categorical breakdown and measurement metrics of the ESG score.

<b>Pillar of ESG Score</b>	<b>Category</b>	<b>Number of measurement metrics used by Thomson Reuters</b>
Environmental	Resource use	20
	Emissions	28
	Innovation	20
Social	Workforce	30
	Human rights	8
	Community	14
	Product responsibility	10
Governance	Management	35
	Shareholders	12
	CSR Strategy	9

Source : Environmental, Social and Governance (ESG) Scores from Refinitiv (*Refinitiv*, 2021).

This study also examines how the controversies regarding ESG operations and activities affect financial performance of corporations and in order to investigate that, the ESG controversies scores calculated by Thomson Reuters will be used in this thesis. The Thomson Reuters uses 23 different parameters to score the controversial events of the corporations such as any ongoing disputes, scandals, lawsuits, penalties for unfair or illegal operations and activities. Thomson Reuters also offers a more detailed ESG score of corporations named as ESG combined score (ESGC). ESGC is aggregate score of the performance of each pillar of ESG with overlay of ESG controversies score calculated by Thomson Reuters. The main difference between overall ESG score and ESGC is an addition of ESG controversies score with the overall ESG score. The relationship between ESG combined scores and the financial performance as well as market valuation of environmentally sensitive corporations will be examined in this study for the robustness of the analyses.

Thomson Reuters also provides a broad range of financial data and information of the corporations from every corner of the world beside the ESG data and information. The



financial data used in this thesis to analyze the financial performance has been extracted from the Thomson Reuters Eikon and Thomson Reuters DataStream.

## **4.2 Data Sample**

This thesis aims to analyze the association of ESG performance and financial performance of the environmentally sensitive corporations. Corporations belonging to industries such as energy, chemicals, heavy machineries, pulp and packaging, utilities, construction and mining are considered as sensitive for the environment because of their production and operation activities. These businesses are known to have a significant impact on the both environmental and societal sustainability (Halme & Huse, 1997). In addition, corporations whose production processes have high negative effect on the environment and the corporations which are considered as not sustainable by nature are often excluded by negative screening while investigating the firms performance and contribution of towards ESG (Dufwa & Hammarström, 2015). This thesis aims to fulfill the academic gap by studying the relation of ESG performance with corporate financial performance of environmentally sensitive companies. For this, ESG data of the corporations who use more natural resources in the production process and have highly negative influence in the ecological sustainability has been extracted from Thomson Reuters Eikon. ESG data of corporations from six different environmentally sensitive industry sectors based on their production and operational activities has been taken as sample for this study. The Table 4 shows the industries and the sectors of the environmentally sensitive corporations taken as sample in this study.

**Table 4:** List of environmentally sensitive industries

Sector	Industry name
Energy	<ul style="list-style-type: none"> <li>• Oil and gas drilling</li> <li>• Integrated oil and gas</li> <li>• Coal</li> <li>• Oil and gas exploration and production</li> <li>• Gas and oil related service and equipment</li> <li>• Uranium</li> </ul>
Chemicals	<ul style="list-style-type: none"> <li>• Agriculture Chemicals</li> <li>• Commodity Chemicals</li> <li>• Diversified Chemicals</li> <li>• Specialty Chemicals</li> </ul>
Mining and Construction	<ul style="list-style-type: none"> <li>• Iron and steel</li> <li>• Diversified mining</li> <li>• Construction materials</li> <li>• Specialty mining and metals</li> <li>• Mining support service and equipment</li> <li>• Gold</li> </ul>
Pulp, paper, and packaging	<ul style="list-style-type: none"> <li>• Forest and wood products</li> <li>• Paper packing</li> <li>• Paper products</li> </ul>
Heavy Machineries and Equipment	<ul style="list-style-type: none"> <li>• Industrial machinery and equipment</li> <li>• Heavy vehicle and machinery</li> <li>• Shipbuilding</li> <li>• Heavy electrical equipment and components</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Natural gas utilities</li> <li>• Electric utilities</li> <li>• Water and related utilities</li> <li>• Multiline utilities</li> </ul>

Source: Author and Thomson Reuters Eikon.

This thesis aims to compare the impact of ESG performance of the environmentally sensitive industries on their corporate financial performance both from developed and emerging countries market. We have followed the economy-wise country classification listed by the united nation to select country sample for our study. The united nation classifies the economic situations of countries into three different category such as developed economy countries, developing or emerging economy countries and countries those are in economic transition period based on the per capita gross national income (GNI), gross domestic product (GDP), growth rate and purchasing power parity (PPP) of the countries worldwide (*WESP-UN*, 2019). As sample countries from the developed economies, the G-7 countries are considered which are classified as “major developed economies” by the “united nation’s world economic situation prospects report” ( *WESP-UN*, 2019). The G-7 countries which are categorized as developed economies in our sample are Canada, France, Germany, Italy, Japan, United Kingdom and United States of America. While selecting the sample countries as emerging or developing economies, we have included 16 different leading emerging countries from different regions of the world as classified by the UN’s world economic situation prospects report (*WESP-UN*, 2019) according to their development growth rate, GDP and GNI. The countries that were included primarily in the emerging economies category of the sample population were, Brazil, Russia, India, China, South Africa, South Korea, Mexico, Malaysia, Chile, Turkey, Indonesia, Argentina, Qatar, Nigeria, Thailand, and United Arab Emirates.

The sample period of the study is ten years. ESG performance data of the corporations from 2009 to 2018 have been used to analyze and observe the relationship of corporate sustainable and socially responsible operations with financial performance of those corporations. In consistent of previous studies to observe the appropriate effect of ESG performance on the corporate financial performance and to remove the problem of endogeneity one-year lag has been used for the ESG performance data used in this studies (Atan et al., 2019; Choi & Wang, 2009; Manrique & Martí-Ballester, 2017; Saleh et al., 2011; Velte, 2017). Therefore, the financial data from 2010 to 2019 of the respective environmentally sensitive corporation has been taken from the Thomson Reuters ESG database.

ESG performance scores for 10 years of the corporations from environmentally sensitive industries as mentioned above has been extracted from the Thomson Reuters Eikon ESG

database. The primary dataset had ESG and financial data of 406 unique environmentally sensitive corporations operating business developed economies or G-7 countries. However, we had to drop Argentina, Qatar, Nigeria, Thailand, and United Arab Emirates from our sample list of emerging economies countries because of insufficient and missing data regarding ESG performance of the environmentally sensitive corporations located in these countries. After dropping these five countries we had ESG and financial data observations from 144 unique environmentally sensitive corporations locating and operating in 11 different leading emerging countries market worldwide.

After cleansing and eliminating the corporations having missing ESG or financial observations, our final sample consists of total 3830 observations from 305 unique corporations from developing countries market and 78 unique corporations from emerging countries market. The sample dataset has been described in more details in the Table 5 below.

**Table 5:** Industry and Region wise categorization of the sample

		Name of Industries and number of the corporations from each industry					
Country	Economic Region	Energy	Chemicals	Mining and Construction	Heavy Machineries and Equipment	Pulp, paper, and packaging	Utilities
Canada	Developed	30	1		1	2	5
France	Developed	2	2		6		2
Germany	Developed		4	6	3		2
Japan	Developed	2	19	14	32	1	12
Italy	Developed	4		1	2		5
United Kingdom	Developed	10	4	7	12	3	6
United States of America	Developed	32	7	11	23	6	26

(Table 5 continues)							
Brazil	Emerging	1	1	4	1	1	3
China	Emerging	6		5	3	1	3
Russia	Emerging	7		1	1		4
South Africa	Emerging	1		6			
India	Emerging	2					5
Chile	Emerging	1	1			1	
Mexico	Emerging		1	4			
South Korea	Emerging	2		1	3		1
Malaysia	Emerging			1			2
Indonesia	Emerging	2		1			
Turkey	Emerging	1					

Source: Author.

Further, the sample observations were arranged and organized as a balanced panel data set as to thoroughly analyze the relationships between the corporation's performances over the time-period, analyzing through panel data is more reasonable and acceptable.

### 4.3 Independent Variable

The independent variables used in this study are as described below.

#### ESG Score

The ESG database by Thomson Reuters is among the most extensive ESG databases and broadly used and accepted by both researchers and investors for its dependable and transparency scoring system. The ESG score is an aggregate score calculated by summing up the performance score of each individual pillar of the ESG operation of corporations. The Refinitiv overall ESG score (100%) is calculated with 34% weight score from environmental performance, 35.5% weight score from the social performance and 30.5% weight score from governance performance of a corporation. Thus, the aggregate ESG score reflects the overall

environmental, social and governance related initiatives and operations of a corporation in a given year. In addition, The ESG score assess and represents the level of corporate sustainability and corporate social responsibility performances of a corporation. To ensure the effectiveness and efficiency of the ESG performance measurement and scoring Refinitiv uses 186 different performance parameters under ten main categories to collect ESG operation and performance data and information from the yearly financial reports and publicly available disclosures of the relevant corporations. The minimum aggregate score of a corporation can be as low as 0 where the maximum ESG score can be 100 where the ESG score represents the overall ESG performance of a corporation based on their corporate sustainable and socially responsible initiatives and operations. In this thesis, we have taken the ESG score (aggregate) as independent variable representing the overall ESG performance of the environmentally sensitive corporations.

### **Environmental score**

The environmental score measures the corporate environmental performances of a corporation throughout the production and supply chain operations. The environmental score reflects commitment of a corporation towards the environmental and ecological stability and sustainability. The environmental score contributes 34% weights to the aggregate ESG score of a corporation. Thomson Reuters has divided the environmental score to further three major themes in order to record and measure the environmental initiatives and operations of a corporation in a more appropriate and effective way. The data and information for environmental score are collected from the annual company reports, websites, and other publicly available disclosure. Besides, Thomson Reuters uses the industry categorization as benchmark for the corporation while scoring the environmental performance. The measurement and scoring of the environmental pillar of ESG includes:

**Resource use:** With 20 measurement parameters it aims to assess the initiatives and activities by the corporations for using the natural resources in efficient ways during their production processes. It also measures the commitments and initiatives taken by the corporation in minimizing the use of natural energy resources and introducing eco-friendly production and

supply chain processes. The score from the resource use performance covers 11% weights of the total ESG score.

***Emissions:*** It records and measures the environmental performance of a corporation in terms of minimizing toxic emissions to the environment during the production process. Refinitiv uses 28 measurement metrics to analysis and estimate the corporation's capability and initiatives taken to reduce toxic chemicals discharge, air emissions, hazardous waste and water discharges and how effectively and efficiently can the corporation contribute to the biodiversity and ecological balance by reducing toxic and hazardous emissions and alleviate the negative impact of the production process in the society. The emission scores weights 12% in the overall ESG score.

***Innovation:*** Innovation score represents the corporation's research and development efforts and activities to introduce and implement environmentally efficient production and operation process, eco-friendly products, and services. 20 parameters are used to collect information and assess the dedication of the corporation to invent and implement environmentally friendly and efficient production and operation processes to minimize the environmental cost. In the overall ESG score, innovation score contributes 11% of weight.

### **Social score**

The social score contributes 35.5% weights of the overall ESG score. Social score represents the corporate social activities and corporation's relationship with both internal and external stakeholders. The social score measure and describe how successful the corporation is in terms of keeping good relation and gaining loyalty and trust from its employees, suppliers, consumers and the overall community where it operates the business. Thomson Reuters has divided the social score into 4 different main groups to record and assess the social activities and performance of a corporation. Data and information on social initiative and operations of the corporations are collected from the publicly available disclosures, annual reports, and websites. Alike the environmental score, Thomson Reuters use industry grouping as benchmark for the corporation to measure the social score. The scoring of the social pillar includes following:

**Workforce:** By using 30 measurement metrics, it assesses the effectiveness and commitment of the corporation in providing a safe and healthy workplace, in ensuring job satisfaction, in maintaining equality and diversity among the workforce and opportunities provided to the employees for their development. Workforce satisfaction is very essential and crucial for a successful corporation. Workforce score of the social pillar contributes 16% of the total weight of the aggregate ESG score.

**Human rights:** It reflects how respectful the corporation is towards the fundamental human rights. Thomson Reuters uses 8 parameters to collect data and measure the effectiveness and dedication of the corporation's management towards basic human rights through its social activities. The Refinitiv aggregate ESG score has 4.5% weight contribution from the human right score.

**Community:** It describes the responsibility and dedication of a corporation towards the wellbeing of the society. Thomson Reuters uses 14 performance measurement parameters to assess how much the corporation is contributing to preserve the general health of the community and public and how respectful the corporation is towards the local business culture and ethics. Community score has 8% weight in the aggregate ESG score.

**Product responsibility:** This score represents the capacity and capability of a corporation to produce products and services of good quality by bearing the safety and health of the consumer in mind. Corporation should also focus on responsible marketing operations and data privacy of the consumers. Having measured through 10 different parameters the product responsibility score contributes 7% weight to the total ESG score.

### **Governance score**

The governance score which contributes 30.5% of the total weight of the ESG score represents the structure of the board of the company, the rights of the shareholder, transparency, ESG and CSR reporting policies. The main objective of the activities and initiatives related to the governance pillar of ESG is to make sure that the management of the corporation acts and manages the corporation in accordance with the best interest of its owners and ensures the transparency in the reports of the corporation. Thomson Reuters collect data



regarding the corporate governance of a corporation from the publicly available reports but unlike the environmental and social pillar scores, the location of headquarters is considered as baseline in order to score the governance performance of the corporations. Thomson Reuters has also divided the governance performance into 3 main sub themes for collecting data and scoring process as discussed below:

***Management:*** Management score reflects the effective management of a corporation and how successfully can the corporation follow and maintain the corporate governance principals. There are 35 performance metrics used to measure and score the management and the management score contributes 19% of the total ESG score.

***Shareholders:*** It measures corporation's effectiveness and dedication towards preserving the rights of the shareholders in the corporation. By using 12 measurement metrics shareholder score measures the practice of equal shareholder's right and takeover decisions in the corporation. In the total ESG score, shareholder score has 7% weight.

***CSR strategy:*** This score represents the corporation's transparency practices as well as how effectively the corporations plan and implement different CSR and ESG strategies in order to integrate those with their daily operations or decision-making processes. Thomson Reuters use 9 different parameters for scoring CSR strategy of a corporation and the CSR strategy score contributes 4.5% to the aggregate ESG score.

### **ESG Controversies score**

The ESG controversies score is provided by the Thomson Reuters which represents if the corporation had any controversies or scandals related to ESG activities or operations in a given year. Thomson Reuters uses 23 different ESG scandal or controversy topics for scoring the ESG controversies for each corporation. All recent controversies and scandals are counted to build the score and Thomson Reuters collects these controversies and scandal news from all the online or offline news sources, NGO websites, from the stock markets or from other media sources. Facing any kinds of penalties, lawsuits, controversies, or scandals affect the ESG scores of the corporation by degrading the score and the negative impact of any ESG related controversies or scandal can be observed in the following years as well. Thomson

Reuters also apply severity weight to overcome the market capital bias problem since larger corporations are expected to have more positive/negative media attraction from the smaller cap corporations (*Refinitiv*, 2021). The default and minimum score of the controversy measurement is 0 and the maximum score is 100, where corporations having no controversies are given a score of 100.

#### **4.4 Dependent variables**

The dependent variables employed in the statistical analyses of this thesis are as discussed below.

##### **Return on Assets (ROA)**

Return on Assets (ROA) is an accounting-based measurement that can describe the financial performance of a corporation. ROA ratio indicates the financial health of a business. ROA is also considered as a profitability ratio which measures the operational efficiency of a corporation. ROA represents the profit a company earns in comparison to its total assets. It states how effectively and efficiently a corporation uses its overall assets in the production and operation process to generate revenue and thus represents the operational performance of a corporation. Corporations with a higher ROA have a greater chance of earning better returns on their investments. ROA has also been broadly used in the similar studies previously to examine the impact of ESG operations and strategies over the corporate financial performance (Bhaskaran et al., 2020; Dalal & Thaker, 2019; Dufwa & Hammarström, 2015; Hedqvist & Larsson, 2020; Langeland & Ugland, 2019; Manrique & Martí-Ballester, 2017; Ramić, 2019; Velte, 2017).

The ROA is calculated as:

$$ROA = \frac{\text{Net Income before financing costs}}{\text{Total Assets}} \quad (i)$$

The ROA ratios of environmentally sensitive corporations from the year 2010-2019 have been collected from the Thomson Reuters.

## **Return on Equity (ROE)**

Return on Equity (ROE) is an accounting-based measurement that indicates the financial performance of a corporation. ROE quantifies a corporation's profitability in relation to its shareholders' equity. ROE can provide a good picture on how efficiently and effectively the management of the corporation is using the equities to generate profit for the equity holders. ROE is also considered as a profitability ratio which reflects the financial performance of the corporation and the profit generating capability of the corporation. A growing and higher Return of Equity states that corporation is doing well in creating shareholders' value and worth for investments. ROE has also been used in good numbers of previous studies on ESG-corporate financial performance relationship (Atan et al., 2019; Bhaskaran et al., 2020; De Lucia et al., 2020; Ramić, 2019; Ting et al., 2019). The ROE is calculated as:

$$ROE = \frac{Net\ Income}{Total\ Equity\ of\ Common\ Shares} \quad (ii)$$

The ROE ratios of environmentally sensitive corporations from the year 2010-2019 have been collected from the Thomson Reuters.

## **Tobin's Q**

Tobin's Q refers to the market-based measurement of the corporation's financial performance which is widely used to analyze the market valuation of corporations. Market-based measurements like Tobin's Q allows investors to assess and determine the potentiality and effectiveness of investing in a particular firm based on present market condition. Tobin's Q assesses financial performance of a corporation by evaluating present market value of the corporation with the book value of the total assets or with the replacement value of the total assets. Along with measuring the corporation's market performance, Tobin's Q also considers the replacement cost of the corporation's total assets in long-term which is very crucial for sustainable investment practices. If any corporation have Tobin's Q ratio is less than one, it implies that the corporation is using its capital inefficiently indicating that the corporation generates lower value in equity market than the worth of its total assets in the current market. On the other hand, a Tobin's Q value greater than one demonstrates that

current market value of the corporation is greater than the value of corporation's total assets and the corporation tends to have higher growth with better investment opportunities. Tobin's Q has been broadly used in the academic researches to analyze market performance of corporations and previous studies also included Tobin's Q in their studies to examine ESG-financial performance relationship (Ahlklo & Lind, 2018; Atan et al., 2019; Dufwa & Hammarström, 2015; Eriksson & Asgodom, 2019; Kulakova, 2018; Manrique & Martí-Ballester, 2017; Ramić, 2019; Ting et al., 2019; Velte, 2017; Yu & Zhao, 2015). The Tobin's Q of the corporations is calculated as:

$$\text{Tobin's Q} = \frac{\text{Market value of the corporation}}{\text{Total Assets}} \quad (iii)$$

The data for Tobin's Q has been extracted from Thomson Reuters.

#### **4.5 Control Variables**

We have added control variables as corporation characteristics in the models of this thesis in line with the previous studies in order to avoid biased assessment and to get actual impact of ESG performance on corporate financial performance of environmentally sensitive corporations. The control variables used in this study are as discussed below.

##### **Size**

The size of the corporation can influence the ESG performance as large corporations have more money and resources to spend in the activities and operations like ESG. Large corporations also face pressures from the stakeholders for taking sustainable and socially responsible initiatives (Rettab et al., 2009). In addition, big corporations have the advantage of economies of scale which plays an essential part in their financial performance. On the other hand, small corporations may not have enough resources to invest in sustainable and socially responsible operations. By considering the potential impact of corporation's size on both ESG performance and corporate financial performance we have included the natural logarithm of total assets of the corporation referring the proxy for corporation size in the line

with the prior similar studies (Bhaskaran et al., 2020; Galbreath, 2013; Garcia et al., 2017; Laskar et al., 2017; Manrique & Martí-Ballester, 2017; Ting et al., 2019; Velte, 2017). The size of the corporations used as control variable in this study can be defined as:

$$\text{Size of the corporation} = \text{Natural Logarithm of Total Assets.} \quad (iv)$$

The data for the total assets of the corporations in our sample has been extracted from the Thomson Reuters database and natural logs of the total assets have been taken as the proxy for size of the corporation in the study.

### **Leverage**

Leverage of the corporations can also affect the ESG operations and financial performance. Leverage represents the debt ratio of a corporation. Obligation of regular debt payments could be keeping the management effective but on the other hand high leverage or high interest or debt payments could result in reduced cash flow for further investments such as ESG investments. (Harrison & Coombs, 2006) in their study found that corporations having leverage have comparatively lower ESG scores. We have included debt to equity ratio of the environmentally sensitive corporations in our regression model as leverage in line with similar studies carried out earlier in order to evaluate more appropriate results (Dufwa & Hammarström, 2015; Ramić, 2019 ; Ting et al., 2019; Bhaskaran et al., 2020).

Debt to equity ratio of a corporation is defined as:

$$\text{Debt to Equity} = \frac{\text{Total Debt}}{\text{Total Equity}} \quad (v)$$

The Debt-to-Equity ratios (as of end of the fiscal periods) of the corporations have been extracted from Thomson Reuters.

### **Unsystematic Risk**

The total debt to total assets ratio as the proxy for unsystematic risk of the corporations have also been included in the models of this study as control variable in accordance with the previous studies carried out on ESG-corporate financial performance relationship (Eriksson

& Asgodom, 2019; Kulakova, 2018; Langeland & Ugland, 2019; Velte, 2017). Corporations doing better in ESG performance might have lower firm risks perceived by the market which could bring them better lending situation (Velte, 2017). Thus, it is better to control the firm risk to observe unbiased results. The total debt to total assets ratio of the corporations has been used in this study as the proxy for firm risk or unsystematic risk of the corporations. The debt to assets ratio can be defined as:

$$\text{Debt to Assets} = \frac{\text{Total Debt}}{\text{Total Assets}} \quad (vi)$$

The Debt to Assets ratios of the corporations have been taken from Thomson Reuters database.

#### **4.6 Reliability and validity**

The acceptancy of a research depends on the validity and reliability of the research work. Reliability requires conducting research in the proper manner and conducting the research in such a way that the outcomes can be trustworthy for the readers. Besides, High reliability of a research guarantees that the analysis is conducted in a transparent and systematic way (Greener, 2008). As secondary data used in this research has been extracted from a reliable data providing agency like Thomson Reuters, the sample data is expected to be reliable. Nevertheless, as far as the ESG data are concerned, different ESG rating agencies use different methodologies for scoring the ESG performance of the corporation and that is why identical outcomes cannot be confirmed if ESG ratings from different data provider is being used for similar study. In addition, this study follows quantitative approach of research using data from reliable and dependable data source which also reduces the researcher's bias in this thesis. However, since the sample of this thesis only includes data of listed environmentally sensitive corporations from above mentioned developed and emerging countries markets, a general conclusion for the corporations except for the corporations included in the sample cannot be drawn from the results of this study. The issue of internal validity is also important which deals with the causality problem and correlation can often be confused with causation and likewise. Again, as the study only investigate the environmentally sensitive corporations and uses only one particular type of ESG performance rating (Thomson Reuters ESG score)

the results of this study cannot be generalized for other contexts. To ensure highest level of reliability and validity, we have attempted to be as impartial and transparent as possible in collecting data as well as in the statistical analyses and analysis approach chosen and the data obtained have been cautiously scrutinized.

#### 4.7 Designing the regression models

In order to investigate the possible relationship of ESG performance of the environmentally sensitive corporations with their corporate financial performance and to respond to the hypothesizes of this study we have designed and used regression models. Two different model has been designed where Model 1 aims to examine the relationship of the overall ESG performance as aggregate ESG score with the corporate financial performances of the corporations and Model 2 investigates the correlation of each individual pillar's performance of the ESG and ESG controversies with the corporate financial performance. Since ESG performances do not affect the corporate financial performance immediately (Choi & Wang, 2009), one year lag for the ESG performance scores has been used in the regressions models of this study. Using one year lag of the ESG performance scores will also help to analyze the impact of the sustainable and socially responsibility performances over the corporate financial performance of the corporation more effectively (Atan et al., 2019; Manrique & Martí-Ballester, 2017; Velte, 2017). Therefore, the financial performance of corporation  $i$  at time  $t$  has been compared with ESG performance of the corporation  $i$  at time  $t-1$  to observe the impact of ESG performance over financial performance of environmentally sensitive corporations. The regression models used in this thesis are as described below:

##### Model One

The first regression model aims to investigate the impact of overall ESG performance score on corporate financial performance.

$$ROA_{it} = \alpha + \beta_1 ESGScore_{it-1} + \beta_2 ControlVariables_{it} + \varepsilon_{it} \dots\dots\dots (1.1)$$

$$ROE_{it} = \alpha + \beta_1 ESGScore_{it-1} + \beta_2 ControlVariables_{it} + \varepsilon_{it} \dots\dots\dots (1.2)$$

$$Tobin'sQ_{it} = \alpha + \beta_1 ESGScore_{it-1} + \beta_2 ControlVariables_{it} + \varepsilon_{it} \dots\dots\dots (1.3)$$

Here in Model 1.1,  $ROA_{it}$  is the returns on assets of corporation  $i$  at the time  $t$  which explains the operational performance of the corporation, in Model 1.2  $ROE_{it}$  refers to the return on equity of corporation  $i$  at time  $t$  which reflects the financial performance of the corporation based on accounting-based measurement, in Model 1.3  $Tobin'sQ_{it}$  presents the market-based measurement of financial performance of corporation  $i$  at time  $t$ .  $ESGScore_{it-1}$  in all the models above represents the overall ESG performance score of corporation  $i$  at the time  $t-1$ , which is the extracted as the aggregate ESG score from the ESG database of Thomson Reuters.  $ControlVariables_{it}$  refers to the control variables which are natural log of total assets referring to the size of the corporation, debt to equity referring to the leverage and debt to assets as the unsystematic risk of corporation  $i$  at the time  $t$ .  $\varepsilon_{it}$  indicates the error term in the regression model.

## Model Two

The regression model two investigates the association of the performance of each individual pillar of ESG as well as the link of ESG controversies with the corporate financial performance of the environmentally sensitive corporations.

$$ROA_{it} = \alpha + \beta_1 Environmental_{it-1} + \beta_1 Social_{it-1} + \beta_1 Governace_{it-1} + \beta_1 ESG\ Controversies_{it-1} + \beta_2 ControlVariables_{it} + \varepsilon_{it} \dots\dots\dots (2.1)$$

$$ROE_{it} = \alpha + \beta_1 Environmental_{it-1} + \beta_1 Social_{it-1} + \beta_1 Governace_{it-1} + \beta_1 ESG\ Controversies_{it-1} + \beta_2 ControlVariables_{it} + \varepsilon_{it} \dots\dots\dots (2.2)$$

$$Tobin'sQ_{it} = \alpha + \beta_1 Environmental_{it-1} + \beta_1 Social_{it-1} + \beta_1 Governace_{it-1} + \beta_1 ESG\ Controversies_{it-1} + \beta_2 ControlVariables_{it} + \varepsilon_{it} \dots\dots\dots (2.3)$$

Similarly in Model 2.1,  $ROA_{it}$  is the returns on assets of corporation  $i$  at the time  $t$  which explains the operational performance of the corporation, in Model 2.2  $ROE_{it}$  refers to the return on equity of corporation  $i$  at time  $t$  which reflects the financial performance of the corporation based on accounting-based measurement, in Model 2.3  $Tobin'sQ_{it}$  presents the market-based measurement of financial performance of corporation  $i$  at time  $t$ . In all the models above,  $Environmental_{it-1}$  represents the score related to the environmental



activities of corporation  $i$  at the time  $t-1$ ,  $Social_{it-1}$  represents score related to the social operations of corporation  $i$  at the time  $t-1$ ,  $Governance_{it-1}$  reflects corporate governance performance score of corporation  $i$  at the time  $t-1$ ,  $ESG\ Controversies_{it-1}$  reflects the ESG scandal or controversies score of corporation  $i$  at the time  $t-1$ . The  $ControlVariables_{it}$  refers to the control variables which are natural log of total assets referring to the size of the corporation, debt to equity referring to the leverage and debt to assets as the unsystematic risk of corporation  $i$  at the time  $t$ .  $\varepsilon_{it}$  indicates the error term in the regression model.

Firstly, the regression analysis will be carried out on the overall sample to investigate the ESG and corporate financial performance relationship of the environmentally sensitive corporations. Further, in order to compare the difference on how the ESG performance of the environmentally sensitive corporations affect corporate financial performance of corporations from developed and emerging countries, the regression models will be run only for the sample corporations from developed and emerging countries' corporation separately and the results will be observed for discussion on how the ESG-corporate financial performance for environmentally sensitive corporations differ in developed and emerging countries markets. Following section describes the regression variables briefly with the time period and description of the variables.

#### **4.8 Regression Variables**

The variables of our regression models and their description are as presented in the Table 6 in the following page.

**Table 6:** Regression variables at a glance

Variables		Description	Period
Independent variables	ESG Score	Aggregate ESG score of the corporation as calculated by Thomson Reuters ESG database	2009 to 2018
	Environmental	Environmental performance score of the corporation by Thomson Reuters.	2009 to 2018
	Social	Social performance score of the corporation by Thomson Reuters.	2009 to 2018
	Governance	Corporate governance performance score of the corporation by Thomson Reuters.	2009 to 2018
	ESG Controversies	ESG related scandals and controversies of the corporation scored by Thomson Reuters.	2009 to 2018
Dependent variables	ROA	$\frac{\text{Net Income before financing costs}}{\text{Total Assets}}$	2010 to 2019
	ROE	$\frac{\text{Net Income}}{\text{Total Equity of Common Shares}}$	2010 to 2019
	Tobin's Q	$\frac{\text{Market value of the corporation}}{\text{Total Assets}}$	2010 to 2019
Control variables	Size	Natural log of the total assets of the corporations.	2010 to 2019
	Leverage	$\frac{\text{Total Debt}}{\text{Total Equity}}$	2010 to 2019
	Unsystematic Risk	$\frac{\text{Total Debt}}{\text{Total Assets}}$	2010 to 2019

Source: Thomson Reuters Eikon and Author.

The statistical software STATA 13 has been used in order to carry out the empirical analyses of this thesis. The findings of the empirical analyses and the results as well as the findings of the regressions are presented in the chapter 5.

## 5. EMPIRICAL RESULTS AND FINDINGS

The empirical analyses of the thesis are presented in this chapter. This chapter analyzes hypothesis of this research based on the empirical findings as well and discusses the theoretical background of these findings.

### 5.1 Descriptive Statistics

The final panel data of this study consists of ESG and financial data of total 383 unique corporations from 7 developed countries' market and 11 emerging countries' market for 10 fiscal years. The descriptive statistics of that variables are as presented in the Table 7 below.

**Table 7:** Summary Statistics (overall sample)

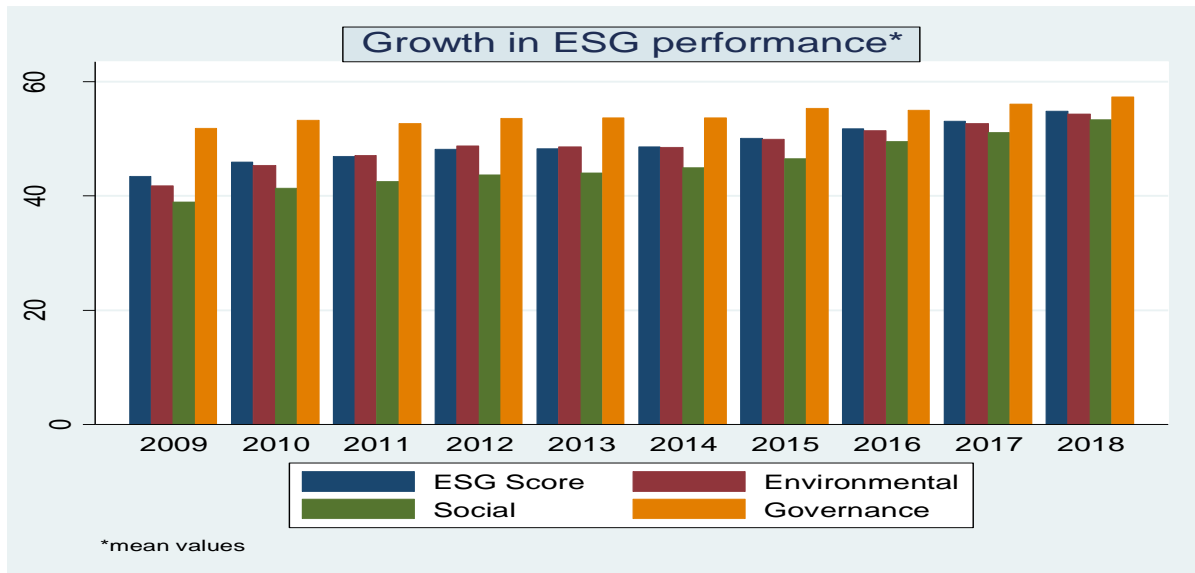
Variable	N	Mean	Std. Dev.	Median	Min.	Max.	Skew.	Kurt.
ESG Score	3830	49.072	20.196	49.34	1.24	92.11	-0.11	2.249
Environmental	3830	48.825	26.392	50.845	0.00	97.15	-0.215	2.009
Social	3830	45.561	23.634	43.245	0.05	98.11	0.151	2.084
Governance	3830	54.237	22.677	56.34	1.24	98.73	-0.222	2.049
ESG Controversies	3830	88.486	24.728	100	0.88	100	-2.158	6.413
ROA	3830	0.033	0.847	0.04	-31.25	32.33	-4.156	1168.91
ROE	3830	0.094	0.595	0.11	-29.75	1.39	-41.64	1927.20
Tobin's Q	3830	0.869	0.892	0.61	0.01	9.58	3.507	21.01
LN_Total Assets	3830	23.062	1.419	22.98	15.9	26.74	-0.122	3.652
Debt to Equity	3830	1.091	2.224	0.64	0.00	50.02	11.141	176.85
Debt to Assets	3830	0.337	1.261	0.26	0.00	24.95	19.027	368.94

Our balanced panel has total 3830 observations from 383 different corporations for 10 years of period. As the table shows, the maximum ESG score in the sample is 92.11 and the minimum ESG score of the corporations in the sample is 1.24. The mean of the ESG scores in our sample is almost similar as the median of the ESG scores which is 49.07. Most of the

ESG score observations in our sample lie between 28.876 to 69.268 since the mean of ESG is 49.072 and the standard deviation is 20.196. Comparatively low standard deviation of ESG scores as compared with the ESG score's mean ensures the reliability of the ESG score estimation. The average Environmental score in the observation is 48.825 with minimum value of 0 and maximum 97.15. The maximum value of social and governance scores in the observation are almost similar. The mean of the social score is 45.561 with minimum value of 0.05 while the mean for the governance score is 54.237 with minimum value of 1.24. It is interesting that the median of the ESG controversies score is 100 while the mean of the ESG controversies is 88.486 with minimum 0.88 and maximum value of 100. The average value of ROA is 0.033 with slightly higher median of 0.04. The mean ROE in our sample is 0.094 while the median for ROE is also slightly higher which is 0.11. The maximum value of Tobin's Q in our sample is 9.58 while the minimum is 0.01. Average Tobin's Q value of the corporations in our sample is 0.869 which represents that the corporation is trading as undervalued in the markets and the market value of the corporations worth lesser than the replacement cost or current value of total assets of the corporations. As the summary statistics of the control variables of our models represents, the average value of the LN of total assets which has been considered as proxy for the size of the corporations is 23.062 whilst the median of the LN of total assets is 22.98 with minimum value of 15.9 and maximum 26.74. The average Debt to Equity value in our sample is 1.091 with median of 0.64 and the average Debt to Asset is 0.337 with median value of 0.26. The minimum value for both Debt to Equity and Debt to Assets in our sample is 0 while the maximum value is 50.02 and 24.95. The wide interval between the minimal and maximum values indicates normal distribution of data in the sample. Overall, the standard deviation of almost all the variable is less than the respective mean values which enhances the accuracy of the models used in this study.

The figure 2 pictures the growth in the ESG performance scores of the environmentally sensitive corporations in our sample over a time-period of 10 years. The Figure 2 shows that, there is an increasing concern regarding the ESG scores and the ESG disclosure among the investors and the corporations' average ESG performance scores have also increased over the time indicating that the environmentally sensitive corporations are enhancing and expanding their ESG related initiatives and activities.

**Figure 2: ESG performance growth of the corporations in sample**



Source: Author.

The summary statistics of our sample observations by economic region is as presented in the Table 8.

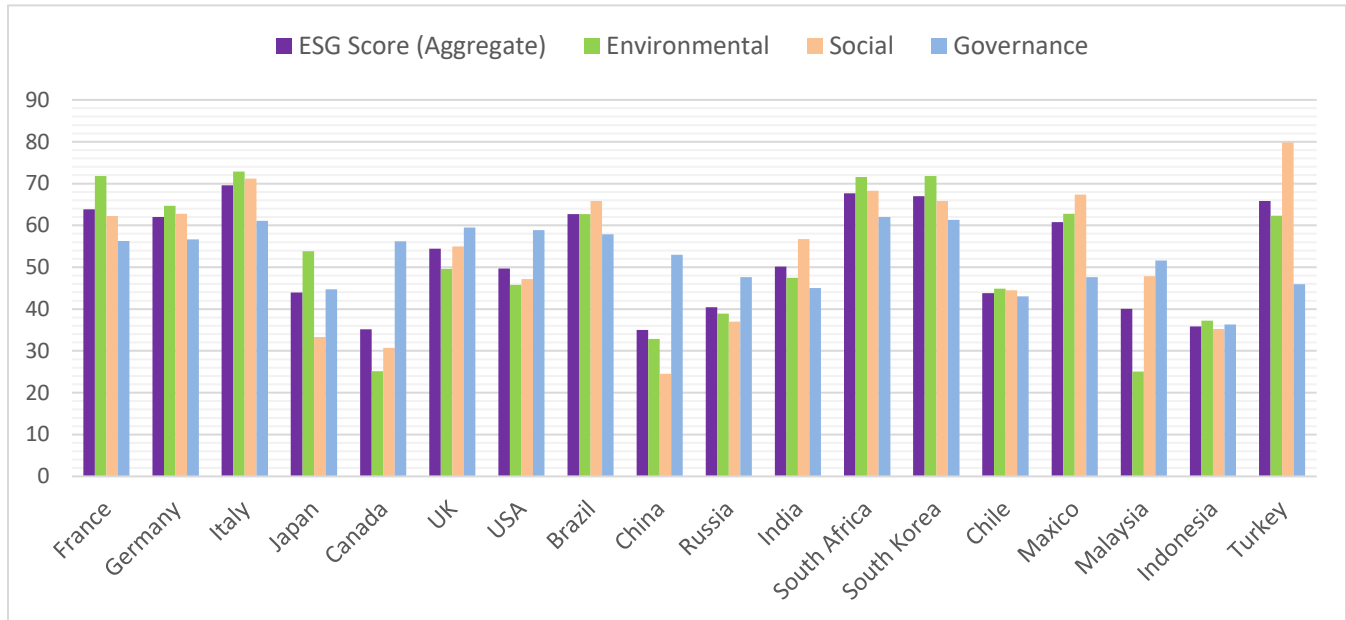
**Table 8: Summary Statistics (Region wise)**

Region	Obs.	No. of Comp anies	ESG Score		Environme ntal		Social		Governance		ESG Controvers ies		ROA		ROE		Tobin's Q	
			Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Developed Countries	3050	305	48.93	20.40	48.78	27.10	44.81	23.30	54.78	22.93	88.80	24.45	0.02	0.94	0.09	0.66	0.88	0.89
Emerging Countries	780	78	49.59	19.37	48.97	23.41	48.48	24.69	52.11	21.50	87.22	25.74	0.05	0.06	0.10	0.14	0.80	0.88

The Table 8 above shows the summary statistics of the ESG and financial performance data observations from 305 environmentally sensitive corporations from 7 most developed countries and 78 environmentally sensitive corporations from the 11 emerging countries. The

Figure 3 below shows and compares the average ESG performance scores of the corporations from the above mentioned developed and emerging countries.

**Figure 3:** Average ESG performance score of the corporations by country



Source: Author.

As the graph shows, the corporations from Germany, France and Italy have higher ESG performance scores than the others in the developed countries context. On the other hand, from emerging countries, corporations from South Africa, South Korea, Mexico and Brazil have higher ESG performance ratings from the others. However, the environmentally sensitive corporations headquartered in Canada showed comparatively poorer ESG performance than the other corporations from the developed countries' market. Contrarily, from the emerging countries' markets, corporations in China, Indonesia and Russia have lower ESG performance rating as compared to the rest.

As mentioned in the chapter 4, six different industries have been chosen for this study as environmentally sensitive based on their production and operational activities which are considered as sensitive to the environment and ecological balance. Table 9 below presents the summary statistics of the corporations in our sample based on their industry.

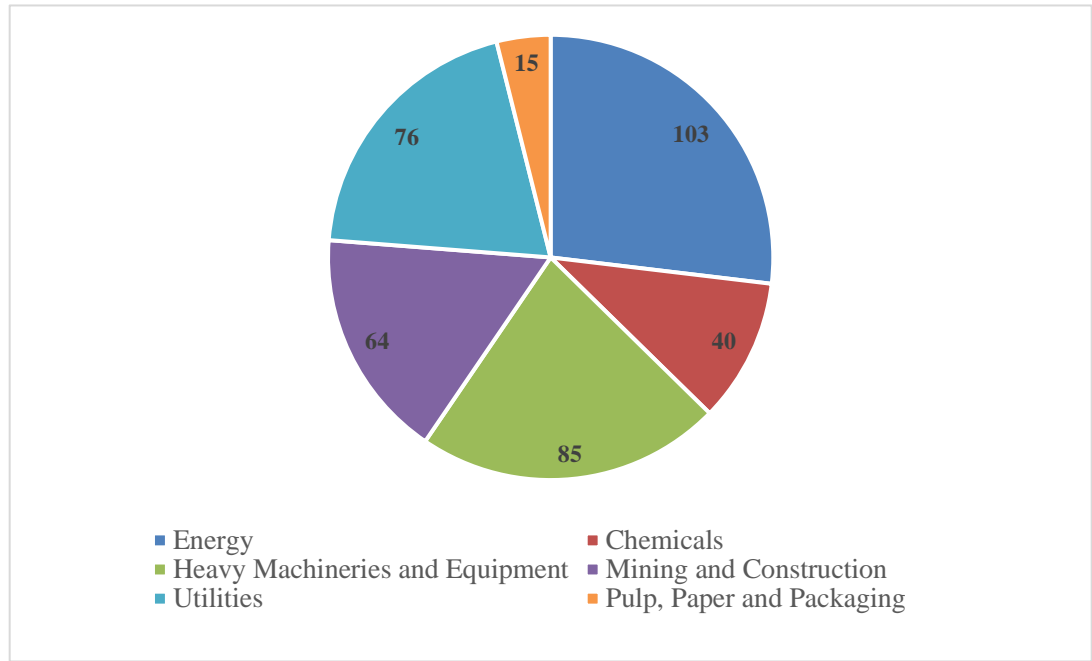
**Table 9:** Summary Statistics (Industry wise)

Industry Name	Obs.	No. of Companies	ESG Score		Environmental		Social		Governance		ESG Controversies		ROA		ROE		Tobin's Q	
			Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Energy	1030	103	45.60	21.37	40.90	27.54	43.31	23.90	55.34	23.48	86.62	26.57	-0.01	1.63	0.03	1.11	0.81	0.72
Chemicals	400	40	51.90	16.28	56.09	19.37	46.76	21.96	53.05	21.00	94.51	17.03	0.06	0.04	0.14	0.14	1.06	0.92
Heavy Machineries and Equipment	850	85	49.65	18.49	50.77	25.87	46.68	22.39	51.82	21.61	90.38	22.64	0.06	0.05	0.14	0.13	1.20	1.13
Mining and Construction	640	64	46.95	23.56	47.03	29.15	43.17	27.07	52.94	23.09	85.73	27.49	0.03	0.06	0.07	0.17	0.80	0.78
Utilities	760	76	53.39	18.58	55.30	23.72	49.18	22.28	55.93	22.91	86.92	25.87	0.03	0.09	0.10	0.10	0.53	0.75
Pulp, Paper and Packaging	150	15	49.15	17.47	47.56	22.40	43.19	21.01	60.33	22.24	94.04	16.31	0.04	0.03	0.12	0.40	0.77	0.48

The industry wise breakdown of the corporations from our overall sample is presented in the Figure 4 below.



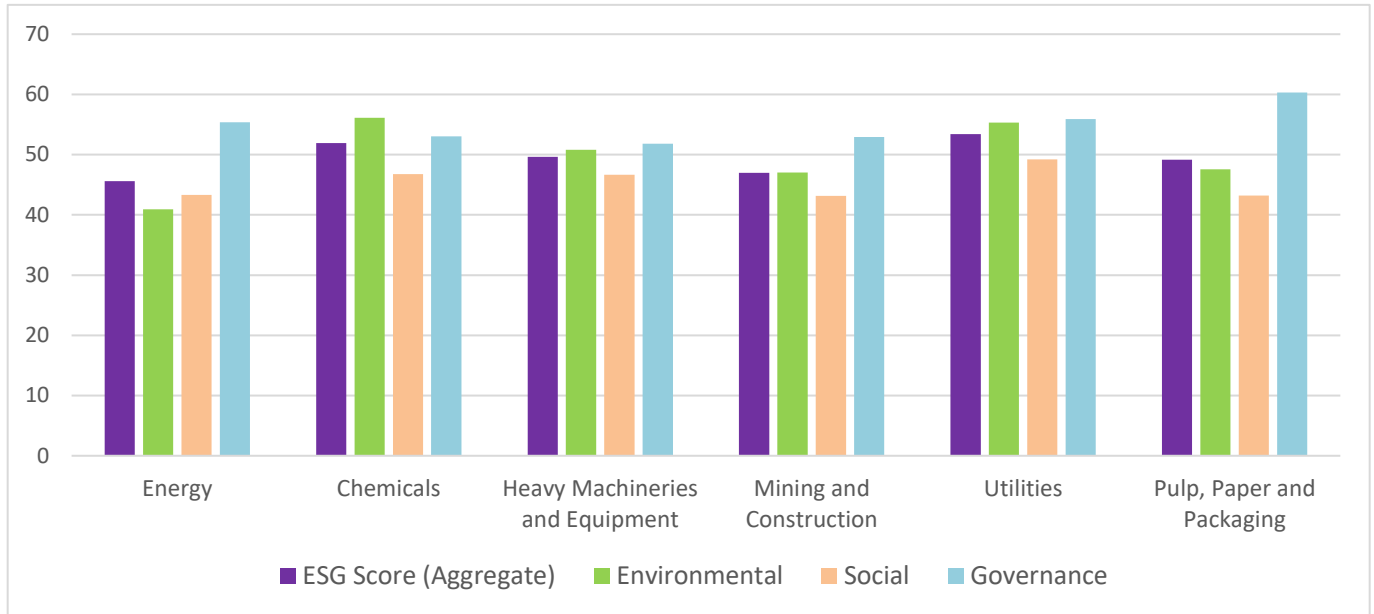
**Figure 4:** Industry-wise breakdown of the overall sample



Source: Author.

The Figure 4 shows that the corporations from energy industries are the most in number and the corporations from the pulp, paper and packaging are the least in number in our whole sample of environmentally sensitive corporations. The Figure 5 below presents the ESG performance scores of the corporations by their industry and the differences in ESG performance scores of the corporations from industry to industry.

**Figure 5:** Average ESG performance score of the corporations by Industry



Source: Author.

As the graph expresses, the average ESG performance scores of the environmentally sensitive industries are almost similar to each other. It creates the perception that the majority of corporations are content with undertaking only enough ESG initiatives and operations to remain competitive in markets. However, among these industries, the corporations belonging to the energy industry have comparatively lower environmental and social performance score while the corporation representing the utilities and chemicals industry have higher environmental performance score. The corporations from utilities industry also shows slightly higher social performance score and the corporations doing business in the pulp, paper and packing sector shows higher performance score in corporate governance practice.

## 5.2 Correlation Matrix

The Pearson correlation matrix of the variables in our panel data is as presented in the Table 10.

**Table 10: Pearson Correlation Matrix**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) ESG Score	1.000										
(2) Environmental	0.881* (0.000)	1.000									
(3) Social	0.893* (0.000)	0.693* (0.000)	1.000								
(4) Governance	0.632* (0.000)	0.340* (0.000)	0.416* (0.000)	1.000							
(5) ESG Controversies	-0.281* (0.000)	-0.227* (0.000)	-0.293* (0.000)	-0.147* (0.000)	1.000						
(6) ROA	0.034* (0.048)	0.035* (0.038)	0.031 (0.066)	0.008 (0.639)	-0.007 (0.682)	1.000					
(7) ROE	0.061* (0.000)	0.053* (0.002)	0.068* (0.000)	0.015 (0.381)	-0.017 (0.314)	0.465* (0.000)	1.000				
(8) TobinsQ	-0.112* (0.000)	-0.183* (0.000)	-0.036* (0.036)	-0.035* (0.041)	0.094* (0.000)	0.027 (0.097)	0.070* (0.000)	1.000			
(9) LN_TotalAssets	0.486* (0.000)	0.482* (0.000)	0.408* (0.000)	0.259* (0.000)	-0.326* (0.000)	0.032 (0.059)	0.054* (0.001)	-0.327* (0.000)	1.000		
(10) DebtToEquity	0.046* (0.004)	0.054* (0.001)	0.031 (0.052)	0.019 (0.229)	-0.022 (0.180)	-0.001 (0.972)	0.013 (0.451)	-0.144* (0.000)	0.153* (0.000)	1.000	
(11) DebtToAssets	0.044* (0.006)	0.030 (0.063)	0.042* (0.010)	0.041* (0.010)	0.006 (0.703)	0.000 (0.977)	0.001 (0.939)	-0.059* (0.001)	0.092* (0.000)	0.598* (0.000)	1.000

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

As the outcomes of the correlation matrix present, it is not surprising to observe that the ESG score is significantly correlated with environmental, social and governance scores as the ESG score is the aggregate score of the scores of its pillars. The environmental (0.881\*) and social (0.893\*) scores have higher and positive correlation with the overall ESG score than the governance score (0.632\*) which explains that giving more importance, corporations are continuously adopting and implementing environmental and social related initiatives and operations. The highly significant correlation of environmental and social scores with ESG score also indicates that environmental and social factors contribute significantly more to overall ESG score than the governance factor does. The environmental and social scores are significantly correlated as well (0.693\*) but even though the governance has positive and significant correlation with the environmental (0.340\*) and social (0.416\*) scores it is worth noting that governance related initiatives and performances appears to be more separated from environmental and social initiatives and performances. It is interesting that the ESG controversies scores of the environmentally sensitive corporations are significantly and negatively correlated with the overall ESG score as well as with the individual pillar scores.

ROA has significant and positive correlation with the overall ESG Score (0.034\*) and environmental score but does not show any significant correlation with the social and governance pillar score. On the other hand, ROE is significantly and positively correlated with ESG score (0.061\*), environmental score (0.053\*) and social (0.068\*) scores but ROE does not have any significant correlation with the governance score. Both ROA and ROE does not have correlation with the ESG controversies in a significant way. However, ROA and ROE is correlated significantly which is expected as both are accounting-based measurement to assess the financial performance of a corporation. Further, Tobin's Q has significantly negative correlation with the overall ESG score (-0.112\*) and with all the three individual pillar score of ESG. Surprisingly, ESG controversies are correlated with Tobin's Q with significance (0.094\*) which explains that the ESG controversies do have an effect on the market and market valuation of the environmentally sensitive corporation. Tobin's Q is correlated positively with ROA and ROE which represents the association of accounting-based and market-based valuation.

As the control variables of the thesis, natural log of total assets which is employed as a proxy for the size of the corporations has positively significant correlation with the ESG score

(0.486\*) and with all the three pillars of ESG. This indicates that bigger corporations have higher ESG performance scores. It can also be perceived that bigger corporations have larger resources to invest in more ESG initiatives than the smaller corporation and thus have higher ESG performance ratings. The correlation between environmental pillar and the size of the corporation is relatively higher (0.482\*) which means that large environmentally sensitive corporations focus more on environmental initiatives and operations. Interestingly, the size of the corporations has negative correlation (-0.326\*) with the ESG controversies scores. The size of the corporations does not show any significant relationship with ROA but significantly and positively correlated with the ROE which expresses that the larger corporations have higher ROE comparatively to the smaller corporations. Tobin's Q have significantly negative correlation (0.327\*) with the size of the corporation which is not in accordance with the expectation since it goes against the economies of scale theory which says large corporations have better returns and market performance as they have the advantage of economies of scale.

The debt to equity and debt to asset which represents the leverage and unsystematic risk of the corporations has significantly positive association (0.046\* and 0.044\*) with the overall ESG score which means that when corporations are heavily in debt, they have higher ESG performance scores. Debt to Equity as proxy for leverage has positive correlation with the environmental score (0.054\*) but no significant score whereas debt to asset which has been used as a proxy for unsystematic risk of the corporations has significantly positive correlation with the social (0.041\*) and governance score (0.041\*) but no significant association with the environmental score only. The leverage of the corporations in our sample does not have any significant correlation with ROA and ROE but negatively and significantly correlated with the Tobin's Q (-0.144\*) which means that corporations with high leverage are not valued positively by the market. Also, positive correlation of Tobin's Q with debt to asset suggests that high unsystematic risk may also cause lower market valuation for the environmentally sensitive corporations. The positive and significant correlation of size of the corporations with debt to equity and debt to assets explains that bigger corporations are more indebted and have higher unsystematic risk comparatively to the smaller corporations. However, it is worth to note that, using correlation matrix only conclusions cannot be developed since no other effects are considered to analyze how different variables interact with each other.

### 5.3 Multicollinearity Test

We have examined the multicollinearity of variables in our model. We have used the variance inflation factor (VIF) test in order to investigate the multicollinearity issue in our model. The variance inflation factor or VIF test demonstrates the volume upon what the influence of one independent variable could be described by another. The minimum possible value for variance inflation factor is 1.00 and if the VIF value cross 5.00, it symbolizes serious issue of multicollinearity among the variables (Studenmund, 2014). The finding of our VIF test is presented in the Table 11.

**Table 11:** Variance Inflation Test

Models	MODEL 1 (ROA)	MODEL 2 (ROA)	MODEL 1 (ROE)	MODEL 2 (ROE)	MODEL 1 (Tobin's Q)	MODEL 1 (Tobin's Q)
Variables	VIF	VIF	VIF	VIF	VIF	VIF
ESG Score	1.311		1.311		1.311	
Environmental		2.127		2.127		2.127
Social		2.149		2.149		2.149
Governance		1.228		1.228		1.228
ESG Controversies		1.162		1.162		1.162
LN_Total Assets	1.339	1.442	1.339	1.442	1.339	1.442
Debt to Equity	1.582	1.585	1.582	1.585	1.582	1.585
Debt to Total Assets	1.557	1.562	1.557	1.562	1.557	1.562
Mean VIF	1.448	1.608	1.448	1.608	1.448	1.608

As the table demonstrates, the social and environmental variables have the highest VIF values (2.149 and 2.127) among all our variables in our sample. However, the VIF value of all the variables in our models are less than 5.0 which implies that there is no severe issue of multicollinearity across the variables in our panel. We can conclude from the results of the (VIF) test that variables in our model is free from any serious multicollinearity issues.

## 5.4 Model Selection Tests

There are three major and most used types of models for panel data regression analysis as Pooled OLS, Random effect model and Fixed effect model. In Pooled OLS regression model, the time-series and cross-sectional observations of dependent variables are pooled together by not taking any advantages from the features of panel data set (Hill et al., 2018). The Random Effects Model accounts for individual effects in the regression model and employs a single intercept for each individual. It is presupposed in the random effect model that, individuals are chosen randomly and that their individual effects are random rather than fixed (Hill et al., 2018). On the other side, in Fixed effect model, it is assumed that the panel data contains omitted variables that vary across individuals and not throughout time period. Fixed effect model enables the adjustment of time-invariant unobserved entity features that are correlating with the reported independent variables. Since we have panel data set for analyzing our hypothesizes, we have to choose the appropriate panel data regression model for our study. In order to select the right regression model for we have carried our F test and Breusch-Pagan LM test.

The F test helps to decide where Pooled OLS model or the Fixed affect model is appropriate for the regression analysis. As per the null hypothesis of F test, the pooled OLS model is more appropriate for regression analysis, whereas the alternative hypothesis claims that the fixed effect model is more appropriate. If the p-value of the F test is lower than the significance level of 5% we reject the null hypothesis and accept the alternative hypothesis which is Fixed effect model is more suitable for our regression model and vice versa. The results from the F test shows, for all our models the null hypothesis of the F test is rejected which means Pooled OLS method is not suitable model for our regression models hence we should use fixed effect model rather than using Pooled OLS method for our panel data.

Next, we have checked whether there are random effects in our models through the Breusch-Pagan LM test. The Breusch-Pagan LM test's null hypothesis claims the error variance to be zero for every entity or time period, indicating that the Pooled OLS method is suitable., and the alternative hypothesis is there are random effects in the models and therefore Random effect model is more appropriate. If the p-value of Breusch-Pagan LM test is less than the significance level of 5% we reject the null hypothesis and accept the alternative hypothesis which is Random effect model is more suitable for our regression model and vice versa. The results of the

Breusch-Pagan LM test reveals that all the p values are less than 5% significance level and that means there is significant random effects in our models and using Random effect model is preferable over Pooled OLS model. Therefore, we reject the null hypothesis and accept that Random effect model is more preferable for our panel data analysis rather than Pooled OLS method of analysis.

#### **Hausman test:**

Since the F test and the Breusch-Pagan LM test outcomes proved that Pooled OLS method is not suitable and preferable method for our regression models and there is mixed effects and random effects in our panel data, we proceed to run the Hausman test which describes whether Fixed effect or Random effect model is strongest and more suitable for our models. The Hausman test will allow us to choose the best suitable model among the Fixed effect and Random effect Models for our panel data analysis. The Hausman test's null hypothesis is that the Random effect model is more suitable for regression analysis, whereas the alternative hypothesis is that the Fixed effect model is more suitable and accurate for the regression analysis. If the P value of the Hausman test is greater than 5%, we will accept null hypothesis and if the P value is lower than 5%, we will reject null hypothesis and accept alternative hypothesis. The results of the Hausman test carried out are presented in the Table 12.

**Table 12: Hausman test**

	MODEL 1.1	MODEL 1.2	MODEL 1.3	MODEL 2.1	MODEL 2.2	MODEL 2.3
Chi-square test value	3.016	19.646	107.587	5.522	5.522	148.178
P-value	0.555	0.001	0.000	0.597	0.597	0.000

As the table shows, we must accept the Null hypothesis and run Random effect model regression for both of the models having the dependent variable ROA, whereas for the models having Tobin's Q as dependent variable we reject the null hypothesis in favor of the alternative hypothesis, which states that a fixed effect model is more appropriate for the regression analysis. However, model 1.2 of the dependent variable ROE rejects the null hypothesis of



Random effect model as being suitable but for the model 2.2 of the dependent variable ROE, Random effect model appears to be more appropriate. Depending on the results from above tests, we have selected the appropriate models for the regression analysis of the study.

### **5.5 Model Diagnostic Tests**

After selecting the appropriate models for our panel, we have carried out some model diagnostics tests. In order to check the heteroscedasticity in the models Breusch-Pagan heteroskedasticity test has been carried out. The null hypothesis of Breusch-Pagan heteroscedasticity test is the residuals are homoscedastic and the alternative hypothesis is that the residuals are heteroscedastic. The Breusch-Pagan heteroskedasticity test shows that, the probability values for all the models are lower than 5% implying that we have to reject the null hypothesis of residuals as being homoscedastic and instead we accept the hypothesis that residuals are heteroscedastic in our model.

Next, we have checked the cross-sectional dependency of the variables in our panel data. We have run Pesaran cross-sectional dependency test to investigate the cross-sectional dependency in the models. The null hypothesis of the Pesaran CD test states that, there is no cross-sectional dependency while the alternative Hypothesis is that there is cross-sectional dependency in the variables of the model. According to the test results the P values are less than 5% which states that we must reject the null hypothesis and accept the alternative hypothesis that there in the cross-sectional dependency the sample of the model of this study.

Finally, we have checked the serial correlation and autocorrelation in our panel data. Wooldridge's test for first-order autocorrelation was carried out to observe whether there is serial correlation and autocorrelation exists in our model. The null hypothesis of the Wooldridge test for autocorrelation states there is no first-order autocorrelation and the alternative Hypothesis for this test is there is first-order autocorrelation. The results show that, there is first-order autocorrelation for both of the models where ROE and Tobin's Q is the dependent variable as the probability here is less than 5%. However, we cannot reject the null hypothesis for both models having ROA as dependent variable where the probability value is more than 5% and depicts the model as free from first-order autocorrelation. The detailed results of the model diagnostic tests are presented in the appendix of this study.

Due to the fact that, heteroscedasticity, cross-sectional dependency and first-order autocorrelation is present in the sample of our study, regressions with Driscoll and Kraay standard errors have been performed in this study. The (Driscoll & Kraay, 1998) standard errors are heteroscedasticity compatible and this standard error estimation is supposed to be robust to the autocorrelation, and cross-sectional dependency. The regressions with Driscoll and Kraay standard errors are robust to the issues as heteroscedasticity, cross-sectional dependency and autocorrelation (Hoechle, 2007). We have used the *xtscc* command in STATA that produce Driscoll and Kraay standard errors in panel regression models which is robust to the cross-sectional dependency, autocorrelation and heteroscedasticity (Hoechle, 2007). The results and finding of the regressions are discussed in the following sections.

## **5.6 Regression Results**

The results of the regression analyses of this study are presented in this section. We have two major models with six sub-models of regression to investigate our hypotheses. The results of the regressions from both Model 1 and Model 2 are as presented under this section.

### **Model One**

In Model 1 of this thesis, we aim to investigate the impact of the overall ESG performance of the environmentally sensitive corporations on their corporate financial performance. The sample includes total 383 unique corporations from developed and emerging countries. Here, Model 1.1 investigates the impact of ESG performance on ROA, model 1.2 examines the impact of overall ESG performance on ROE of the corporations and model 1.3 investigates the impact of ESG on Tobin's Q of the corporations. The regression results in the Table 13 below represents the impact of ESG performance on corporate financial performance of environmentally sensitive corporations both from developed and emerging countries' markets as whole.

As the regression results suggest, the ESG score which represents the overall ESG performance has no significant relationship with the ROA of environmentally sensitive corporations from both developed and emerging countries. Although ESG score and ROA are positively related, but they do not have any statistically significant relationship. The LN of total assets which is the proxy for size of the corporations has positive and significant relationship with the dependent variable ROA which describes that larger corporations have higher return on asset or ROA as expected. However, the overall ESG performance score has positive and significant relationship with ROE of the corporations. The debt to equity or leverage of the corporations in our sample has positive and significant relation with the ROE but the debt to assets has negatively significant relationship with ROE. Surprisingly, the size of the corporations has

**Table 13:** Regression results Model 1 (overall sample)

Model and Dependent variable	Model 1.1 (ROA)			Model 1.2 (ROE)			Model 1.3 (Tobin's Q)		
	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value
<b>ESG Score</b>	0.00079	0.00050	0.147	0.00213	0.00046	0.001***	0.00141	0.00054	0.029**
<b>LN_Total Assets</b>	0.00960	0.00391	0.037**	-0.08697	0.01791	0.001***	-0.33185	0.02249	0.000***
<b>Debt to Equity</b>	-0.00133	0.00115	0.278	0.01156	0.00537	0.060*	0.01543	0.00564	0.023**
<b>Debt to Assets</b>	-0.00055	0.00157	0.733	-0.44214	0.17097	0.029**	-0.84713	0.27892	0.014**
<b>Constant</b>	-0.22586	0.00157	0.057*	2.13152	0.42862	0.001***	8.72183	0.52011	0.000***
<b>No. of Obs.</b>	3830			3830			3830		
<b>R-squared</b>	0.0010			0.0058			0.0664		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

significantly negative interrelation with ROE. Similarly, Tobin's Q of environmentally

sensitive corporations has positive and significant association with the ESG performance score of corporations from our overall sample. The leverage or debt to equity is positively and significantly linked with the Tobin's Q, which express that the market values the indebted corporations higher. On the other hand, the debt to assets which is employed as a proxy for unsystematic risk of corporations has negative significant relation with the Tobin's Q of these corporations. The size of the corporations has significantly negative relationship with the Tobin's Q which suggests that larger corporations have a smaller Tobin's Q and are thus less overvalued in relation to their asset prices.

## **Model Two**

In Model 2, we aim to analyze the impact of the performance of individual pillars of ESG of the environmentally sensitive corporations on their corporate financial performance. Beside the impact of individual pillars as environmental, social and governance we also examined the effect of ESG controversies of these corporations on their financial performance. The sample again includes total 383 unique corporations from developed and emerging countries. Here, in Model 2.1 we aimed to analyze the effect of each ESG pillar performance and ESG controversies on ROA, model 2.2 examines the effect of individual pillar's performance and ESG controversies on ROE of the corporations and model 2.3 investigates their impact on Tobin's Q of the corporations.

The regression results in the Table 14 below represents the impact of each pillar's performance and effect of ESG controversies on corporate financial performance of environmentally sensitive corporations both from developed and emerging countries' markets as whole.

**Table 14:** Regression results Model 2 (overall sample)

Model and Dependent variable	Model 2.1 (ROA)			Model 2.2 (ROE)			Model 2.3 (Tobin's Q)		
	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value
<b>Environmental</b>	0.00141	0.00049	0.017**	0.00059	0.00082	0.485	-0.00003	0.00043	0.948
<b>Social</b>	-0.00065	0.00042	0.155	0.00060	0.00048	0.239	0.00185	0.00054	0.008***
<b>Governance</b>	-0.00006	0.00101	0.956	0.00041	0.00014	0.017**	-0.00051	0.00029	0.105
<b>ESG Controversies</b>	0.00009	0.00013	0.503	0.000007	0.00016	0.965	0.00093	0.00021	0.001***
<b>LN_Total Assets</b>	0.00758	0.00920	0.431	-0.00003	0.00589	0.997	-0.33174	0.02202	0.000***
<b>Debt to Equity</b>	-0.00172	0.00212	0.436	0.00862	0.00685	0.240	0.01575	0.00577	0.023**
<b>Debt to Assets</b>	0.00026	0.00365	0.944	-0.01161	0.00685	0.124	-0.84906	0.27947	0.014**
<b>Constant</b>	-0.18518	0.26481	0.502	0.00983	0.15669	0.951	8.65130	0.51014	0.000***
<b>No. of Obs.</b>	3830			3830			3830		
<b>R-squared</b>	0.0014			0.0041			0.0689		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

As the regression results show, the environmental scores which represents the environmental performance of the corporations have positively significant relationship with the ROA of the environmentally sensitive corporations. However, the social and governance performance of these corporation has negative relation with ROA, but the relationship is not statistically significant. The ESG controversies score also does not have any significant relationship with ROA of the corporations. Further, ROE is significantly and positively correlated with governance performance of the corporations. The other two pillars of ESG, environmental and social pillar's performance score has positive but no significant relationship with the ROE of

the environmentally sensitive corporations in our overall sample. Similar to the dependent variable ROA, ROE also does not have any significant relationship with the ESG controversies scores of the corporations. As the regression results of the model 2.3 show, the social performance score of the environmentally sensitive corporations has significant and positive relation with the Tobin's Q or market valuation of the corporations from the overall sample. Although the environmental and social score has negative correlation with Tobin's Q, the relationship is not statistically significant. The positive and statistically significant relationship of ESG controversies score and Tobin's Q indicates that higher ESG controversies score positively affects the market valuation of the environmentally sensitive corporations.

Interestingly, the control variables are not significant for both models 2.1 and 2.2 where are dependable variable in ROA and ROE whilst all the control variables are significant for model 2.3 with different significance level where dependent variable is Tobin's Q indicating that the impact of our control variables is significant on Tobin's Q or market valuation of the environmentally sensitive corporations from the overall sample. The impact and relationship of the control variables on the Tobin's Q in model 2.3 is similar to the results in the model 1.3.

### **Results from the Developed Countries**

In order to analyze and compare how the ESG performances of the environmentally sensitive corporations from developed countries and emerging countries affect their financial performance, we have investigated the ESG-financial performance relationship separately for the corporations from developed and emerging countries' market. Our sample panel has ESG and financial performance data of 305 unique corporations from the developed countries. regression results below represent the impact of overall ESG performance on the corporate financial performance of the environmentally sensitive corporations from the developed countries' markets.

The Table 15 presents the results of the regressions conducted with ESG performance and financial performance data of the corporations from developed countries only.

**Table 15:** Regression results Model 1 (sample from developed countries)

<b>Model and Dependent variable</b>	<b>Model 1.1 (ROA)</b>			<b>Model 1.2 (ROE)</b>			<b>Model 1.3 (Tobin's Q)</b>		
<b>Variable</b>	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value
<b>ESG Score</b>	0.00100	0.00063	0.145	0.00271	0.00056	0.001***	0.00122	0.00038	0.010**
<b>LN_Total Assets</b>	0.01046	0.00465	0.051*	-0.08612	0.02144	0.003***	-0.28270	0.03301	0.000***
<b>Debt to Equity</b>	0.00009	0.00080	0.910	0.01481	0.00742	0.077*	0.01254	0.00406	0.013**
<b>Debt to Assets</b>	-0.00157	0.00132	0.267	-0.58735	0.23138	0.032**	-0.74412	0.26168	0.019**
<b>Constant</b>	-0.26096	0.11792	0.054*	2.12566	0.51626	0.003***	7.56484	0.70363	0.000***
<b>No. of Obs.</b>	3050			3050			3050		
<b>R-squared</b>	0.0011			0.0062			0.0531		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

As the outcomes of the regression models suggests, the ESG score or the overall ESG performance of the environmentally sensitive corporations from developed countries does not have any significant relationship with the ROA of the corporations. However, the overall ESG performance score is positively and significantly interrelated with ROE and Tobin's Q of the corporations from developed countries' market. The impact and relationship of the control variables in the models of developed countries context is almost similar with the outcomes of the regressions conducted on the overall sample of this study.

The regression results on the impact of each pillar's performance and the effect of ESG controversies on the corporate financial performance of the environmentally sensitive corporations the from developed countries' markets only are as presented in the Table 16 below.

**Table 16:** Regression results Model 2 (sample from developed countries)

Model and Dependent variable	Model 2.1 (ROA)			Model 2.2 (ROE)			Model 2.3 (Tobin's Q)		
Variable	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value
Environmental	0.00171	0.00056	0.014**	0.00081	0.00092	0.401	-0.00085	0.00057	0.171
Social	-0.00087	0.00044	0.077*	0.00068	0.00052	0.222	0.00280	0.00072	0.004***
Governance	0.00008	0.00126	0.949	0.00063	0.00012	0.001***	-0.00068	0.00025	0.025**
ESG Controversies	0.00006	0.00015	0.706	-0.00010	0.00017	0.552	0.00062	0.00036	0.123
LN_Total Assets	0.00768	0.01072	0.492	-0.00293	0.00639	0.658	-0.28316	0.06577	0.002***
Debt to Equity	-0.00052	0.00195	0.794	0.01231	0.00792	0.154	0.01288	0.00470	0.023**
Debt to Assets	-0.00041	0.00354	0.909	-0.01454	0.00779	0.095*	-0.73839	0.30180	0.037**
Constant	-0.20196	0.30961	0.531	0.05605	0.17499	0.756	7.53056	1.46662	0.001***
No. of Obs.	3050			3050			3050		
R-squared	0.0016			0.0055			0.0566		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The results represent that, the environmental performance score of the environmentally sensitive corporations from developed countries has positive and significant relationship with the ROA while the social performance score has slightly significant association with ROA in a negative way. However, the governance and ESG controversies has no significant relation with the ROA of these corporation even though they are correlated positively. The governance



performance score has positive relationship with the ROE in a significant way for the corporations from the developed countries. The environmental and social performance scores are also positively linked with the ROE but do not have any statistical significance. Further, the score of the social pillar of the ESG operations of the environmentally sensitive corporations from developed countries is positively and significantly associated with the Tobin's Q of these corporation whilst the governance score has a negatively significant interrelation with the Tobin' Q. The environmental performance score also does not have any significant correlation with the Tobin's Q or market valuation of these corporations from the developed countries. Nevertheless, ESG controversies score has negative association with the ROE and a positive interrelation with Tobin's Q but with no statistical significance. The influences of the control variables for the models with data from developed countries only are nearly same with the models as discussed above.

### **Results from the Emerging Countries**

We have analyzed the relationship of the ESG performance with corporate financial performance of environmentally sensitive corporations from emerging countries to observe how the ESG-financial relationship varies for the environmentally sensitive corporations in emerging and developed countries. Our sample has 78 unique corporations from emerging countries. The impact of overall ESG performance on corporate financial performance of environmentally sensitive corporations from the emerging countries' markets is presented in the following Table 17.

**Table 17:** Regression results Model 1 (sample from emerging countries)

<b>Model and Dependent variable</b>	<b>Model 1.1 (ROA)</b>			<b>Model 1.2 (ROE)</b>			<b>Model 1.3 (Tobin's Q)</b>		
<b>Variable</b>	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value
<b>ESG Score</b>	-0.00010	0.00009	0.313	0.00014	0.00039	0.734	0.00283	0.00241	0.270
<b>LN_Total Assets</b>	-0.00985	0.00223	0.002***	-0.07760	0.00709	0.000***	-0.53092	0.09686	0.000***
<b>Debt to Equity</b>	-0.00310	0.00180	0.118	-0.00120	0.00429	0.785	0.03484	0.01396	0.034**
<b>Debt to Assets</b>	-0.08990	0.03748	0.040**	-0.11853	0.07980	0.172	-1.10448	0.29770	0.005***
<b>Constant</b>	0.31682	0.06834	0.001***	1.94902	0.17801	0.000***	13.39329	2.43384	0.000***
<b>No. of Obs.</b>	780			780			780		
<b>R-squared</b>	0.1157			0.0570			0.1172		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The table represents the results of regressions conducted with ESG performance and financial performance data of the environmentally sensitive corporations from emerging countries only. As per the regression results, the overall ESG performance of the environmentally sensitive corporations from the emerging countries does not have any significant impact on the financial performance measures ROA, ROE and Tobin's Q. Although the ESG performance score of the corporations from the emerging countries corporations are negatively correlated with the return on assets (ROA) and has positive correlation with the return on equity (ROE) and Tobin's Q, the relationship is not statistically significant. It is surprising that, all the financial performance variables of the corporations from emerging countries have negatively significant relationship with the size of the corporation. The effects of the control variables on the Tobin's Q of the corporations from emerging countries are almost similar with the findings of the regressions conducted with the overall sample of the environmentally sensitive corporations.

The regression results on how the performance of each pillar of ESG and the ESG controversies affect the corporate financial performance of the environmentally sensitive corporations the from emerging countries are as presented in the following Table 18.

**Table 18:** Regression results Model 2 (sample from emerging countries)

Model and Dependent variable	Model 2.1 (ROA)			Model 2.2 (ROE)			Model 2.3 (Tobin's Q)		
Variable	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value
<b>Environmental</b>	-0.00023	0.00017	0.211	-0.00048	0.00032	0.172	0.00307	0.00251	0.253
<b>Social</b>	0.00017	0.00019	0.398	0.00037	0.00042	0.399	-0.00118	0.00348	0.741
<b>Governance</b>	-0.00003	0.00011	0.774	-0.00011	0.00017	0.517	0.00105	0.00214	0.634
<b>ESG Controversies</b>	0.00019	0.00010	0.097*	0.00024	0.00027	0.419	0.00215	0.00062	0.007***
<b>LN_Total Assets</b>	-0.00866	0.00388	0.052*	-0.01144	0.01269	0.391	-0.52610	0.11658	0.001***
<b>Debt to Equity</b>	-0.00285	0.00312	0.385	-0.00319	0.00608	0.611	0.03820	0.01445	0.027**
<b>Debt to Assets</b>	-0.09394	0.04278	0.056*	-0.11714	0.05829	0.075*	-1.15101	0.39377	0.017**
<b>Constant</b>	0.27249	0.10394	0.028*	0.03964	0.32332	0.251	13.09542	2.79012	0.001***
<b>No. of Obs.</b>	780			780			780		
<b>R-squared</b>	0.1355			0.0337			0.1251		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

According to the regression results, there is no significant interrelation of the ESG pillar such as environmental, social and governance performance score with the ROA, ROE or Tobin's Q of environmentally sensitive corporations from the emerging countries. Even though there are some correlations exist between the ESG pillars and financial performance measures of the corporations from the emerging countries, there is no statistical significance among them.

However, the ESG controversies score has positive and slightly significant relationship with the ROA of these corporations. Similarly, ESG controversies scores are also significantly associated with the Tobin's Q in a positive way. The positive and significant relation indicates that higher ESG controversies score leads to higher return on assets (ROA) and greater market valuation (Tobin's Q) for the environmentally sensitive corporations from the emerging countries. The effects of the control variables are consistent with those of earlier models in this study.

### **5.7 Additional Regression Analysis (Robustness Check)**

In order to confirm the results of our models an additional regression analysis has been carried out as robustness test. ESG combined score provided by Thomson Reuters has been considered as independent variable in this model to analyze the impact of ESG performance over financial performance of the corporations. ESGC is basically an overall ESG performance score of corporations based on the environmental, social, and corporate governance pillars' reported data (ESG Score), including an overlay of ESG Controversies. The findings of the additional regression analysis are similar with the main models of this study which increases the validity and robustness of the study. The regression result shows the relationship between ESG combined as rated by Refinitiv with ESG controversies overlay on the corporate financial performance of the environmentally sensitive corporations both from developed and emerging countries as a whole. As the results of the additional regression analysis represents, the ESG combined score of the environmentally sensitive corporations from our overall sample has positively significant relationship with ROE and Tobin's Q but no significant association with ROA. The findings of the regression analysis with ESG combined score as independent variable are almost similar with the findings of our model 1 where the independent variable was aggregate ESG performance score. The result of the additional regression is presented in the Table 19 below.

**Table 19:** Regression results (For robustness check-overall sample)

Dependent variable	ROA			ROE			Tobin's Q		
Variable	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value	Coefficient	Drisc/Kraay Stand. Error	p-value
<b>ESG Combined Score</b>	0.00084	0.00051	0.135	0.00878	0.00034	0.003***	0.00192	0.00042	0.001***
<b>LN_Total Assets</b>	0.01066	0.00431	0.035**	-0.08430	0.01795	0.001***	-0.33276	0.02230	0.000***
<b>Debt to Equity</b>	-0.00141	0.00114	0.248	0.01151	0.00541	0.062*	0.01555	0.00569	0.023**
<b>Debt to Assets</b>	-0.00066	0.00164	0.708	-0.43435	0.17268	0.033**	-0.85650	0.28070	0.014**
<b>Constant</b>	-0.25070	0.11470	0.057*	2.10647	0.43360	0.001***	8.72539	0.51864	0.000***
<b>No. of Obs.</b>	3830			3830			3830		
<b>R-squared</b>	0.0010			0.0054			0.0673		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

There were no significant changes or variations observed in the findings when we investigated the impact of ESG performance of the environmentally sensitive corporations on their corporate financial performance using the ESGC score as the independent variable, which is a detailed ESG performance evaluation score provided by Thomson Reuters with the addition of ESG controversies scores with it. The relationship and impacts of the control variables are also nearly same as the observed in the model one and model two.

## **5.8 Empirical Findings**

The findings on the hypothesized of the studies and the theoretical analyses of the findings of this thesis are discussed in detail in this section.

### **Findings and Analysis of Hypothesis 1**

In our hypothesis 1, we hypothesized whether the overall environmental, social and governance (ESG) performance affect financial performances such as profitability and market valuation of corporations from environmentally sensitive industries. The findings indicate that, the overall ESG performance does not have any significant relationship with ROA of the environmentally sensitive corporations. As discussed in the chapter 4, ROA is an accounting-based measure, widely used to measure operational efficiency and profitability of a corporation. Even though the results indicate that ROA of the corporations in our sample and the ESG performance score have a positive correlation, but the relationship is not proved as statistically significant. Therefore, it could be said that the overall ESG performance has no significant impact on return on assets of the environmentally sensitive corporations. The insignificant relationship of ROA and ESG performance is in line with the outcome of the prior studies by (Ahliklo & Lind, 2018; Ramić, 2019). The insignificant relationship of the ESG performance with the ROA could be interpreted using the legitimacy theory discussed in the chapter 2 of this thesis. The legitimacy theory suggests that, for a sustainable survival a company must do the business by keeping harmony with norms and values of the company (Dowling & Pfeffer, 1975). Corporation integrate information like ESG initiative encouraged by the “social contract” a corporation has with the community. The possible explanation of the insignificant relationship of ROA with the overall ESG performance could be that the environmentally sensitive corporations might have gained the ESG performance score by engaging themselves in ESG activities to maintain the legal obligations and social contract, which could not bring any value or impact on the profitability of these corporations.

On the other hand, another accounting-based measure ROE which is also used in this study as a measure of profitability and financial performance, has significantly positive relationship with the overall ESG performance of the environmentally sensitive corporations. The positive and statistically strong significant relationship of the return on equity or ROE of the

environmentally sensitive corporations with their overall ESG performance indicates high level of ESG performance score results in higher return on equity. The positive impact of the overall ESG performance score on the return on equity (ROE) also suggests that ESG performance can increase the profitability and can positively affect the financial performance of the environmentally sensitive corporations. Previous research also reported similar positive relationship between ROE and the ESG performance (De Lucia et al., 2020; Ramić, 2019; Shakil et al., 2019; Ting et al., 2019) and opposite to the findings of Atan et al. (2019). From theoretical point of view, the positively significant relationship of ROE with the overall ESG performance of the environmentally sensitive corporations supports stakeholder theory (Freeman, 1984) and opposes the shareholder theory (Friedmann, 1962). The shareholder theory states, a corporation's sole goal and focus must be in maximizing the value and the profit of the shareholders and the corporation should engage in the activities only which are in line with the shareholder's wellbeing. Shareholder theory argues that non-financial operations such as ESG could turn into misuse and wastage of shareholder's profit and value. On the contrary, stakeholder theory opposes shareholder theory by arguing that, engaging in activities like ESG and by maintaining a decent relationship with all the stakeholders might positively affect financial performance of a corporation. The stakeholder theory suggests that corporate sustainable and socially responsible initiatives and operations could bring competitive advantage as well as goodwill for the corporation and could also increase the value of the corporation at the same time as well. The positive and significance relationship of ESG performance and return on equity (ROE) indicates positive association of ESG initiatives and operations with the corporate financial performance of the corporations and this result argues in favor of the stakeholder theory rather than the shareholder theory. The significantly positive impact of the ESG performance on the return on equity or ROE also supports the value enhancing theory since the value enhancing theory argues that inclusion of sustainable and socially responsible strategies like ESG practices help the corporation to gain more competitive advantages and ensure sustainable returns for the shareholders. The positive relation between ROE and ESG performance score indicates that high level of ESG performance does not decrease the ROE rather it could contribute to higher ROE for the environmentally sensitive corporations and this finding supports the value enhancing theory.

Tobin's Q which has been used as a market-based measurement of measure the financial performance is also positively and significantly interrelated with the ESG performance of environmentally sensitive corporations. The results reveal that the overall ESG performance of the corporations in our sample have significantly positive impact on the Tobin's Q which has been used in this study as a market valuation and financial performance measurement variable. The result supports the previous studies on ESG-financial performance relationship (Bhaskaran et al., 2020; Dalal & Thaker, 2019; Kulakova, 2018; Manrique & Martí-Ballester, 2017; María Miralles-Quirós et al., 2018; Ting et al., 2019; M. Yu & Zhao, 2015) which found significantly positive association of ESG performance with Tobin's Q and opposite to the findings few studies (Ahlklo & Lind, 2018; Atan et al., 2019; Dufwa & Hammarström, 2015; Eriksson & Asgodom, 2019; Marsat & Williams, 2011; Ramić, 2019; Velte, 2017) who found negative or insignificant relationship of Tobin's Q with the ESG performance of the corporations. The positive and significant relation of ESG performance of the environmentally sensitive corporations with their Tobin's Q which assesses the market performance of corporations supports the stakeholder theory since ESG performance could positively contribute to the increase in market valuation of corporations and opposes the shareholder theory.

Therefore, based on above findings and arguments we cannot reject the *Hypothesis 1<sub>A</sub>* which the overall ESG performance of the corporations from environmentally sensitive industries affects their profitability and market valuation. The financial measurement ROE and Tobin's Q have positively significant relationship with the overall ESG performance indicating positive affect of the ESG performance on the profitability and market valuation of the corporations in our overall sample. However, only the accounting-based profitability measurement ROA has statistically insignificant relation with the ESG performance of these corporation which partially supports the *Hypothesis 1<sub>B</sub>* of no effect of ESG performance over corporate financial performance.

## **Findings and Analysis of Hypothesis 2**

Further, we aimed to investigate how ESG performance affect corporate financial performance of environmentally sensitive corporations from the developed countries. The results indicate that, the ESG performance score of environmentally sensitive corporations from developed countries does not have any significant relationship with the return on assets (ROA) of the



corporations. However, ROE and Tobin's has significantly positive relation with the overall ESG performance of these corporations indicating positive affect of overall ESG performance score on the profitability and market valuation. The positive association of the financial measurement variables ROE and Tobin's Q with the ESG performances supports the stakeholder theory and value enhancing theory while opposing the shareholder theory. Hence, we cannot fully reject the *Hypothesis 2<sub>A1</sub>* that ESG performance of corporations from environmentally sensitive industries in developed countries affects their profitability and market valuation.

On the contrary, when we analyzed the ESG-financial performance relationship of the environmentally corporations from the emerging countries market, none of the financial performance measurements have significant relationship with the overall ESG performance. Even though the ROA, ROE and the Tobin's Q of the environmental sensitive corporations from the emerging countries has positive correlation as per the regression results, their relationship is statistically insignificant. As discussed above the insignificant relationship of ESG performance with the measurements of financial performance could possibly be explained by the legitimacy theory. The ESG initiatives and operations of the environmentally sensitive corporations in emerging countries might have considered more as a part of their social contract or legitimization activities by the potential investors and stakeholders and thus have not been considered as value creating strategies. Unlike the findings for overall sample and the findings for the developed countries' corporations. the findings of the ESG-financial performance relationship of the environmentally sensitive corporations from the emerging countries neither supports the stakeholder theory nor the shareholder theory as the relationship is insignificant. Since none of the financial performance measurement variables have significant relation with the overall ESG performance score of the corporations from emerging countries we reject the *Hypothesis 2<sub>B1</sub>* and accept the *Hypothesis 2<sub>B2</sub>* that is ESG performance of the corporations from environmentally sensitive industries in the emerging countries' markets affects their profitability and market valuation.

According to the results, the overall ESG performance of the environmentally sensitive corporations from developed countries have more stronger relationship with their financial performance than the corporations from emerging countries. The overall ESG performance

score of the corporations from developed countries have positive and strongly significant relationship with their ROE and Tobin's Q whereas the overall ESG performance scores of the environmentally sensitive corporations from the emerging countries have no statistically significant relationship with the financial performance variables namely ROA, ROE and Tobin's Q. Based on the result we reject the *Hypothesis 2<sub>D</sub>* and rather accept the *Hypothesis 2<sub>C</sub>* that the effect of ESG performance on the financial performance of corporations from environmentally sensitive industries in developed countries' markets is stronger and greater than in the emerging countries' markets.

Although as presented in the descriptive statistics the mean of the overall ESG performance of the corporations from emerging countries in the sample of this thesis is slightly higher than the corporations from developed countries the ESG performances of these corporations do not have any impact on the profitability and market valuation. This indicates that the ESG performances of the environmentally sensitive corporations from emerging countries are not much recognized as value creating initiatives and strategies by the investors in emerging countries' market. Besides, this may be because stakeholders and the investors lack confidence and trust in corporations' ESG strategies and operations in the emerging countries context, which could subsequently affect the profitability and market valuation of the corporation in a positive way, as is the case in the developed countries. The transparent and comparatively more ethical business practice in the developed countries could also be a cause to the stronger and positive effect of ESG performance of the environmentally sensitive corporations on the financial performance in the developed countries as compared to emerging countries. The ESG practices is yet not very much popular in emerging countries as in the developed countries since a limited number of corporations from these emerging countries reported their ESG operations and initiative information. Furthermore, the positive and stronger relation between market valuation and the ESG performance score for corporations from the developed countries expresses that the investors and lenders from the developed markets more aware and values the corporate sustainable and corporate socially responsible strategies and operations of the environmentally sensitive corporations more than the investors and lenders from the emerging countries. However, the average ESG performance score as well the average performance score of the each ESG pillar of the environmentally sensitive corporations both from developed and emerging countries are also same which indicates that the managements of the environmentally

sensitive corporations from both economic regions give same level of importance and priority to the strategies and activities related to the corporate sustainability or ESG.

### **Findings and Analysis on Hypothesis 3**

Under the hypothesis 3 we have investigated the impact of the performance of each individual pillar of ESG on financial performance. We also examined the impact of the ESG controversies score of the environmentally sensitive corporations on their financial performance.

The statistical findings show that environmental performance of the environmentally sensitive corporations from our overall sample has positive and significant association with ROA. This significant and positive relationship of the environmental score with the ROA implies that, increase of environmentally sustainable operations such as improved emission score, resource use score and innovation score positively affect the profitability of the environmentally sensitive corporations. Besides, the results indicates that efficient use and management of the natural resources also can ensure higher return on the total assets of the environmentally sensitive corporations. On a previous study (Velte, 2017) also found positive relation of environmental performance with the ROA. The significantly positive relation of environmental performance score with return on assets (ROA) also supports the stakeholder and value enhancing theory as a value creating component for the environmentally corporations. The environmental performance score also significantly and positively affects the return on assets or ROA of the environmentally sensitive corporations from the developed countries only but the ROA of the corporations from the emerging countries have no significant relationship with their environmental performance score. This finding reveals that, higher environmental performance score can contribute more to increase of profitability of the corporations in developed countries than of the emerging countries. However, the other two financial performance variables of our study do not have any significant relation with the environmental performance score. The results show that there are no significant effects of the environmental performance of the corporations on their ROE and Tobin's Q.

The individual regression analyses with the sample from emerging and developed countries presents that, the impact of environmental performance score on ROE and on Tobin's Q of environmentally sensitive corporations both from developed and emerging countries is

statistically insignificant as well. The insignificant interrelation of environmental performance score with ROE and Tobin's Q neither supports the shareholder theory nor the stakeholder theory. The outcome of our analysis is mixed as the environmental performance of the environmentally sensitive corporations positively and significantly affects the accounting-based measure of profitability namely ROA but do not have any impact on the other accounting-based measure of profitability and financial performance name ROE and the market-based measure of the market valuation namely Tobin's Q. Based on the outcomes of our analysis we cannot fully accept the *Hypothesis 3<sub>A1</sub>* that the environmental performance of the corporations from environmentally sensitive industries affects their profitability and market valuation as the accounting-based measure ROE and market-based measure Tobin's Q does not have any significant correlation with the environmental performance. However, the positive correlation of ROA or return on assets with the environmental performance indicates that we can partially accept the *Hypothesis 3<sub>A1</sub>* and partially reject the *Hypothesis 3<sub>A2</sub>* which is the environmental performance of the corporations from environmentally sensitive industries has no effect on their profitability and market valuation. Nevertheless, in developed market context we also can partially accept the *Hypothesis 3<sub>B1</sub>* that the environmental performance of the corporations from environmentally sensitive industries in the developed countries markets affects their profitability and market valuation but we rejected the *Hypothesis 3<sub>B2</sub>* that the environmental performance of the corporations from environmentally sensitive industries in the emerging countries markets affects their profitability and market valuation as the finding showed no significant interrelation of the environmental performance with financial performance measures.

According to the results, social performance score of the environmentally sensitive corporations of our overall sample has positive and strong significant relation with Tobin's Q. Tobin's Q, a market-based measurement used in this study as proxy for the market valuation and performance of corporation. The significantly positive relationship of social performance score with Tobin's Q implies that social strategies and actions of the environmentally sensitive corporations are recognized and positively valued by the market and the higher level of social performance has the ability to contribute to increase in market value of the corporations. This result is in favor of the stakeholder theory as the social performance of the corporations can enhance the value of corporation in the market by maintaining good relationship with all the

stakeholders. However, the two accounting-based variables ROA and ROE have no statistically significant relationship with social performance score of environmentally sensitive corporations from our overall sample. The statistically insignificant relationship does not let us to interpret any negative or positive affect of the social performance on the ROA or ROE and thus does not either support the stakeholder or the shareholder theory. According to the findings, we cannot wholly reject the *Hypothesis 3<sub>C1</sub>* that the social performance of the corporations from environmentally sensitive industries affects their profitability and market valuation as only the Tobin's Q of these corporations have significantly positive relation with the social performance. Yet the insignificant relationship of ROA and ROE with social performance also rejects the *Hypothesis 3<sub>C2</sub>* partially.

Further, as far as the corporations from the developed markets are concerned, the impact of the social performance on their financial performance is mixed. The social performance of the environmentally sensitive corporations from the developed countries is positively and significantly correlated with the Tobin's Q indicating that high social performances are valued positively and could contribute to market valuation of the corporation in a positive way in the developed market context. However, the ROA of these corporations has slightly negative and significant relationship with social performance score. Possible explanation of the negative association could be that expenditures made on activities like social activities could possibly decrease the profitability of the corporation. The negatively significant relationship of ROA with the social performance of the corporations in the developed countries supports the shareholder theory which argues that investing in activities like corporate socially responsible operations destroys the value of the corporation and minimize the profit of the shareholder. The social performance of the corporations from the developed countries has insignificant relationship with the ROE which do not allow to conclude any positive or negative impact of social performance on profitability or financial performance of these corporations. Therefore, based on the findings we cannot reject the *Hypothesis 3<sub>D1</sub>* wholly that social performance of the corporations from environmentally sensitive industries in the developed countries markets affects their profitability and market valuation since the results show social performance of these corporation affects the Tobin's Q in a significantly positive way and has negatively significant impact on ROA. On the contrary, results from the regression analysis with sample corporations from the emerging countries indicates that the social performance of the

environmentally sensitive corporations in the emerging countries have insignificant relationship with the financial performance measurements used in this study. The insignificant relationship of social performance with ROA, ROE and Tobin's Q implies that social performance of environmentally sensitive corporations in emerging countries does not have any significant effect on profitability and market value of the corporation. Hence, we hereby reject the *Hypothesis 3<sub>D2</sub>* that the social performance of the corporations from environmentally sensitive industries in the emerging countries markets affects their profitability and market valuation as we cannot find any statistically significant association of the social performance of these corporations with their financial performance.

The corporate governance performance score of the environmentally sensitive corporations from our overall sample is only significantly and positively related with the return on equity or ROE. Even though the other two financial performance measurements ROA and Tobin's Q has slightly negative correlation with the corporate governance performance their relationship is not statistically significant and therefore we cannot conclude any significant effect of governance score on ROA and Tobin's Q of the environmentally sensitive corporations from our overall sample. The insignificant relationship of governance score with the market-based valuation tool Tobin's Q implies that the governance practices are not recognized by the investors as value enhancing strategies for these environmentally sensitive corporations. The corporate governance performance score represents the structure of the board of corporation, the rights of the shareholder, transparency, ESG and CSR reporting policies. The positive and significant relationship of ROE with governance score suggests that better and effective governance practice leads to higher return on equity (ROE) for the environmentally sensitive corporations which also supports stakeholder theory. Since ROE of the corporations has a significant and positive interrelation with corporate governance score, we partially accept the *Hypothesis 3<sub>E1</sub>* which is the corporate governance performance of the corporations from environmentally sensitive industries affects their profitability and as insignificant relationship is present among the financial variables as well, we do not fully reject the *Hypothesis 3<sub>E2</sub>*. The outcomes of separate regression analysis with the data of corporations from developed countries only show mixed impact of corporate governance performance score on their financial performance. According to the results, governance performance of the environmentally sensitive corporations from the developed countries does not have any significant impact on the

return on assets or ROA. However, the ROE of these corporations has significantly positive relationship with their governance performance score whereas Tobin's Q has negatively significant relationship with the governance performance.

The positive association of governance performance with ROE implies that, corporate governance practice at an optimum and efficient level can increase the profitability and financial performance of the corporations which also in favor of the stakeholder theory. On the contrary, the negative relationship of the governance performance score with market-based measurement tool Tobin's Q supports the shareholder theory indicating that strategies and expenditures related to activities like corporate governance cannot increase the value of corporation and even destroys profit and wealth of the stockholders. Here again we can partially accept the *Hypothesis 3<sub>F1</sub>* that the corporate governance of the corporations from environmentally sensitive industries in the developed countries markets affects their profitability in a positive way and affects their market valuation in a negative way. In another separate regression analysis with the sample corporations from emerging countries only we have observed that, governance performance of the environmentally sensitive corporations from the emerging countries showed no significant impact on their financial performance. The both accounting-based measurement variable ROA and ROE and the market-based measurement variable Tobin's Q do not have any statistically significant interrelation with corporate governance performance score of these corporations from emerging countries. This could be because the governance related strategies and initiatives taken by these environmentally sensitive corporations from the emerging countries are not valued enough or recognized by the investors and market as a component of increasing profitability or value of the corporation. It could possibly be other way around as well, failure to disclose enough information regarding the governance initiatives and practices could also be a reason for the no-effect relationship of governance score and financial performance. Since there insignificant association found between governance performance score and financial performance variables, we reject the *Hypothesis 3<sub>F2</sub>* that the corporate governance of the corporations from environmentally sensitive industries in the emerging countries markets affects their profitability and market valuation.

We have analyzed the effect of the ESG controversies scores as supplied by the Thomson Reuters with financial performance of environmentally sensitive corporations. The regression analysis on our overall sample presents that the ESG controversies score of the environmentally sensitive corporations has statistically insignificant relationship with the accounting-based measures of financial performance indicators used in this study namely ROA and ROE. The ESG controversies score is a combination of negative news or scandals related to the ESG activities of a corporation. The default and minimum score of the controversy measurement is 0 and the maximum score is 100, where corporations having no controversies are given a score of 100 by the Refinitiv. We hypothesized that ESG related negative publicity in the media or ESG controversies score affects the financial performance and market valuation. The results show that ESG controversies score does not have any significant correlation with ROA or with ROE. The possible explanation of the insignificant relationship could be the span of time. It should be noted that, yearly financial data and one-year lagged ESG controversies score has been used in this study while investors and market may have more prompt reaction to the controversial news or scandals related to a corporation and the affect could be more immediate than our expectation within this study. The insignificant relationship of ESG controversies and ROA is in line with the prior research work of Langeland & Ugland (2019). However, the market-based measure Tobin's Q that has been used as a proxy for market valuation has significantly positive relationship with the ESG controversies scores. This finding indicates that ESG controversies score of the environmentally sensitive corporations affects the market valuation of the corporations positively. Previous studies (Aouadi & Marsat, 2018; Ting et al., 2019) have also found similar positive correlation of value of the corporations with the ESG controversies. The results indicate investors in the market recognize and values the scandals and controversies related to ESG activities of the environmentally sensitive corporations and better ESG controversies score may lead to better valuation for the environmentally sensitive corporation. Based on the findings we partially accept the *Hypothesis 3<sub>G1</sub>* that the ESG controversies of the corporations from environmentally sensitive industries affect their market valuation as the Tobin's Q has positive and significant interrelation with the ESG controversies scores of these corporation. However, as ESG controversies score has no significant association with the ROA and ROE we cannot fully reject the *Hypothesis 3<sub>G2</sub>* as well.



Furthermore, when we have investigated the effect of ESG controversies score on corporate financial performance of environmentally sensitive corporations from the developed countries only, we have found that, neither the accounting-based measure for financial performance namely ROA and ROE nor the market-based measure Tobin's Q have any significant relationship with ESG controversies score. Findings implies that ESG controversies score does not have any potential and significant effects on financial performance and valuation of the environmentally sensitive corporations from the developed countries. Therefore, we reject the *Hypothesis 3<sub>H1</sub>* that the ESG controversies of the corporations from environmentally sensitive industries in the developed countries markets affect their profitability and market valuation. On the other side, the analysis on the relationship of ESG controversies score with financial performance of environmentally sensitive corporations from emerging countries alone expresses that, the ESG controversies scores have positive and slightly significant association with ROA and strongly significant and positive association with the Tobin's Q of these corporations. Although the coefficient between the ROE and the ESG controversies is positive, but their relationship is statistically insignificant. The significant and positive association of financial performance measurement variables with the ESG controversies score indicates that higher ESG controversies score of the corporations in the emerging countries can positively affect the profitability and financial performance of the corporations. Hence, we cannot reject the *Hypothesis 3<sub>H2</sub>* that the ESG controversies of the corporations from environmentally sensitive industries in the emerging countries markets affect their financial performance. Nevertheless, it is worthy to note that, according to the findings the markets of the emerging countries value and react to the ESG controversies more significantly than the markets of the developed countries.

In addition, an additional regression analysis was carried out to check robustness of our findings. The ESG combined score of Thomson Reuters ESG database was employed as the independent variable to observe the impact of the ESG performance on the corporate financial performance of the corporations from our overall sample. The ESG combined score is an aggregate rating of ESG performances of the corporations with an adjustment of the ESG controversies score. The result of the additional regression shows that, ROA has insignificant relationship with the ESG combined score of the environmentally sensitive corporations whereas ROE and the Tobin's Q have significant and positive association with the ESG

combined scores indicating that ESG combined score is more likely to affect ROE and Tobin's Q in a positive way. The relationship of the control variables with the financial measurement variables is nearly same as found in the outcomes of our main models. The effects of ESG combined score on financial performance are in line with our previous findings which indicates robustness and validity of our other regression models.

## 6. CONCLUSION

The summary of this thesis with concluding remarks have been discussed in this chapter. Besides, recommendations and limitation of the thesis are also presented in the chapter.

### 6.1 Discussion

The environmental, social and governance mostly collectively referred as ESG has been one of the most debated and widely researched topics throughout the past few years. The value creating ability of the corporate sustainable and socially responsible activities of the corporations are one of the growing concerns of the managements and investors. Corporations from almost all sectors around the globe have engaged themselves in different ESG initiatives and actions. Specially, corporations which are belongs to environmentally sensitive industries like energy, mining, metals, construction, chemical industries are spending a great amount in the environment management to alleviate the environmental issues made though their business operations. Besides, at present environmentally sensitive corporation also have a considerable amount of costs from the social activities and governance initiatives. Therefore, this thesis aimed to investigate how the ESG performance of the environmentally sensitive corporations affect their corporate financial performance and for that we have formulated our first research question as *How does ESG performance effect the financial performance of the environmentally sensitive corporations?* The sample of our study includes the ESG and financial data of 383 unique corporations from six different environmentally sensitive business sectors. The ESG scores by the Thomson Reuters ESG database has been used in this thesis as the measure of ESG initiatives and performance of these corporation. As measurement of the financial performance, we have used ROA and ROE which are accounting-based measurements of profitability, operational and financial performance. Tobin's Q of these environmentally sensitive corporations has also been used in this study which is a market-based valuation measuring the market performance of the corporations. We have also included several control variables in our models in line with the previous literature such as LN of the total assets as size of the corporation, debt to assets as unsystematic risk and debt to equity as leverage of the corporations. The findings of our analyses present that, the overall ESG performance of the environmentally sensitive corporations has positive and significant relationship with ROE and

Tobin's Q of the corporations. The ROE is an accounting-based measurement for measuring profitability and financial performance of a corporation. The outcome suggests that higher ESG performance has significantly positive affect on the return on equity (ROE) and thus it positively affects the profitability of these corporation. The aggregate ESG performance scores of the corporations from our overall sample also positive and significant correlation with the Tobin's Q which is market-based measurement for measuring market value and performance of the corporations. The findings of our analysis suggests that higher and better ESG performance ratings lead to better market performance and could increase the market value of the corporations. From a theoretical point of view, this positive impact of ESG performance of the environmentally sensitive corporation on their profitability and the market valuation supports the stakeholder theory and against the shareholder theory since the ESG performance score can contribute positively to increasing both the profitability and market value of these corporations. However, the other accounting-based measure of financial performance indicator of this thesis ROA does not have any significant relationship with the overall ESG performance of these environmentally sensitive corporations. The insignificant relationship of ROA and the ESG performance does not support either stakeholder or shareholder theory but the legitimacy theory might clarify the reasons behind that the corporations are engaging themselves into the ESG operations and activities to appease the external stakeholders as well as to validate the presence of the corporation.

Furthermore, we have also analyzed the effect of each individual pillars' performance score that are environmental, social and governance performance and their impact on corporate financial performance of environmentally sensitive corporation in order to get clearer picture on which pillar of the overall ESG performance have greater impact on the financial performance and market valuation. According to the findings, the return on assets or ROA of the environmentally sensitive corporations has positive and significant interrelation with the environmental performance score indicating that the environmental strategies and operations affects the ROA or profitability positively. Although the overall ESG performance score does not have any significant relationship with the ROA, but our findings suggest that higher environmental performance positively contributes to better ROA or profitability of these corporations. However, the environmental performance has insignificant impact on the ROE and Tobin's Q of the environmentally sensitive corporations. The ROE of the corporations has positive

relationship with governance performance score of the environmentally sensitive corporations which means that the corporate governance performance of these corporations affects the corporations' ROE or profitability and financial performance in a positive way and higher governance performance can lead to higher return on equity for the environmentally sensitive corporation. The governance performance score has insignificant relationship with ROA and Tobin's Q indicating that the corporate governance performance does not have any impact on these financial performance measurement. The social performance score has strongly significant relationship with Tobin's Q in a positive way which indicates that the socially responsible strategies and initiatives are valued by the market in a positive way and higher social performance could also increase the value of the corporations from environmentally sensitive industries. Nevertheless, the social performance does not have any significant impact on the accounting-based measures ROA and ROE of the corporations in our sample. The positive relationship of these pillars of ESG with the financial performance measures supports the stakeholder theory rather than the shareholder theory. However, several insignificant relationships found in our analysis neither support the shareholder theory or the stakeholder theory.

Further, we aimed to investigate how the impact of the ESG performance of environmentally sensitive corporations on their corporate financial performance differs in the developed and emerging countries. ESG strategies and operation is widely popular for the corporations around the globe nowadays but most of the prior research focused on the financial value of the ESG performance of the corporations from developed countries. It would be significant to find how the impact of the ESG performance varies in developed and emerging countries and which market values the ESG performance of the environmentally sensitive corporations the most. Therefore, we constructed our second research question as *How does the effect of the ESG performance of environmentally sensitive corporations on their financial performance differ from developed countries to emerging countries?* Our sample consists of 305 unique environmentally sensitive corporations from 7 different developed countries and 78 corporations from 11 emerging countries. The finding from our analysis shows that, the overall ESG performance score of the environmentally sensitive corporations from the developed countries have positive and significant impact on the accounting-based measurement of financial performance ROE (return on equity) as well as on the market-based measurement

Tobin's Q. The findings reveal that, overall ESG performance affect the profitability and market valuation of these corporations in developed countries in positive and significant way which also supports the stakeholder and value enhancing theories. However, the overall ESG performance score of these environmentally sensitive corporations from developed countries has insignificant association the return on assets or ROA. On the contrary, the overall ESG performance score of environmentally sensitive corporations from the emerging countries in our sample has insignificant relationship with the financial performance measurements. Both accounting-based measurement ROA and ROE and market-based measure Tobin's Q of these corporations from emerging countries have insignificant relationship with their overall ESG performance score which means that ESG performance could not contribute either in positive or negative way to the profitability and market valuation of these environmentally sensitive corporations from emerging countries. Our findings suggest that ESG performances of the environmentally sensitive corporations are more recognized in the developed countries' markets and have stronger impact on financial performance of the corporations belonging to developed countries than of emerging countries. We have also analyzed the impact of each pillars' performance on the financial performance and the outcomes show that the effects of the individual score of environmental, social and governance performance over the financial performance of the corporations from developed countries are almost similar as our findings from the overall sample except the slightly negative significant relationship between ROA and social performance as well as the negative relationship of governance performance score with the Tobin's Q of these corporations from developed countries. Again, the individual performance scores of the ESG pillars do not have any significant impact on financial performance variables of the corporations from the emerging countries which indicates that ESG operations and initiatives of the environmentally sensitive industries are not as recognized and valued in the emerging countries as in the developed countries.

The impact of the ESG controversies score over the financial performance has also been analyzed in this thesis. The findings show that ESG controversies score only have significantly positive impact on market-based measurement Tobin's Q. The strongly significant and positive interrelation of ESG controversies score with Tobin's Q implies that higher and better ESG controversies score can increase the market value of the corporation and can contribute to the better market performance. It also expresses the fact that, the investors and the market recognize

and reacts to the ESG controversies of the environmentally sensitive corporations from our overall sample. However, the ESG controversies score of the environmentally sensitive corporations from our overall sample does not have any significant correlation either with ROA or ROE of these corporations. It is surprising that though the overall ESG score or the individual pillar scores have some impact on the accounting based measures of financial performance of these corporations, the ESG controversies scores do not have any significant impact on ROA or ROE. Further analysis represents that, ESG controversies score of the corporations from developed countries only does not have any significant relationship or impact on financial performance measurement variables while the ESG controversies score of the corporations from the emerging countries affect the ROA and Tobin's Q in a positive and significant way. The results suggest that the effect of ESG controversies score of the environmentally sensitive corporations are stronger and more noticeable in the emerging countries than of the developed countries. Although, some of our models have low R-squared value but a low R-squared does not imply that the significant relationships between the variables are unimportant or irrelevant. Having a low R-squared value, the P-values and coefficients which are statistically significant continue to detect interrelation and association between the variables. We have carried an additional regression analysis with ESGC score as the proxy for overall ESG performance score and found similar results which ensures the validity and robustness of the model used in this thesis.

The findings of this thesis aim to address the gap in ESG literature related to ESG-financial performance by studying the effect of ESG performance of the environmentally sensitive corporations on their financial performance as well as how the impact of ESG performance of these countries differs from developed to emerging countries. This thesis contributes to the academic literature by studying financial value of ESG performances of environmentally sensitive industries from both emerging and developed market perspective. The thesis's findings contribute to an improved understanding regarding the effects of the ESG performance on financial performance specially for environmentally sensitive corporations from both developed and emerging countries' legal and economical context. The findings of our study also corroborate the findings of the existing academic research where a large portion of the academic research have reported positive link between ESG and financial performance (Alshehhi et al., 2018; Friede et al., 2015). The findings of this thesis would also contribute to

the decision-making process of the environmentally sensitive corporations from both developed and emerging countries. The study would encourage the managements of environmentally sensitive corporations to adopt more efficient and effective ESG policies and initiatives as the ESG performance can maximize the profitability and can increase the market value of the corporations. Also, the findings would help the investor in making investment as well as to understand the value of corporate sustainability.

## **6.2 Limitations**

This thesis comes with some limitations as well. First of all, this thesis only studies the ESG performance of 383 environmentally sensitive corporations from 6 different business sectors. Therefore, the findings of the thesis are not generalizable and may not be applicable for corporations from any other industries. Secondly, the sample of this study consists of 305 environmentally sensitive corporations from 7 developed countries and 78 unique corporations from 11 emerging countries. All the corporations from environmentally sensitive industries operating business in these countries could not be added to our sample due to missing ESG data in the Thomson Reuters ESG database and that is why adding ESG performance data of more corporations from any different country or business sector in the study sample may bring variation to the findings. Moreover, the ESG and financial data of 10 years have been used in this study to observe the ESG-financial performance relationship and increase or decrease of time period could also present different results than ours. In addition, the ESG data by the Thomson Reuters has been used in this study as measurement for the ESG performance of the environmentally sensitive corporations. The methodologies of rating ESG performance used by the ESG data providing agencies such as Thomson Reuters, Bloomberg ESG database, Sustainalytics are different and unique from each other. We could not analyze and compare the ESG performance data provided by the other ESG data providers other than Thomson Reuters to examine the ESG-financial performance relationship of the environmentally sensitive corporation which is another limitation of this study.



### **6.3 Recommendations**

The findings of the thesis recommend that, the high ESG performances of the environmentally sensitive corporations affects their profitability positively and could also increase the market value of these corporations. However, the financial value of ESG performances of the environmentally sensitive corporations from emerging countries are still insignificant and inconclusive which suggests that the management of these corporation from emerging countries should emphasize more on ESG strategies and initiatives which could enhance the value of these corporations beside satisfying all the stakeholders. In addition, few insignificant relationships among the ESG performance variables and financial performance indicators also denotes that, the ESG strategies and operations are not enough yet to create any impact on the profitability or financial value for the corporations in our sample. Therefore, we recommend that the management and decision-making bodies of the environmentally sensitive corporations should give more importance and invest in the ESG activities according to the interest of both stockholders as well as internal and external stakeholders of the corporations in order to maximize the value of the corporation. Moreover, since the sustainability and socially responsible performance scores are positively correlated with corporate financial performance specially in developed countries context, our findings recommend the investors to invest in the environmentally sensitive corporations with higher ESG performance ratings. Lastly, a more generalized and universal valuation framework should be developed to analyze the impact of ESG strategies and activities on the valuation and financial performance of the corporations in a more comprehensive and reliable way.

There are multiple possible avenues exist for future research according to the findings of this thesis. Firstly, a country-based analysis can be done to investigate the impact of the ESG performance of environmentally sensitive corporations on their financial performance in order to observe which countries value the corporate sustainable and socially responsible performance of the corporations more. Secondly, further research could be conducted on how the impact of the ESG performance on corporate financial performance of corporations differs from environmentally sensitive industries to the corporations from other industries which are not considered as environmentally sensitive. Future studies may also use different methodologies and different proxies for financial performance to examine and compare the

ESG-corporate financial relationship of the environmentally sensitive corporations. In addition, future study may also be carried on using ESG performance scores from different ESG data providers such as Bloomberg ESG database, Sustainalytics, or any other ESG data providers as an attempt to observe the validity and reliability of the ESG ratings by the Thomson Reuters Refinitiv and to compare the probable differences.

## APPENDIX

### Appendix 1: Result of F test.

Model	Prob>F	Result
Model 1.1	0.0000	Null hypothesis is rejected
Model 1.2	0.0000	Null hypothesis is rejected
Model 1.3	0.0000	Null hypothesis is rejected
Model 2.1	0.0000	Null hypothesis is rejected
Model 2.2	0.0000	Null hypothesis is rejected
Model 2.3	0.0000	Null hypothesis is rejected

### Appendix 2: Result of Heteroscedasticity test.

	MODEL 1	MODEL 1.2	MODEL 1.3	MODEL 2.1	MODEL 2.2	MODEL 2.3
chi2	4607.3200	4098.6600	1277.5000	2086.4100	5894.1100	1348.1600
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

### Appendix 3: Result of Cross-sectional dependency test

	MODEL 1	MODEL 1.2	MODEL 1.3	MODEL 2.1	MODEL 2.2	MODEL 2.3
Stat.	31.832	43.651	22.233	22.879	43.807	20.466
Prob.	0.000	0.000	0.000	0.000	0.000	0.000

**Appendix 4:** Result of Serial correlation test.

	MODEL 1	MODEL 1.2	MODEL 1.3	MODEL 2.1	MODEL 2.2	MODEL 2.3
F	0.4710	345.2330	21.1660	0.4690	345.2490	21.4470
Prob > F	0.4928	0.0000	0.0000	0.4940	0.0000	0.0000

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