Stakeholders, Environmental Performance and Firm Value

Sajjad Ahmed

UNIVERSITÉ CLERMONT AUVERGNE
École Universitaire de Management
École Doctorale des Sciences Économiques, Juridiques, Politiques et de Gestion
Clermont Recherche Management (CleRMa)

Sujet de la thèse:

Stakeholders, Environmental Performance and Firm Value

Pour obtenir le titre de

DOCTEUR EN SCIENCES DE GESTION

Présentée par

Sajjad AHMED

soutenue le 27 juin 2024

devant le jury composé de :

Directeur de thèse	**Sylvain MARSAT** Professeur, Université Clermont Auvergne
Co-encadrant de thèse	**Guillaume PIJOURLET** Maître de conférences, HDR, Université Clermont Auvergne
Rapporteur	**Stéphanie GIAMPORCARO** Associate Professor, Nottingham Trent University
Rapporteur	**Eric SEVERIN** Professeur, Université de Lille
Suffragant/ Président du jury	**Yves MARD** Professeur, Université Clermont Auvergne

UNIVERSITÉ CLERMONT AUVERGNE
École Universitaire de Management
École Doctorale des Sciences Économiques, Juridiques, Politiques et de Gestion
Clermont Recherche Management (CleRMa)

Sujet de la thèse:

Stakeholders, Environmental Performance and Firm Value

Pour obtenir le titre de

DOCTEUR EN SCIENCES DE GESTION

Présentée par

Sajjad AHMED

soutenue le 27 juin 2024

devant le jury composé de :

Directeur de thèse	**Sylvain MARSAT** Professeur, Université Clermont Auvergne
Co-encadrant de thèse	**Guillaume PIJOURLET** Maître de conférences, HDR, Université Clermont Auvergne
Rapporteur	**Stéphanie GIAMPORCARO** Associate Professor, Nottingham Trent University
Rapporteur	**Eric SEVERIN** Professeur, Université de Lille
Suffragant/ Président du jury	**Yves MARD** Professeur, Université Clermont Auvergne

Acknowledgements

I wish to convey my profound appreciation to the individuals and entities whose invaluable contributions and unwavering support have been pivotal in the completion of this thesis. Their dedication to academic excellence and mentorship has played a crucial role in shaping this research endeavor. First and foremost, I am deeply indebted to my thesis supervisor, Professor Sylvain MARSAT. His benevolence, consistent availability, and steadfast support have been instrumental in the successful realization of this work. Professor MARSAT's invaluable guidance and encouragement not only facilitated the completion of this research but also enriched its quality and depth. I extend my sincere gratitude to my co-supervisor Professor. Guillaume PIJOURLET, whose scholarly insights and meticulous guidance have significantly enhanced the rigor and scholarly merit of this thesis. Professor. PIJOURLET`s constructive suggestions and astute corrections have been pivotal in refining the research, and I am truly thankful for his generous contributions. I would also like to express my deepest appreciation to the esteemed members of the thesis evaluation committee, comprising Professor Stéphanie GIAMPORCARO, Professor Eric SEVERIN and Professor Yves MARD. Their commitment of time and expertise to assess and evaluate this research is profoundly appreciated.

Furthermore, I am thankful to Dr. Mathieu GOMES, Director of the Chair "Value & CSR," for the invaluable support provided and for granting access to the environmental data employed in this study. I extend my gratitude to the CleRMa community, encompassing educators, doctoral students, and administrative staff. Their collaborative spirit and engagement in monthly seminars, particularly the FIRE workshop, offered invaluable feedback and suggestions that greatly enriched my research. To my dear friends, Asif, Dr. Hussain Magsi, Dr. Muhammad Ullah, and Saif, your friendship has been a constant source of motivation and solace. I am grateful for the laughter, shared moments, and your unwavering belief in me. Throughout this journey, my friends have been my steadfast companions. To the friends who stood by me through thick and thin, your presence in my life has

been invaluable. Your belief in my potential has driven me to achieve more than I ever thought possible. To my parents, your unwavering patience, love, and support have been my anchor throughout this academic journey. I am profoundly grateful for the sacrifices you've made to see me succeed. To my wife Haseena and our beloved son Meer Hamdan, you have been a source of great inspiration and motivation for me and I am truly fortunate to have you by my side. My siblings, your encouragement and belief in me have been a source of inspiration. Thank you for being my pillars of strength. In my heart, there is a special place reserved for my family. Your sacrifices and unwavering support have been the driving force behind my accomplishments. I dedicate this thesis to you.

Finally, I acknowledge and express my appreciations to the Higher Education Commission of Pakistan for providing me the financial assistance for the research that enabled me to accomplish this work.

Abstract

The dissertation comprises of three empirical essays examining the impacts of environmental performance (EP) on firm value. We capitalize from a vast body of existing knowledge on environmental performance. On the one hand, based on neoclassical economists' view, investing in environmental engagement is considered as a deviation from the fundamental social responsibility of profit maximization (Friedman, 1970). On the other hand, in line with the propositions of natural resource based view (Cohen et al. 1995; Song et al., 2017; Shabbir and Wisdom; 2020), investing in environmental engagement may improve financial performance of firm by engaging in stakeholders' oriented environmental practices and earn firm reputation and competitive advantage in an environmentally challenging world of business. As the firms engage in environmental practices, their firm value may increase or decrease based on the demands of the shareholders (Jacobs et al, 2010; Walls et al, 2012; Hart and Milstein, 2003).

The first chapter explains how environmental performance have an impact on firm value, highlighting the role of various stakeholders in this relationship. It specifically leads us to the main research question about the assumed relationship between the stakeholders' oriented environmental practices of firms and overall firm value. Building on this idea, the chapter then introduces further three avenues of research. We explore how institutional, consumer, and shareholders' orientations toward the environmental performance can impact firm value. These avenues are discussed in the following chapters.

The second chapter discusses the mediating role of environmental performance in the relationship between country-level environmental policies and firm value. Utilizing data of 2014 from Environmental Performance Index, DataStream and Trucost, we analyzed a sample of 4,681 observations to assess the relationship between country level carbon policies and its impacts on the firm value. Performing Generalized Structured Equation Modelling (GSEM), we found a positive indirect relationship between countries' carbon policies and firm value. It indicates that countries'

carbon policies improve firms' environmental performance, which ultimately translates into improved firm value. This demonstrates that country-level carbon policies not only improve the environmental practices of firms but also overall firm value. This relationship is explained by three different channels i.e. "walk-channel" through decreased carbon emission, "talk-channel" through increased carbon disclosure, and "walk-then-talk" channel through a combination of both decreased emission and increased disclosure.

In the third chapter, we discuss the role of consumer environmental awareness as a detrimental factor of improved environmental performance of firm and then examine its moderating impact on firms' financial performance. Using data on environmental awareness from Greendex, and environmental and financial data from Thomson Reuters Asset4, we performed Ordinary Least Squares (OLS) regression on 5,697 observations consisting of a sample of 1,139 firms from 18 countries, we find a negative moderating impact of consumer environmental awareness on the financial performance of companies. Our results demonstrated a positive direct impact of consumer environmental awareness on firms' environmental and financial performance. However, we came across a negative indirect EP-FP link as moderated through consumers' environmental consciousness. This is primarily because of two important factors. Firstly, in countries with high consumer environmental awareness, consumers are demanding more from companies and even environmentally high performing companies do not meet the expectations of consumers. Secondly, assessment of environmental performance in these countries is majorly the portfolio of governments and institutions and consumers rely on what is propagated to them by these (Xiao et al, 2018). Thirdly, along with environmental awareness, consumers are also price conscious that leads them to overlook environmental variables while making a purchase decision hence impacting the overall firm value.

Finally, the fourth chapter delves into examining the relationship between environmental shareholder activism on the financial performance, i.e. firm value. Shareholder activism refers to "any formal or informal effort to monitor corporate managers or to communicate a desire for change in a company's management or policies" (Black, 1990: 522) Building on this definition, we operationalize environmental shareholder activism as an effort of shareholders to influence the

environmental policies and practices of firm. Using data on environmental performance from Thomson Reuters Asset4 and environmental shareholder activism (ESA) data of 2,281 observations from Institutional Shareholder Services (ISS), we find a positive EP-FP link as moderated through environmental shareholder activism. It indicates that environmental proposals on carbon intensity improved the overall firm value, since the shareholder pressure is not only reflected in the increased number of submitted environmental proposals but also increasing support and approval rates for environmental policies and practices.

Overall, if high carbon intensity of firms is detrimental to their financial performance, we find that the role of country level carbon policies, consumers' environmental consciousness, and environmental shareholder activism have their mediating and moderating impacts on this relationship. The stakeholders influence on the environmental and financial performance has a relationship with firm value. This dissertation provides a comprehensive understanding of the role of stakeholders in the EP-FP link.

Keywords: Environmental Performance, Financial Performance, Consumers` Environmental Consciousness, Environmental Shareholder Activism, Mediation, Moderation.

Résumé

La thèse comprend trois essais empiriques examinant les impacts de la performance environnementale (PE) sur la valeur de l'entreprise. Nous nous fondons sur un vaste corpus de connaissances existantes concernant la performance environnementale des entreprises. Selon le point de vue des économistes néoclassiques, investir dans un engagement environnemental poussé est considéré comme une déviation de l'objectif fondamental de maximisation du profit (Friedman, 1970). D'autre part, conformément aux propositions du point de vue basé sur les ressources naturelles Cohen et al, (1995) , Song et al, (2017) , Shabbir et Sagesse (2020) , investir dans l'engagement environnementale peut améliorer la performance financière de l'entreprise en s'engageant dans les pratiques environnementales orientées vers les parties prenantes, afin d'acquérir une réputation solide et un avantage concurrentiel auprès de parties prenantes exigeants sur le plan environnemental. À mesure que les entreprises s'engagent dans des pratiques environnementales, leur valeur peut par ailleurs augmenter ou diminuer en fonction des demandes des actionnaires (Jacobs et al, 2010 ; Walls et al, 2012 ; Hart et Milstein, 2003).

Le premier chapitre explique comment la performance environnementale a un impact sur la valeur de l'entreprise, en soulignant le rôle des différentes parties prenantes dans cette relation. Cela nous amène spécifiquement à la principale question de recherche sur la relation supposée entre les pratiques environnementales des entreprises orientées vers les parties prenantes et la valeur de l'entreprise. S'appuyant sur cette idée, le chapitre présente ensuite trois autres pistes de recherche, les orientations envers les institutions, les consommateurs et les actionnaires dans la performance environnementale des entreprises en tant qu'impact sur la valeur de l'entreprise, qui sont discutées dans les chapitres suivants.

Le deuxième chapitre examine le rôle médiateur de la performance environnementale dans la relation entre les politiques environnementales nationales et la valeur de l'entreprise. En utilisant les données de 2014 de l'Indice de performance environnementale, DataStream et Trucost, nous avons analysé un échantillon de 4,681 observations pour évaluer la relation entre les politiques carbone au

niveau national et leurs impacts sur la valeur de l'entreprise. En effectuant la modélisation par équation structurée généralisée GSEM, nous avons trouvé une relation indirecte positive entre les politiques carbone et la valeur de l'entreprise. Nos résultats indiquent que les politiques carbone améliorent la performance environnementale (émissions de carbone) et la divulgation des entreprises, ce qui se traduit in fine par une amélioration de la valeur de l'entreprise. Cela démontre que les politiques carbone au niveau national améliorent non seulement les pratiques environnementales des entreprises, mais également leur valeur. Cette relation s'explique par trois canaux différents, à savoir le canal Walk par une diminution des émissions de carbone, le canal Talk par une divulgation accrue concernant l'impact carbone et le canal Walk-then-Talk par une combinaison de diminution des émissions et d'augmentation de la divulgation.

Dans le troisième chapitre, nous discutons du rôle de la sensibilisation environnementale des consommateurs en tant que facteur de l'amélioration de la performance environnementale des entreprises, puis examinons son impact modérateur sur la performance financière des entreprises. En utilisant les données sur la sensibilisation à l'environnement de Greendex et les données environnementales et financières de Thomson Reuters Asset4, nous effectuons une régression des moindres carrés ordinaires (OLS) sur 5,697 observations composées d'un échantillon de 1,139 entreprises de 18 pays. Nos résultats démontrent un impact positif direct de la sensibilisation des consommateurs à l'environnement sur les performances environnementales et financières des entreprises. Par ailleurs, nous trouvons un impact direct positif de la sensibilisation environnementale des consommateurs sur la performance environnementale des entreprises et la performance financière des entreprises. Cependant, nous mettons en lumière un lien indirect négatif entre PE et FP, qui est modéré par la conscience environnementale des consommateurs. Cela est principalement dû à deux facteurs importants. Premièrement, dans les pays où les consommateurs sont très soucieux de l'environnement, ceux-ci exigent davantage des entreprises et, même les entreprises les plus performantes sur le plan environnemental ne répondent pas aux attentes des consommateurs. Deuxièmement, l'évaluation de la performance environnementale dans ces pays relève principalement du portefeuille des gouvernements et des institutions, et les consommateurs

comptent sur ce qui leur est propagé par ceux-ci (Xiao et al, 2018). Troisièmement, outre leur conscience environnementale, les consommateurs sont également conscients des prix, les amenant à négliger les variables environnementales lorsqu'ils prennent une décision d'achat, ce qui a un impact sur la valeur globale de l'entreprise.

Enfin, le quatrième chapitre examine la relation entre l'activisme environnemental des actionnaires et la valeur de l'entreprise. L'activisme actionnarial fait référence à « tout effort formel ou informel visant à surveiller les dirigeants d'une entreprise ou à communiquer un désir de changement dans la gestion ou les politiques d'une entreprise » (Black, 1990 : 522). En nous appuyant sur cette définition, nous définissons l'activisme environnemental des actionnaires comme un effort des actionnaires pour influencer les politiques et pratiques environnementales de l'entreprise. En utilisant les données sur la performance environnementale de Thomson Reuters Asset4 et les données sur l'activisme actionnarial environnemental (ESA) de 2,281 observations d'Institutional Shareholder Services (ISS), nous trouvons un lien positif EP-FP modéré par l'activisme actionnarial environnemental. Ceci indique que les propositions environnementales des actionnaires activistes sur l'intensité carbone ont amélioré la performance environnementale des entreprises ainsi que leur valeur. La pression des actionnaires se reflète non seulement dans le nombre croissant de propositions environnementales soumises, mais également dans l'augmentation des taux de soutien et d'approbation des politiques et pratiques environnementales.

Globalement, si la performance environnementale des entreprises est parfois considérée comme préjudiciable à leur performance financière, nous constatons que le rôle des politiques carbone au niveau national, la conscience environnementale des consommateurs et l'activisme environnemental des actionnaires ont un impact médiateur et modérateur dans cette relation. L'influence des parties prenantes sur la performance environnementale et financière est liée à la valeur de l'entreprise. Cette thèse souhaite donc approfondir une compréhension globale du rôle des parties prenantes dans le lien entre performance environnementale et financière.

Mots clés : performance environnementale, performance financière, conscience environnementale des consommateurs, activisme actionnarial environnemental, médiation, modération.

Table of contents

List of Figures

List of Tables

Abbreviations

CI	Carbon Intensity
CSR	Corporate Social Responsibility
FP	Financial Performance
EP	Environmental Performance
CEP	Corporate Environmental Performance
EV	Ecosystem Vitality
CFP	Corporate Financial Performance
EPI	Environmental Performance Index
GHG	Greenhouse Gas Emissions
EU ETS	European Union Emission Trading Scheme
NRBV	Natural Resource Based View
GSEM	Generalized Structural Equation Modelling
OLS	Ordinary Least Squares
CDP	Carbon Disclosure Project
CSSCI	Chinese Social Sciences Citation Index
ISS	Institutional Shareholder Services
ESA	Environmental Shareholders Activism

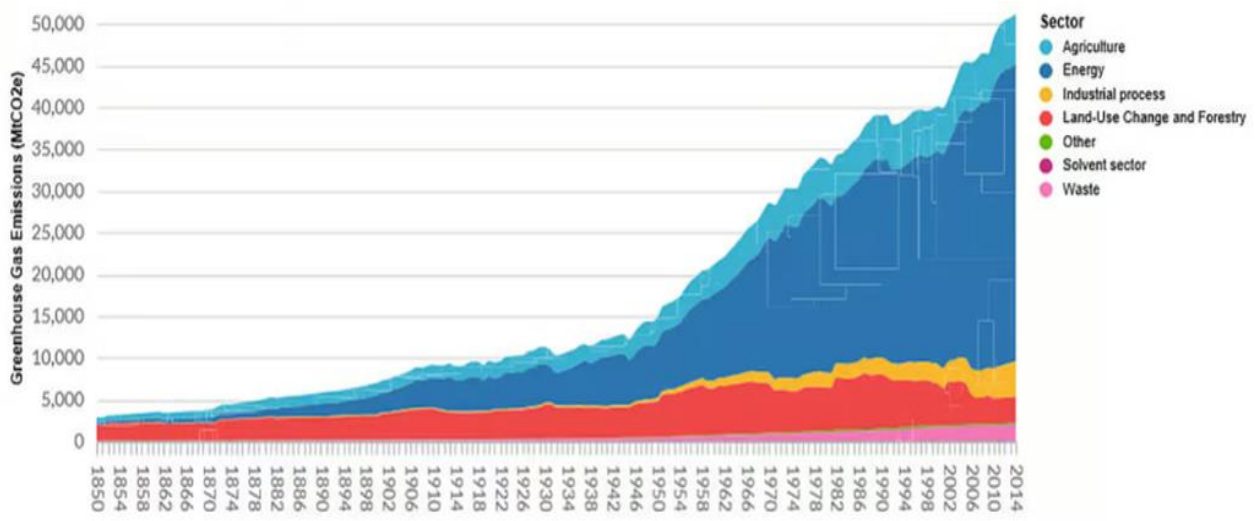
General Introduction

Concerns regarding climate change have witnessed a significant escalation in recent decades (Barnett, 2003, Barnett and Adger, 2003). These apprehensions are primarily triggered by several alarming environmental issues, including rising global average temperature, elevating sea levels, and the systematic depletion of ice and glaciers (Giddens, 2009; Singh and Singh, 2012; Mimura, 2013). These changes have profound and simultaneous impacts on both human life and ecosystem (IPCC, 2014). Furthermore, a 2023 climate report from the National Oceanic and Atmospheric Administration (NOAA) reveals record-high global ocean surface temperatures in June, marking a historical milestone in the planet's 174-year climate record. Additionally, July of 2023 was recorded as the warmest month ever documented.

The main driver of environmental degradation, as identified by the IPCC (2014), is human-induced greenhouse gas emissions. The influence of individuals on the ecosystem is steadily intensifying, according to the same report. The European Environmental Agency corroborates this by noting that global average temperatures have consistently risen since the industrial revolution. Among the various sources of human-induced greenhouse gas emissions, industrial activities emerge as the leading contributor. Between 1970 and 2010, industries were responsible for a staggering 78% of the total greenhouse gas emissions (IPCC, 2014). Figure 1 provides a longitudinal understanding of the contributors of greenhouse gases. Of the main contributors of CO2 in this period, agriculture, energy, and industrial process are at the top over the years. This trend is exacerbated by the growing demand for energy, primarily sourced from fossil fuels, which leads to an accelerated rate of emissions (Nel and Cooper, 2009; Abbasi and Abbasi, 2011). Population growth further exacerbates this issue by increasing energy demand and, consequently, carbon emissions, posing a significant threat to the ecosystem. Thus, it becomes evident that without adhering to the environmental protocols outlined in sustainable

development goals, the desired mitigation of climate change's impact on human lives remains elusive (OECD, 2016).

Figure 1. Primary contributors of greenhouse gases



Source: Resource watch 2018 Washington DC: World Resource Institute

In response to these challenges, global organizations, institutions, and stakeholders are urging companies to embrace environmentally friendly policies. These policies aim to tackle the ecological challenges by reducing their impact on the environment and fostering eco-efficiency to curtail economic harm to the ecosystem (Linnenluecke et al., 2016, Banerjee et al., 2019). Internationally recognized institutions like the Conferences of Parties (COP) and the World Business Council for Sustainable Development actively endorse these environmental impact reduction practices (Bazillier et al., 2017). Given the heightened activism among all stakeholders regarding environmental issues (Flammer, 2013), the adoption of eco-friendly policies has become critically important for companies.

Actions to address climate change are now regarded as one of the foremost long-term trends in global investment. The Global Risk Perception Survey of 2020 reveals a historic shift, with environmental concerns dominating most global risk assessments for the first time in history (World Economic Forum, 2020). This survey highlights the fact that environmental

considerations have overtaken other risks in both likelihood and impact. Notably, a substantial majority of the world's largest 250 companies, 67% in 2017, now openly disclose their emission reduction targets (KPMG, 2017). Similarly, a survey conducted by PRI-Novethic (2017) found that 63% of investment managers and 74% of asset owners view climate change as a fundamental avenue for action. This mounting pressure on companies underscores the urgency of adopting eco-friendly policies to maintain stakeholder confidence in terms of investment, consumer trust, and market competitiveness. Consequently, companies are actively embracing policies geared towards enhancing their eco-friendliness and thereby securing their position in the fiercely competitive market landscape.

The involvement of key stakeholders, among which institutions (Shnayder and Rijnsoever 2018), consumers, and shareholders have a significant impact on both environmental and financial performance of companies. Stakeholder refers to “any group or individual who can affect or is affected by the achievement of organization’s objectives” (Freeman, 1984:46). While the environmental challenges are multi-tiered and are caused by a variety of factors, institutions play a significant role in this sphere. Global institutions are pushing the companies to adopt eco-friendly policies as part of their business processes not only in the domain of emission, but also disclosure. Also, others stakeholders such as environmentally active consumers and shareholders appreciate firms that have an approach of sustainable development and eco-responsible business practices. Because of the growing environmental sensitivity among these stakeholders, poor performance affects the reputation of companies negatively thus leads to undesirable outcomes such as decreased sales and weak financial performance and hence mitigating firm value (Bansal and Clelland, 2004).

The environmental and financial performance of companies are also influenced by the diverse roles of institutions. In the wake of increased global environmental challenges due to climate change, institutions are taking an active role in its regulation and reduction. Institutions such as

Environmental Performance Index, Conference of Parties, and World Business Council for Sustainable Development are actively involving in the domain of firms' decisions about the environmental protocols. These institutions not only provide regulatory guidelines to the companies for endorsing and adopting eco-friendly polices but also provide them with lucrative incentives (Delmas et al. 2008). In the developing countries like India, government is providing subsidies to firms investing in renewable energy or other eco-friendly technologies so as to mitigate its impacts on the natural environment and improve their financial performance at the same time (New York Times, 2022). Overall, the effects of institutions on the environmental performance demonstrates the crucial role they play in defining the conduct of businesses (Ioannou and Serafeim, 2012). Institutions, such as regulatory bodies and certification organizations, have the power to influence companies' environmental practices through policies, regulations, and certifications. For example, environmental labelling certification (ELC) has been found to have a positive impact on both the environmental and financial performance of firms (He et al., 2021). This suggests that institutions can incentivize companies to adopt environmentally sustainable practices, which can lead to improved financial performance.

Not only do institutions encourage and engineer the conduct of business adopted by firms and companies, consumers have a yet greater role in the mobilization of their approach towards environmental protection. There is rich evidence that consumers are more concerned with the sustainable approaches adopted by the firms as they are more actively engaging in eco-friendly consumerism. For example, The Economist Intelligence Unit (2021) shows a staggering 71% rise in online searches for sustainable goods globally over the past five years. This "eco-wakening[1]" is not just occurring among consumers in high-income countries, but is also strong in developing and emerging economies. Increasing consumer interest in sustainability is also

[1] A process of how consumers are driving sustainability.

being reflected in purchases of everyday household items, with consumers more likely to avoid single-use plastic and to choose brands that have environmentally sustainable and more ethical practices and values. In one survey, 66% of all respondents, and 75% of millennial respondents, said they consider sustainability when making a purchase (Sustainability & Consumer Behavior 2022 | Deloitte UK). Consumers are now more environmentally conscious and are now demanding a "do-more" policy from the firms for sustainable development and environmental performance.

Thus, consumers also play a vital role in driving companies to engage in environmental initiatives. Studies have shown that consumers are more likely to support and purchase products from companies that demonstrate a commitment to environmental responsibility (Martos-Pedrero et al., 2022). Consumer engagement in value co-creation processes, such as providing input into the company's competences and word-of-mouth recommendations, can create value for companies (Piligrimiene et al., 2015). Additionally, effective communication of environmental corporate social responsibility (CSR) initiatives to consumers can enhance consumer trust, purchase intentions, and advocacy (Christis & Wang, 2021). Therefore, companies that prioritize environmental sustainability and effectively communicate their efforts to consumers can gain a competitive advantage and improve their financial performance.

In the wake of rising demands from the institutions and consumers for an improvement in environmental performance, shareholders are also manifesting increased concerns for environmental performance on the part of companies (De Villiers et al, 2011). Environmental performance of the companies have an assumed relationship with their financial performance and hence the value of shares. Shareholders, by virtue of increased environmental activism, may also endorsing policies that are eco-friendly. Inadequate environmental performance may result in heavy monetary implications for the firm in the form of fines, lawsuits, and increased operational expenditures. It may then make it difficult for the shareholders to hold the shares

and hence decrease the value of firms. Good environmental performance, on the other hand, may result in financial benefits such as decreased operating expenses and higher revenue from environmentally conscientious clients. For example, Waddock et al. (1997) demonstrated that companies with better environmental performance have an increased customer loyalty and investment prospects. Similarly, Delmas et al. (2008) revealed that companies that pursued environmental management techniques specifically lowering greenhouse gas emissions had a better Tobin's Q. Studies have also highlighted that companies with better environmental performance confront lower financial risks (Sharfman and Fernando, 2008).

Shareholders can influence companies' environmental engagements notably through shareholder activism and proxy voting. Shareholder activism aimed at affecting corporate environmental and social performance has been gaining traction (Cundill et al., 2017). Shareholder engagement, which involves dialogue, letter writing, and shareholder proposals, can lead to changes in companies' environmental practices and policies (Beunza et al., 2022). Studies have shown that shareholder activism has a significant positive effect on corporate financial performance (Pan et al., 2014). Furthermore, the impact of shareholder pressure on the quality of sustainability reporting has been observed, with companies facing pressure from stakeholders such as consumers and the environment producing higher-quality sustainability reports (Rudyanto & Siregar, 2018). Therefore, shareholders who prioritize environmental sustainability and actively engage with companies can drive positive environmental and financial outcomes.

Keeping into consideration the aforementioned debate on the role of institutions, consumers, and shareholders in the environmental performance of companies, it is arguable that companies may come under different pressures to adopt eco-friendly policies. However, the relationship between institutions, consumers, and shareholders as influencing firm value is understudied that, this research efforts to address. This study shows that environmental demand by

stakeholders may affect the financial performance of the firms. This study, therefore, investigates the mediating role of institutions on firm value as mediated through environmental performance. It also studies the moderating impacts of environmental awareness in EP-FP link. We also examine the moderating role of shareholder activism on the relationship between environmental performance and firm value.

Neoclassical economics view profiteering as the social responsibility of the businesses (Friedman, 1970). Investing in the environmental pretension, on the contrary, may drain more resources that could be put to the primary responsibility of profit maximization and thus decrease the wealth of shareholders. From the standpoint of managers, it seems unrealistic to achieve both the social and financial goals simultaneously and without affecting each other (Jensen, 2001), and thus creating a dilemma of agency due to the inability of shareholders to keep the business monitored (Barnea and Rubin, 2010). On the other hand, the natural resource-based view (Hart, 1995, Russo and Fouts, 1997) sees environmental performance as an important resource for companies and suggests that engagement in environmental protection may improve the reputation of firm to be eco-friendly and achieve competitive advantage in the market. Given that the stakeholders are manifesting a greater environmental activism (Flammer, 2013), increasing environmental performance may protect the firms from the after-effects of bad environmental policies and thus resulting into a financial strain. (Bansal and Clelland, 2004). Studies have demonstrated that companies with high environmental performance may get other benefits, such as easier access to investment, (Nandy and Lodh, 2012, Cheng et al., 2014, Banerjee et al., 2019) and lower cost of capital (Heinkel et al., 2001, Sharfman and Fernando, 2008, Chava, 2014, Gupta, 2018). Furthermore, high environmental performance may also protect the firms from latent environmental liabilities in the form of compliance to emission control cost (Clarkson et al., 2004, Chapple et al., 2013, Clarkson et al., 2015). Blending the debate on the orientation of stakeholders for the high environmental performance

of the firm, we extend this this literature by examining the relationship between the environmental performance and its impacts on the firms' financial performance. To examine the relationship between the two variables, we aim to address the following main research question.

Does the environmental orientation of institutions, consumers, and shareholders drive firms' financial performance?

Keeping in view the aforementioned theoretical discussion and empirical evidence concerning institutions, consumers, and shareholders, we propose a tripartite argument to investigate the relationship between the stakeholder (institutions, consumers, and shareholders) induced environmental performance and firm value. Our argument stems from the proposition of natural resource-based view which considers environmental engagement as a significant resource and maintains that environmental protection improves the reputation of companies as environmental-friendly, attract more clients, and improve the financial performance (Hart, 1995, Russo and Fouts, 1997). These propositions are engaged to understand the increasing demand of the stakeholders for eco-friendly process, commodities, and assets. The rising demand for environmental performance by institutions, consumers, and shareholders has come to observation following a set of continuous issues pertaining to climate change, such as warming temperature, melting of ices and glaciers, and rising sea-levels which have serious impacts not only for the human-race but entire ecosystem. In this regard, global green institutions, performing their social responsibility, put forth regulatory guidelines and lucrative incentives (Delmas et al. 2008) to companies for adopting eco-friendly practices in their conduct of doing business. Therefore, the indicators of environmental performance have become areas of due significance for firms and stakeholders (Flammer, 2013) and thence high EP remains the only option to adapt to the demanding conditions of the market. Environmental practices improve the reputation of firms and award them with competitive advantage in the

market thus increasing firm value. We, therefore, argue that investment in environmental protection (carbon emission reduction and carbon disclosure) by the companies enhance their stakes in the market and thus increase their values.

Secondly, we also study the moderating role of consumers' environmental consciousness in the relationship between corporate environmental performance (CEP) and corporate financial performance (CFP). We specifically examine the role of environmental performance in the firm value as moderated through consumers' environmental awareness. As the trend of "eco-wakening" among consumer is rising, the companies and firms receive more demands of eco-friendly practices in their conduct of doing business.

Lastly, we delve deeper in the intervening role of shareholders in the relationship between corporate environmental performance and corporate financial goals. We investigate the impacts of environmental shareholder activism on the link between corporate environmental performance and corporate financial performance. Studies have found a positive relationship between environmental shareholder activism and corporate environmental performance (Clark and Crawford, 2012). Based on the proposition of natural resource based view which predicts a positive impact of environmental performance on firm value (Hart, 1995, Russo & Fouts, 1997), we posit that environmental shareholder activism may translate into higher firm value. We thus hypothesize that the environmental shareholder activism work as a mediator between companies' environmental investments and it financial outcomes, thus influencing the firms' value.

Building upon the aforementioned arguments we raise the following specific research questions to address the central point of this dissertation.

Research Question 1. Does country-level carbon policies increase the corporate financial performance of firms through high environmental performance?

Research Question 2. Does consumers' environmental consciousness influence the firms' value through increased environmental practices?

Research Question 3. How environmental shareholder activism does moderate the corporate financial performance through increased environmental engagement?

Specifically, this thesis comprises four chapters. In first chapter, we present a brief overview of our general research question, examining both EP, FP and role of stakeholders. We analyze their theoretical and empirical literatures and discuss the financial implications for companies. We then bridge their literatures, which leads us to consider more in detail the precise EP-FP link and environmental orientation of institutions, consumers, and shareholders**.** Building on this chapter, we then introduce the avenues of research that are undertaken in the following chapters.

In second chapter, we investigate the indirect impact of country-level carbon policies on firms' value. On one hand, more stringent regulation on carbon emissions may generate costs for companies to decrease their CO2 footprints and disclose more information, leading to a lower value. On the other hand, these policies may also foster innovation and make firms proactive in this field, therefore creating financial value. We precisely investigate this link through three channels: (1) what firms do through their carbon footprint (walk channel), (2) what they say through their carbon disclosure (talk channel) and (3) what they do then say (walk then talk channel combined). Based on a worldwide sample of 4,681 observation for the year 2014, we disentangle these different channels through a mediating model. Our findings suggest that both walk and talk channels have a significant positive impact on firm value, whereas their combination does not. We found that firms that decreased their carbon emission, as well as increased carbon disclosure, yielded higher financial gains. However, when tested through a combination of both emission and disclosure, the results were insignificant. Then, interestingly, stringent carbon regulations at country levels prove to foster for firms both carbon performance

and disclosure that in turn eventually benefits to firm value. These results have implications for regulators, managers, and investors, showing that there seems to be no trade-off between strict carbon regulations and firm value, but rather a virtuous indirect relationship.

Corporate environmental performance (CEP) is becoming an increasingly important aspect of firm operations, as more and more consumers are becoming aware of the environmental impact of corporate activities. In chapter 3, we examine the role of consumers' environmental consciousness in the relationship between CEP and corporate financial performance (CFP). Consequently, high CEP firms may not meet these expectations and, therefore, may be perceived as less productive. Consumers in socially and environmentally sustainable countries take firms sustainable practices for granted based on the idea that it is the duty of firms to conform to sustainable norms (Xiao, 2018). Similarly, our results confirm this relationship between consumer environmental awareness and firms' financial performance. The interaction between CEP and consumers' environmental consciousness is negatively associated with CFP, suggesting that high levels of consumers' environmental consciousness can mitigate the positive impact of CEP on CFP. This study is an important contribution to the literature on corporate environmental performance, as it highlights the importance of taking consumers' environmental consciousness into account when examining the relationship between CEP and CFP. By doing so, firms can gain a better understanding of the factors that affect their financial performance and can adjust their environmental policies and practices accordingly. One possible explanation for the negative impact of consumers' environmental consciousness on the CEP-CFP link is that firms may be investing more in environmental sustainability, which can be costly which affects their financial performance. Consumers, on the other hand, may take it for granted as the responsibility of firms as social actors and be less willing to pay the premium that involves in this process.

In the fourth chapter, we investigate the impact of environmental shareholder activism (ESA) on firm value and its moderating role in the link between a firm's carbon intensity and firm value. The study finds robust evidence that ESA improves a firm's value, as measured by Tobin's q and market-to-book value ratio. This suggests that investors are willing to pay a premium for firms that are environmentally responsible and transparent. However, the study also finds that this relationship holds only for firms in carbon-intensive industries, indicating that the environmental impact of a firm's operations is an important consideration for investors in these industries. Moreover, the study finds that ESA amplifies the negative impact of a firm's carbon intensity on its market value because of the consistent sustainable proposals on their part. This means that firms with poor environmental performance are more likely to experience a decrease in market value if they are targeted by ESA. This highlights the potential for ESA to have a significant impact on a firm's financial performance and underscores the importance of environmental performance for long-term sustainability.

Overall, this study contributes to the growing body of research on the impact of environmental performance on firm value and the role of investors in promoting environmental responsibility. It suggests that firms in carbon-intensive industries should pay close attention to their environmental impact and take steps to improve their performance in this area. Furthermore, it underscores the importance of ESA as a tool for investors to hold companies accountable and drive positive change in the business world. Moving forward, businesses should recognize the growing importance of environmental responsibility and the potential impact that ESA can have on their financial performance. They should take proactive steps to reduce their environmental footprint and be transparent about their performance in this area. Investors, on the other hand, should continue to push for greater accountability and transparency from companies and use their influence to promote environmental responsibility in the business world. Together,

businesses and investors can work towards a more sustainable future and create long-term value for all stakeholders.

Chapter 1. Stakeholders, environmental performance and company`s financial performance

In this chapter, we first provide a brief overview of corporate environmental engagements and their financial implications from both theoretical and empirical perspective in section 1.1. We then discuss the growing environmental pressure on firms by different sources through different channels in section 1.1.1. The section 1.1.2 highlights deeper insights into financial implications of environmental engagements. We then bring forth empirical evidence of EP-FP link from existing body of knowledge in section1.1.3. We next discuss the role of different stakeholders and explore different channels through which these stakeholders influence the working of firms in section 1.2. This section is further divided into sub-parts to explore the nature and essence of these stakeholders and the channels they have adopted to affect the environmental and financial performance of the firms. Firstly, we briefly describe the role of institutions` environmentalism in the carbon regulation of firms while engaging different empirical approaches and theoretical standpoints in section 1.2.1. Secondly, a brief relationship of consumers' environmental consciousness is brought under discussion and its relationship with the environmental practices in the process of creating finished good in section 1.2.2. Lastly, in section 1.2.3 we discuss the role of shareholders` environmental activism in the role of companies' environmental engagements and their financial implication on the value of their shares using latest theoretical debates and empirical studies from across the existing body of literature. We then conclude our discussion while highlighting the key theoretical, methodological and empirical gaps about the relationship between environmental performance and firm value.

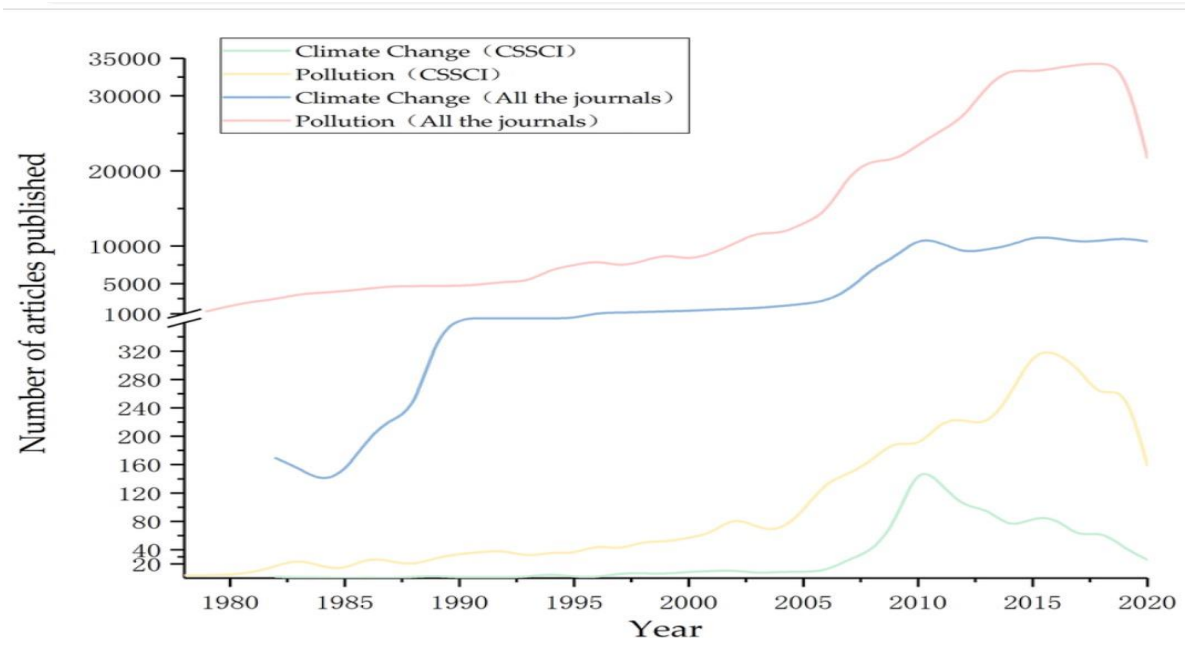
1.1. Corporate environmental engagements

1.1.1. The growing environmental pressure

Human activities have been shown as the significant contributor in the worsening state of environment (IPCC, 2014). According to OECD (2016), the economic output of the world is predicted to rise four-fold by 2050, hence increasing the demand for energy which directly translate into an increasing rate of ozone depletion. It also predicts a 80% increase in the consumption of energy, acquired through fossil fuels. The growth of global economy is interdependent on increasing rates of greenhouse gas emissions, which further intensifies the issue of climate change. Therefore, reducing its impacts on human wellbeing is only possible by acting upon the regulations provided by sustainable development goals (OECD, 2016).

Industries, agriculture and business activities are the primary human activities that contribute to GHG emissions and have an impact on the environment. It has also attracted the attention of scientific community across different disciplines who engage in scholarly research to explore and explain different dimensions and causes of climate change. Figure 1.1 shows the number of research articles on the rising intensity of climate change. A rise in the environmental consciousness of different stakeholders have explained the active role companies may play in the sustainability of environment (Linnenluecke et al. 2016). Demands for environmentally responsible behavior and practice has increased with the rising growth in the awareness about environmental challenges (Musova et al, 2021).

Figure 1. 1 Rising number of articles published on climate change

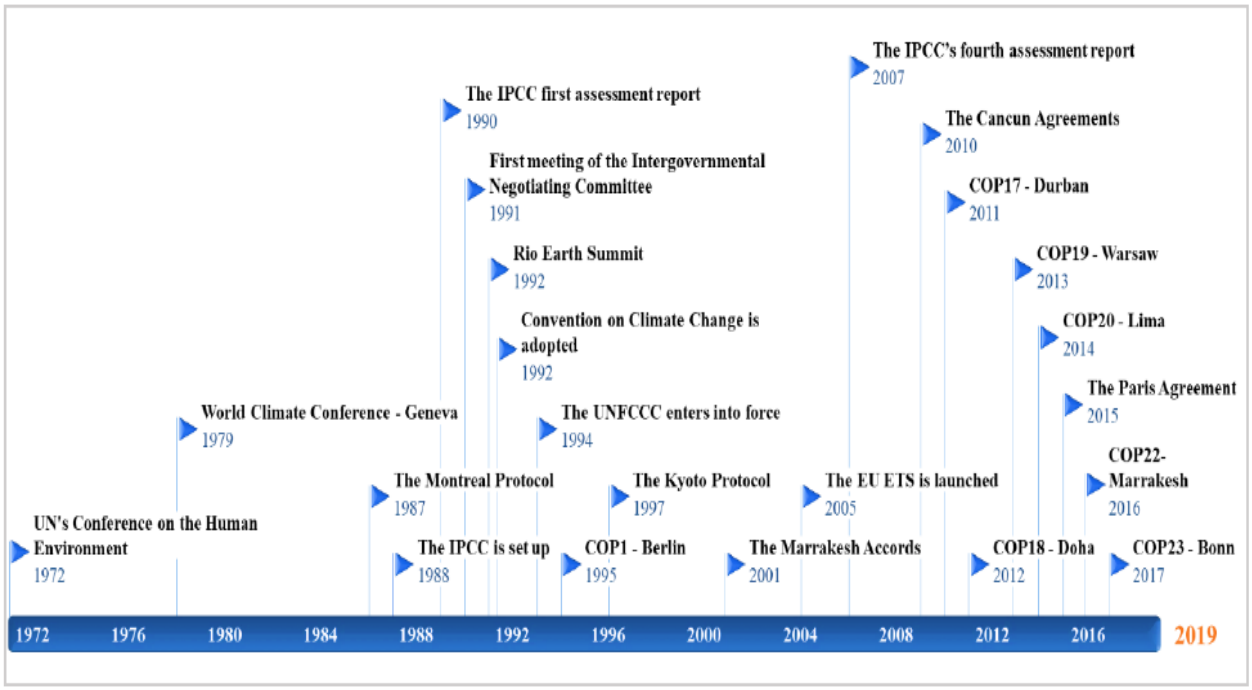


Source: ResearchGate

Stakeholders are influencing the companies to adopt pro-environment practices through different channels. Global institutions have met on multiple occasions Rio Earth Summit in 1992, the Millennium Summit in 2000, the Johannesburg World Summit on Sustainable Development in 2002, and the Paris Agreement in 2015 (COP 21) to assist the course of increasing awareness on the impacts of climate change. European Parliament has published a time frame as shown in figure 1.2 in which different institutions work together to reduce greenhouse gas emissions and enact eco-friendly regulatory guidelines at both national and international spheres. Conference of Parties COP 21 is the hallmark of global efforts to promote low-carbon economics and eco-friendly investments to build a hazard-free future. Resultantly, important sustainable finance-related standards are developed by the countries obliging businesses to adopt environment friendly and socially responsible practices in their process and production. According to the white paper from PRI (2019), around 97% of the sustainable finance policies have been adopted in the last century which has expanded in a notable rate in

the world's 50 largest economies. Increased environmental sensitivity on the environmental challenges has made them a key note of concern for businesses (Flammer, 2013).

Figure 1. 2 Climate change negotiations timeline in Europe



Source: European Parliament
Interactive timeline: A GUIDE TO CLIMATE CHANGE NEGOTIATIONS

The aforementioned debate highlights a growing sensitivity to environmental challenges on the part of different stakeholders and the pressure that is being asserted on companies to adapt to eco-friendly practice in their business process. This body of knowledge informs us about the growing pressure and new strategies that are changing the course of doing business from a solely profit-maximization zone to an eco-friendly business approach. Different institutions and governmental agencies are taking an active part in this process to mitigate environmental problems. In the subsequent paragraphs, we will discuss the financial implications of environmental engagement.

1.1.2. Financial implications of environmental engagements for firms

While the financial costs of environmental responsibility are not a new avenue of research for scientific community, environmental performance of firms is currently attracting more spotlight in the academic debate. Academics have studied the financial implications from both theoretical and empirical standpoints substantially (Horváthová, 2010). Nevertheless, empirical studies are mixed. While some studies show a negative relationship between environmental performance and financial performance (Russo and Fouts, 1997, Konar and Cohen, 2001, King and Lenox, 2001, Clarkson et al., 2011, Guenster et al., 2011, Flammer, 2013, Jo et al., 2014), others have found positive relationship between the two variables (Stanwick and Stanwick, 1998, Galema et al., 2008, Jacobs et al., 2010, Marsat and Williams, 2013). There are strong theoretical justification for these inconclusive results between environmental performance and financial outcomes. The negative relationship between environmental and financial performance is understood while engaging the theoretical propositions of neoclassical economists' perspective (Friedman, 1970). This perspective proposes that the primary social responsibility of the businesses is profit maximization. Investing in socially responsible initiatives such as environmental engagement, depletes the resources of companies that could otherwise be invested in the core purpose of increasing shareholder's value. It is therefore understandable that managers concentrate on improving the fundamental operations, procedures, and capacities of the companies instead of engaging in resource depleting activities such as environmental activism. Jensen (2001) argues that it is difficult for the managers to continue working for the fulfilment of both financial and social goals simultaneously. In addition, it is also challenging for the shareholders to monitor multiple goals of the companies at the same time which leaves managers with an opportunity to serve their vested personal interests. Environmental engagement could result into an agency problem where managers may divert from the primary objective of profit maximization for shareholders. In doing so, they end up in pro-environmental practices and hence increase their reputation (Barnea and Rubin, 2010), establish themselves

(Cespa and Cestone, 2007, Surroca and Tribó, 2008, Jiraporn and Chintrakarn, 2013, Chahine et al., 2019), and weakens control mechanism (Surroca and Tribó, 2008, Fabrizi et al., 2014) at the expense of decreasing the value of shares.

The profit maximization proposition of neoclassical economist approach is contested, and other approaches have argued in favor of environmental policies as actually improving the financial performance of firms. For instance, stakeholder theory asserts that businesses should consider the concerns of all the stakeholders, in this case institutions, consumers, and shareholders that can affect or are affected by the accomplishment of organizational goals. The theory also emphasizes the insights of stakeholder's in business strategies (Freeman, 1984). Since the modern process of doing business rests on the satisfaction of stakeholders for its success and development, it creates a long-lasting relationship between the stakeholders and firms which ultimately translates in increasing financial performance of the organizations. Furthermore, the instrumental form of stakeholder theory (Jones, 1995, Donaldson and Preston, 1995) contends that investment in creating a positive relationship with stakeholders provides the firm with a cross-cutting competitive edge in changing landscape of doing business. The operational managers, therefore, can gain stakeholders' cooperation and confidence and create a loyalty to the firm, hence increasing the value of firm for all the stakeholders.

The natural resource based view (NRBV) (Hart, 1995, Russo and Fouts, 1997), an extension of resource-based view paradigm (Wernerfelt, 1984, Barney, 1991), considers environmental engagement as a potential resource for the firms. It proposes that investment in eco-friendly practices, such as innovative technologies and pro-environmental policies, improve both the environmental performance and hence firms' reputation among all stakeholders. It provides the firm with a competitive advantage since the competitors find it challenging to replicate the environmental policy requirements to redesign their manufacturing and service delivery options. Hence, environmental engagement enhances the reputation of firm by providing it with a competitive advantage while acquiring scarce, priceless, and not replaceable resources.

Additionally, environmental performance also increases the companies' long-term economic growth (Hart, 1995).

1.1.3. The EP-FP link: evidence from empirical studies

Studies have examined the EP-FP link through different metrics and approaches, such as portfolio analysis, regression analysis, and event study. Since the theoretical approaches have postulated both negative and positive relationships between EP-FP (Horváthová, 2010, Endrikat et al., 2014), empirical studies have also shown mixed results in this domain. Although not all studies have found a positive relationship between environmental and financial performance, yet the inclination towards a positive result is greater (Albertini, 2013, Dixon-Fowler et al., 2013, Endrikat et al., 2014, Endrikat, 2016). However, Jaggi and Freedman (1992), Fisher-Vanden and Thorburn (2011), Jacobs et al. (2010), and Lioui and Sharma (2012) identified a negative correlation between EP-FP, while Cohen et al. (1997) and Graves and Waddock (1999) couldn't find any significant relationship. Horváthová (2010) examined the results of 37 studies in a meta-analytic study with a total of 64 results through regression modelling and portfolio analysis. She discovered different links between EP-FP with 35 results showing a positive relationship, 10 showing negative results, and 19 depicting an insignificant link between environmental and financial performance. There are different methodological factors responsible for the inconclusiveness in the results of EP-FP link. (Horváthová, 2010).

Other meta-analysis studies have depicted the cumulative findings of a rich body of empirical studies that show a positive relationship between environmental and financial performance (Albertini, 2013, Dixon-Fowler et al., 2013, Endrikat et al., 2014, Endrikat, 2016). Recently, studies have also linked environmental performance with additional organizational outcomes in addition to financial gains. For example, some studies show environmentally friendly businesses have a greater access to investors (Banerjee et al., 2019, Nandy and Lodh, 2012, Cheng et al., 2014) and a lower cost of capital (Sharfman and Fernando, 2008, Heinkel et al., 2001, Gupta, 2018, Chava, 2014). Furthermore, Dögl and Holtbrügge (2014) maintained that

environmental engagement enhances the environmental reputation of firms which leaves favorable marks on the commitment of employees. Among other benefits of environmental performance, insurance due to environmentalism has recently come to light (Godfrey et al., 2009). Ambec and Lanoie (2008) contend that environmental practices assist businesses to develop long-lasting relationships with stakeholders from outside while at the same time lowering the risks of those involved.

Flammer (2013) argues that stakeholders are quite concerned with the potential impacts of firms' environmental practices on natural environment. Studies have discovered an immediate and unfavorable market response to the disclosure of negative environmental news on any firm (Hamilton, 1995, Flammer, 2013, Krüger, 2015, Endrikat, 2016, Capelle-Blancard and Petit, 2019). It demonstrates that inconsiderate environmental actions, (endangering ecosystem, or exceeding carbon footprint limits) of the businesses are punished by the other stakeholders. Furthermore, studies have also concentrated on the advantages of socially responsible and environmental practices of firm in enhancing their value by mitigating the risks connected with bad-news story (Peloza, 2006). Thus, environmental engagements might be viewed as an expense in the short term, but they may increase their value in the long run by reducing the chances of value loss due to an unfavorable event in the future. .

Additionally, studies have explained the companies' carbon intensity as a latent environmental liability in the event of a strict environmental regulations and/or stakeholders' sensitivity to the effects of business operations on the ecosystem at large (Clarkson et al., 2004, Chapple et al., 2013, Clarkson et al., 2015). Compliance with these regulatory guidelines may require companies to invest in less-carbon intensive technologies and processes. Alternatively, companies can also purchase allowances in an event of Emission Trading Scheme (ETS) to fulfill the environmental guidelines. Similarly, Chapple et al. (2013) observed that market capitalization of carbon-intensive firms decreased about 7% to 10% following the proposed announcement of environmental guidelines in Australia. Clarkson et al (2004) argues that strict

environmental restrictions increase the production costs of firms significantly, whereas financial market evaluates a company's environmental liabilities using emission data, also known as toxic release inventory.

1.2. The role of stakeholders in driving environmental and financial performance

1.2.1. Role of stakeholders

In recent years, environmental performance has emerged as a paramount concern for a diverse array of stakeholders. Stakeholders encompass various individuals, groups, and institutions interconnected with and dependent on firms. They possess the ability to exert influence on firms while also being influenced by the firms' actions. According to stakeholder sheory, businesses have a responsibility not only to their shareholders but also to a broader spectrum of stakeholders, including employees, customers, suppliers, and the wider community (Freeman, 1984). This theory underscores the significance of recognizing that corporate activities have repercussions on stakeholders, thus playing a pivotal role in shaping corporate environmental strategies.

Institutions, consumers, and shareholders are the key stakeholders that may influence the relationship between environmental performance and overall firm value. The institutions regulate and set target for the environmental performance of firms (Hartmann and Uhlenbruck, 2015). This influence adds in the environmental goals of the firms which may ultimately translate into increased firm value. Furthermore, consumers have grown environmentally conscious in the wake of increased climate sensitization by institutions (Rahman et al, 2020) which may influence their behavior while making a purchase. We assume that this environmental consciousness on the part of consumers also influence the relationship between corporate environmental performance and firm value. Lastly, environmental activism of the shareholders may be a result of institutional regulation (Kelly, 2021) as well as consumer environmental consciousness. We hypothesize that shareholders environmental activism also influence the environmental performance of firms which may ultimately result in overall

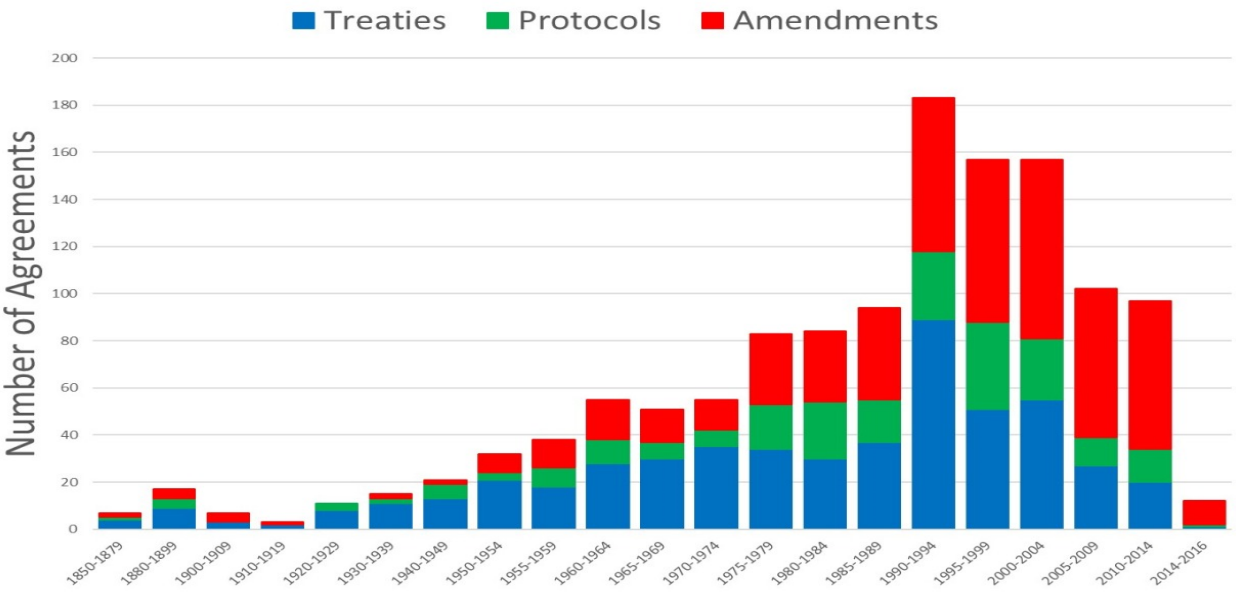
increased firm value. The involvement of these stakeholders in this study is important to increased firm value.

1.2.2. Role of Institutions` environmental regulations

Throughout history, there has been a growing involvement of various global (Hall, 2015), regional, and national (Galarraga, Mikel, and Anil, 2011) advocacy institutions in raising awareness about the potential consequences of climate change and driving campaigns to mitigate its impact. Figure 1.3 illustrates the increasing number of climate change agreements reached since the industrial revolution. Extensive research has consistently shown a positive relationship between corporate environmental regulations and firm value (Porter, 1991, Palmer, Oates et al., 1995, Porter and Van der Linde, 1995, Dowell, Hart et al., 2000). Conversely, Filbeck and Gorman (2004) and Triebswetter and Hitchens (2005) have highlighted a negative correlation between regulation and value maximization. Previous studies have also emphasized the importance of carbon disclosure by firms, with a primary focus on voluntary disclosures (Matsumura et al., 2014, Choi et al., 2021, Griffin et al., 2017).

The firms' carbon footprints has been a significant topic of discussion as a leading contributor to climate change (Shen et al., 2020). Numerous international organizations have emphasized the need to regulate and reduce carbon emissions by firms to protect the natural environment (Hall, 2015). Institutions such as the Environmental Performance Index by Yale University, the Conference of Parties, the World Business Council for Sustainable Development, the Intergovernmental Panel on Climate Change (IPCC, 2007), the United Nations Framework Convention on Climate Change (UNFCCC), and the Rio Earth Summit have actively engaged in raising awareness and regulating firms to reduce their carbon footprints (Kolk & Pinkse, 2004). These regulatory bodies, alongside other stakeholders, have exerted direct influence on the environmental practices of firms, resulting in a significant reduction in carbon emissions (Dunn, 2002, Kolk & Pinkse, 2007, Yeoh & Tang, 2007, Hashmi and Alam, 2019).

Figure 1. 3 Number of agreements on climate change



Source: International Environmental Agreements Database Project 2017

Carbon disclosure serves as a crucial metric for assessing a company's environmental performance. Various studies have consistently demonstrated a positive correlation between the extent of carbon disclosure and a company's financial performance (Matsumura et al., 2014, Choi et al., 2021, Griffin et al., 2017). An increase in environmental disclosure directly contributes to legitimizing firms within a competitive market (Milne and Patten, 2002). Notably, research by Deegan and Gordon (1996) has established that lobby groups intensify their scrutiny of firms' environmental performance, which, in turn, leads to an expansion in disclosure efforts. Cho and Patten (2007) have also highlighted the role of heightened environmental engagement and parallel disclosure as instruments of legitimization. Furthermore, Lu and Abeysekera (2014) have provided empirical evidence demonstrating the positive association of corporate social and sustainability disclosures with factors such as company size, industry classification, and overall profitability.

The relationship between environmental regulation and increased environmental disclosure is significant, translating into improved financial outcomes for companies. As argued by Luo and

Tang (2014), firms with robust environmental performance are more inclined to disclose their activities, thereby distinguishing themselves and gaining improved access to financing opportunities. Consequently, it can be asserted that both regulation of carbon emission and disclosure are linked with environmental performance

1.2.3. Role of consumers` environmental consciousness

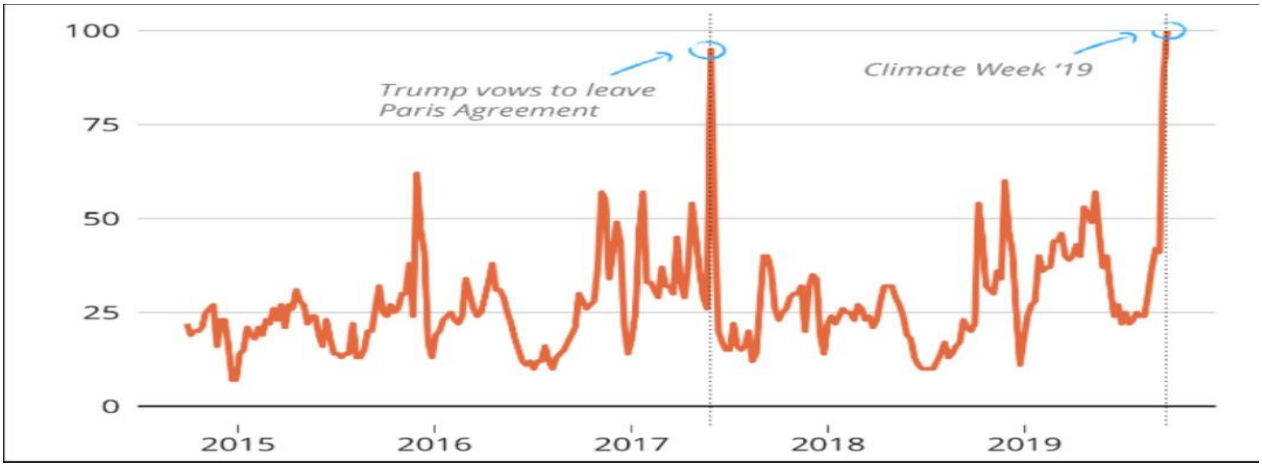
Among the various stakeholders involved, consumers hold a pivotal role in this complex equation. The environmental practices of businesses are now significantly influencing consumers' choices, reflecting a growing awareness catalysed by global institutions. Numerous studies have suggested that consumers are increasingly inclined to favour products from companies with a strong environmental track record (Grimmer and Bingham, 2013, Nyilasy, Gangadharbatla, and Paladino, 2014). What's more, these studies have indicated that consumers are even willing to pay a premium for products manufactured using environmentally friendly processes (Polonsky and Rosenberger III, 2001, Pickett-Baker and Ozaki, 2008).

This consumer behaviour shift underscores the expanding environmental consciousness within society and its direct impact on patterns of consumption. Firms' environmental performance is now seen as an indicator of their social responsibility, which, in turn, shapes consumers' purchasing decisions and thereby influences the financial performance of these firms. Mohr et al. (2001) have even suggested that socially responsible firms are perceived as trustworthy, and consumers tend to prefer their products. Moreover, environmental performance extends its influence to various aspects of consumerism, as consumers believe that companies with strong environmental records are more likely to produce high-quality goods, fostering brand loyalty (Sen and Bhattacharya, 2001, Salmones et al., 2005, Werther & Chandler, 2005).

In recent years, environmental concerns have intensified, leading consumers to become increasingly conscious of the impact their consumer behaviour can have on climate change. Figure 1.4 illustrates the rise in online searches related to climate change and environmental topics, emphasizing the growing significance of these issues in public discourse. Studies have

consistently shown that younger generations, such as Millennials and Generation Z, are displaying an even greater degree of environmental consciousness. They tend to favour products with a lower environmental footprint (De Pelsmacker et al., 2005, Kidwell and Turrisi, 2004). This profound shift in consumer behaviour has prompted firms to invest more in improving their environmental performance to align with evolving consumer preferences. Firms boasting robust environmental engagement records also tend to enjoy a superior brand reputation and image (Sen and Bhattacharya, 2001, Salmones et al., 2005, Werther & Chandler, 2005). A favourable reputation leads to increased customer loyalty and repeat purchases (Dick and Basu, 1994, Weiwei, 2007). Additionally, research has argued that high environmental performance can result in heightened customer satisfaction (De Mendonca and Zhou, 2019).

Figure 1. 4 Online searches for climate change



Source: Google Trends

The connection between environmental performance and consumer behaviour has also been explored by incorporating various financial performance variables. For instance, Polonsky and Rosenberger (2001) delved into the link between firms' environmental performance and consumers' willingness to pay more. Their study revealed that consumers are indeed willing to pay a premium for eco-friendly products. However, this willingness is influenced by several factors, including the level of environmental performance, product type, and individual

consumer characteristics. Similarly, Boulstridge and Carrigan (2000) examined the concept of "green consumption," investigating the purchase and use of environmentally friendly products. They found that green consumption is influenced by environmental concerns, social norms, and personal values, and it extends beyond particular demographics or market variables.

In a similar vein, Lee and Hutton (2015) scrutinized the relationship between environmental performance and brand loyalty. They argued that consumers are more inclined to remain loyal to brands that exhibit a strong commitment to environmental sustainability, particularly among younger consumers with heightened environmental awareness.

Numerous other studies have explored the intersection of environmentalism and consumerism. Sen and Bhattacharya (2001) posited that environmental performance significantly contributes to building and maintaining customer loyalty, emphasizing that companies with strong environmental performance are more likely to gain consumer trust. Similarly, Du et al. (2010) demonstrated that strong environmental performance by companies results in a more positive reputation in the eyes of consumers. In summary, these studies collectively suggest that environmental performance can have a profound impact on consumer behaviour, with consumers seeking products and services that have a lower impact on climate change. However, the financial implications of this relationship, particularly with the moderating role of consumers' environmental consciousness, remain relatively unexplored.

1.2.4. Role of environmental shareholder activism

In recent decades, companies have faced substantial environmental pressure from stakeholders, compelling them to adhere to environmental protocols (Clark and Crawford, 2012). Environmental activism among shareholders has emerged as a pivotal factor in this context. Shareholders have become increasingly environmentally conscious, evidenced by a surge in environmental-related shareholder proposals observed in recent years (Flammer, Toffel, and Viswanathan, 2021). Consequently, shareholders are playing a significant role in reshaping the governance structure and decision-making processes of firms (Goranova and Ryan, 2014,

Stathopoulos and Voulgaris, 2016).

According to Clark and Crawford (2012), environmental shareholder activism exerts a substantial impact on improving the environmental performance of firms. The natural resource view, as supported by studies (Hart, 1995, Russo and Fouts, 1997), suggests that this activism can lead to higher valuation for the firm. We posit that when environmental shareholder activists target a firm, they provide new information to the market regarding improvements in the target firm's environmental commitments. Consequently, the market responds positively by investing more in its shares and consuming its products, resulting in higher valuation.

However, the pursuit of environmental engagement can create agency issues, where managers may prioritize their self-interests over environmental concerns proposed by shareholders, as it is often challenging for shareholders to effectively monitor these activities (Barnea and Rubin, 2010). Nonetheless, environmental shareholder activism can mitigate these agency issues by strengthening the monitoring mechanism (Black, 1991; Pound, 1992). As a result, firms targeted by environmental shareholder activism may achieve higher valuations in the market.

Shareholder activism has garnered increased attention over the past few decades, with scholars examining its impacts on various avenues for enhancing a firm's financial assets (Stathopoulos and Voulgaris, 2016, Denes, Karpoff, and McWilliams, 2017). Despite receiving less support, shareholder activism, particularly concerning executive compensation, anti-takeover provisions, and social and environmental practices, can influence managers to address shareholder demands (Flammer et al., 2021). Goranova and Ryan (2014) and Smith (1996) contend that shareholder activism is instrumental in reshaping corporate governance structures and decision-making processes. Denes et al. (2017), in a comprehensive review spanning 30 years of literature, conclude that shareholders' environmental activism reduces agency conflicts and enhances a firm's financial efficiency, ultimately leading to an improvement in the target firm's value.

Researchers have also explored other channels through which environmental shareholder

activism is linked to firms' financial outcomes. For instance, Boyson and Mooradian (2011) and Shingade et al. (2022) examined the relationship between shareholder activism and firms' value and operating performance. They found that shareholder activism indeed improves both the short-term value and long-term performance of firms. Moreover, significant alterations were observed in firms' performance when shareholders demanded changes in corporate governance and reductions in excess cash.

Drawing on agency theory, Boyson and Mooradian (2011) propose that activism encourages managers to distribute excess cash as dividends, thereby enhancing the value of firms' shares. Activism also offers a potential means of addressing issues related to monitoring and incentives, ultimately improving firm performance. In line with these arguments, Black (1991) and Pound (1992) contend that activism reduces costs associated with agency conflicts and incentives, enhancing firm performance through an improved monitoring mechanism.

Conclusion: avenues of research

The foundation and operation of firms are intricately intertwined with institutions, shareholders, and consumers. In the following chapters, we conduct empirical analyses to explore the relationship between environmental performance and financial performance, fostered by institutions, and moderated by consumers and shareholders. Our primary aim is to capture the nuanced influence of corporate environmental performance on corporate financial performance, dissecting the mediating and moderating roles played by these pivotal stakeholders.

Furthermore, other stakeholders, including shareholders, exert pressure on firms to adhere to these regulations for the greater good of the ecosystem and humanity as a whole. In this dissertation, carbon emissions will be regarded as a major indicator of firms' performance, influenced by institutional influences. However, the financial implications of these influences remain largely unexplored. Our thesis will first examine the role of institutional environmental regulation, specifically carbon emissions and disclosure, in the relationship between firms' environmental performance (EP) and financial performance (FP).

Consumer environmental consciousness has garnered significant attention in recent times, and its impact on firms' environmental engagement has been studied extensively. This research has revealed diverse effects of consumers' environmental consciousness on corporate environmental performance, including implications for green consumption, customer loyalty, willingness to pay a premium, firm reputation, and brand loyalty. We hypothesize that consumers' environmental consciousness also exerts a moderating influence on the link between environmental performance firms' financial performance, and in this study, we aim to elucidate the various channels through which this moderating role plays out on financial performance.

Furthermore, shareholders wield significant influence in the corporate landscape. Environmental shareholder activism has gained prominence as a force influencing firms' environmental practices. Various studies have explored the mechanisms through which environmental shareholder activism impacts firms, such as strengthening monitoring systems, improving corporate governance, encouraging pro-environmental decision-making, reducing agency problems, and affecting operating performance. We contend that environmental shareholder activism also has a moderating effect on firms' financial performance, which is another critical avenue we will investigate in this dissertation.

Drawing upon the variables mentioned above and their potential impact on environmental and financial performance, we posit that all stakeholders (institutions, consumers, and shareholders) play pivotal roles in affecting firms, both directly and indirectly. Our research agenda encompasses their influence not only on firms' environmental performance but also on their financial performance, the primary dependent variable in this study. Through our comprehensive findings, we aim to shed light on these relationships in detail and contribute to a deeper understanding of the link between environmental and financial performance in the context of these key stakeholders.

Chapter 2. Walk or Talk? Investigating the channels between country`s carbon policies and firm value.

Abstract

This study delves into the indirect impact of country-level carbon policies on firms` value. While stringent regulations on carbon emissions may initially entail costs for companies as they strive to reduce their CO_2 emissions and disclose more information, potentially leading to a perceived lower value, these policies may also stimulate innovation and prompt firms to take proactive measures, thereby creating financial value. This study investigates this complex relationship through three distinct channels: (1) the actual actions firms undertake to reduce their carbon footprint (the "walk" channel), (2) the information they convey through carbon disclosure (the "talk" channel), and (3) the combination of both actions and communication (the "walk then talk" channel). Drawing upon a global dataset comprising 4,681 observations for the year 2014, we disentangle these diverse channels through a mediating model. Our findings reveal that both the "walk" and "talk" channels exert a significant and positive impact on firm value. However, the combined effect of these channels does not demonstrate the same positive relationship. We show that stringent carbon regulations at the national level prove to incentivize firms to improve both their carbon performance and disclosure practices, ultimately contributing to increase in firm value. These results carry substantial implications for regulators, managers, and investors, suggesting that there may be no inherent trade-off between rigorous carbon regulations and firm value. Instead, there appears to be a virtuous and indirect relationship between the two, highlighting the potential for sustainable financial gains within a context of heightened environmental responsibility.

Key words: Carbon policies, Carbon emissions, Carbon disclosure, Sustainable development, Firm value.

JEL Codes : Q58, G32, Q01.

2.1. Introduction

In the face of growing concerns about climate change, national and international institutions have been compelled to intervene and regulate the environmental performance of companies. These institutions are actively encouraging firms and industries to adopt environmentally friendly policies and practices. Several international organizations are spearheading these efforts. For instance, the Intergovernmental Panel on Climate Change (IPCC) assesses scientific knowledge on climate change and releases reports on mitigating its impacts, with representatives from governments worldwide. Likewise, under the Conference of Parties (COP21) framework adopted under the United Nations Framework Convention on Climate Change (UNFCCC), countries convene to discuss and make decisions regarding country-level carbon policies aimed at mitigating climate change's impacts. Additionally, the Environmental Performance Index (EPI) serves as a comprehensive tool to assess and quantify countries' environmental performance through benchmarking and public awareness campaigns, ultimately contributing to climate change mitigation.

These regulatory bodies wield substantial influence over firms' environmental behaviour, resulting in a noticeable decrease in carbon emissions (Yin, Liu, and Gu, 2022). The increase in environmental regulation has led to higher environmental disclosure by companies, potentially translating into improved economic outcomes. Luo and Tang (2014) thus argue that firms with strong environmental performance are more likely to disclose their activities to distinguish themselves and gain better access to financing.

Addressing climate change also requires concrete and concerted action from individuals, groups, and institutions alike. The question of "Does it pay to be green?" has been the subject of extensive research over the past few decades (Nguyen, 2018, King and Lenox, 2001a, Hart and Ahuja, 1996, Clarkson et al., 2011). With the advent of institutional regulations and international agreements, firms have increasingly adopted green practices (Rennings and

Rammer, 2011, Zhang et al., 2020, Nie et al., 2022). However, the urgency of adhering to these environmental protocols has grown exponentially at the firm level, presenting substantial challenges given their potential impacts on business sustainability (Berman and Bui, 2001, Moosa and Ramiah, 2014). Studies have yielded inconclusive results regarding the relationship between corporate environmental performance and corporate financial performance (Dixon-Fowler et al., 2013, Margolis & Walsh, 2001, Horváthová, 2010). This lack of consensus is attributed to several factors, including heterogeneous empirical methods and variables used in these studies. For example, Al-Tuwaijri et al. (2004) employed the ratio of recycled toxic waste to generated toxic waste to measure environmental performance, while Guenster et al. (2006) used eco-efficiency scores, and Earnhart and Lizal (2007a,b) used the level of air-pollutant emissions to gauge environmental engagement.

In the wake of the climate emergency, global institutions are emphasizing the need for more ambitious climate action policies to accelerate climate change mitigation efforts. They consistently work on crafting international agreements, environmental guidelines, and policies to sensitize countries to align their climate actions with the urgency and severity of climate change. The current study employs country-level environmental policies as regulatory bodies to assess firms' environmental performance. It also investigates the indirect relationship between regulation-guided environmental performance and corporate financial performance. To achieve these objectives, we follow the recommendations of Walker and Wan (2012), who proposed substantive action (the "walk" channel), symbolic action (the "talk" channel), and green highlighting (the "walk then talk" channel) and their financial implications on firms as future research avenues.

To explore this multifaceted relationship between environmental policies and financial outcomes, we employ Ecosystem Vitality climate energy scores (henceforth EV climate energy) from the Environmental Performance Index (EPI) as a measure of country-level carbon policies.

We use Greenhouse Gases (GHG) emissions impact ratio and carbon disclosure data from Trucost to measure environmental performance and disclosures, respectively. By using Tobin's Q to measure firm value, we conduct Generalized Structural Equation Modelling (GSEM) analysis based on 4,681 observations for the year 2014. Our findings suggest that country-level carbon policies reduce carbon emissions, indicating improved environmental performance. Moreover, we also find a negative relationship between firms' carbon emissions and market value. However, we also demonstrate an indirect positive effect of country-level carbon policies on firms' value through improved environmental performance. Additionally, our findings suggest a positive relationship between country-level carbon policies and increased carbon disclosure, translating into improved financial performance. Nevertheless, the relationship between environmental regulations and the channel of both emission and disclosure has an insignificant effect on firms' financial performance.

This study makes several noteworthy contributions to the literature. Firstly, it is the first attempt to analyse the indirect relationship between country-level carbon policies and financial performance. While previous studies have directly assessed the impact of country-level environmental policies on financial performance, none have focused on capturing the indirect and total impact of these policies on financial performance. This study bridges this gap by specifically considering the mediating role of firms' environmental engagements, measured by carbon emissions and disclosures. By employing the GSEM model, we can trace the complete chain of this relationship from country-level policies to firms' financial performance through their environmental practices.

Secondly, the results (both the "walk" and "talk" channels) empirically demonstrate that country-level carbon policies may improve firm value through the mediating role of environmental engagements. These findings challenge the notion of considering country-level policies as constraints on firms' financial performance, as proposed by neoclassical economists

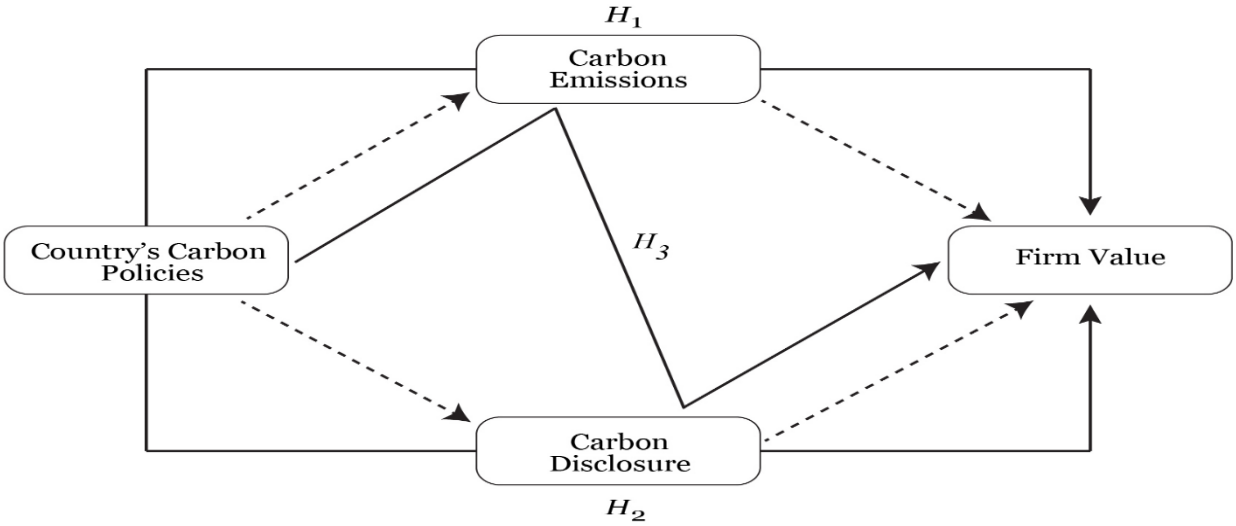
(Manchiraju and Rajgopal, 2017). However, these economists primarily examined the direct link between country-level policies and environmental performance. In line with Porter's hypothesis, this study indicates that stringent environmental regulation may actually enhance firms' financial performance by fostering improved environmental performance. Building on the Natural Resource-Based View (NRBV), our results show that high environmental performance positively influences firms' financial performance.

Thirdly, we deduce that emissions abatement and disclosures hold equal importance for firm value, as the results indicate an insignificant difference in the impact of actual performance (emissions abatement) and disclosures on financial performance. Finally, and perhaps most intriguingly, our findings suggest that high environmental performance does not necessarily correlate with high levels of disclosure, and vice versa. As our results do not show a significant link between emissions abatement and disclosures, this suggests that actual environmental performance and disclosures are not significantly associated with each other. While Al-Tuwaijri et al. (2004) found a positive impact of actual performance on disclosures, and Cho et al. (2012) found an opposite relationship, our study could not confirm the findings of these studies.

The structure of this study proceeds as follows: in section two, we delve into a comprehensive review of the literature and outline the development of hypotheses. Section three provides a detailed exploration of the data and methodology employed. Our results are presented in section four. Section five offers a thorough discussion of our findings and outlines the limitations of the current research work. Finally, the study suggests avenues for future research by highlighting the limitations of the current study in this regard.

2.2. Literature review and hypothesis development

Figure 2. 1 Conceptual framework and hypothesis relationship



Source: Self-constructed

2.2.1. Walk channel: country-level carbon policies, carbon emission (EP) and firm value

The "walk channel" consists of two distinct yet interconnected parts, representing direct relationships. In the first part, it is posited that country-level carbon policies exert direct pressure on firms, compelling them to enhance their environmental performance by reducing carbon emissions (Hartman, and Vachon, 2018). In the second direct part, it is assumed that a reduction in carbon emissions directly translates into positive effects on the financial performance of these firms.

The world is increasingly grappling with pressing environmental issues, such as climate change, ozone depletion, habitat destruction, and pollution. The growing global concern for the environment has placed mounting pressure on firms and production units to take proactive measures to protect it (United Nations, 1997). Business operations are recognized as significant contributors to environmental damage and the emission of toxic gases (Heede, 2017). Consequently, there is a heightened demand for corporations to adhere to carbon mitigation

policies and engage in environmental sustainability efforts. This growing emphasis on environmental sustainability places substantial pressure on organizations, as they have faced accusations of being responsible for climate change and ecological degradation (Walker and Wan, 2012).

Regulatory bodies, industry competitors, civil society, and governments have intensified their pressure on these producing entities to reduce carbon emissions (Damert et al., 2017, Reid and Toffel, 2009, Weaver et al., 1999, Guenster et al., 2011). In response, corporations have increasingly engaged in environmental conservation and sustainability initiatives. Some companies even resort to lobbying efforts to encourage slower-moving governments to enact stringent environmental regulations. Consequently, the rise in environmental regulations compels firms to enhance their environmental performance, consequently raising their overall worth (Zhu and Sarkis, 2007; Weng et al, 2015).

However, it is essential to recognize that while these country-level policies can promote corporate sustainability, they can also pose constraints by potentially decreasing firms' productivity (Lanoie et al., 2008) and limiting their ability to maximize shareholder value (Manchiraju and Rajgopal, 2017). Nevertheless, previous research has indicated that elevated environmental regulations have a positive impact on both EP and firm value. This argument is rooted in the idea that well-designed environmental regulations can serve as catalysts for innovation, which can partially or wholly offset the financial costs associated with compliance (Porter and Van der Linde, 1995). This aligns with Porter's hypothesis, which suggests that environmental regulations can stimulate innovation within enterprises.

Innovative production methods become a source of competitive advantage for organizations. These innovations not only reduce the costs associated with complying with environmental regulations but also confer an absolute advantage over competitors. Innovations driven by environmental regulations enable organizations to develop effective strategies for managing

emissions and toxins, thereby reducing the expenses associated with pollution control (Porter and Van der Linde, 1995). Zhao et al. (2015) support Porter's hypothesis and find that market-based regulations are instrumental in curbing carbon emissions and improving firm efficiency. Similarly, Al-Najjar and Anfimiadou (2012) advocate for firms' engagement and adoption of country-level environmental policies, as implementing these policies can generate additional value for the firm. Cleff and Rennings (1999) also consider regulations as significant drivers of eco-innovation. Additionally, Ramanathan et al. (2014), Ramanathan et al. (2017), and Horbach et al. (2012) posit that carbon policies can effectively influence firms to reduce carbon emissions.

Furthermore, innovation can enhance product quality or the production process itself. Consumers are increasingly inclined to purchase environmentally friendly products and are willing to pay a premium for such goods. For example, in response to government environmental regulations, Cummins Engine developed low-emission diesel engines for trucks and buses, enabling it to enter international markets (Porter and Van der Linde, 1995). This viewpoint is supported by a survey conducted by Konar and Cohen (2001b), which found that undesirable sustainability practices negatively impact the value of a company's intangible assets. Moreover, a 10% reduction in toxic waste emissions results in a $34 million increase in the value of publicly traded enterprises (Konar and Cohen, 2001b). This finding aligns with the results of a study by King and Lenox (2001a), which established a positive correlation between pollution reduction and economic outcomes. Therefore, environmental regulations enhance both the environmental performance (EP) and value of organizations.

Moreover, in line with the Natural Resource-Based View (NRBV), enhanced EP enables a company to gain a competitive advantage, which subsequently contributes to its financial performance (Munodawafa and Johl, 2019). Efficient resource utilization reduces production costs, which can be passed on to consumers through lower prices compared to those offered by

competitors. Consequently, firms can increase their revenue through higher sales (Russo and Fouts, 1997), thereby enhancing their financial performance and overall value (Yadav et al., 2016).

In summary, the above discussion suggests that enhanced environmental regulations positively relate with improved EP. Subsequently, EP fosters the financial performance (FP) of a firms. Thus, environmental regulations enhance both sustainability practices and the financial performance of firms. Combining both parts of the "walk" channel and drawing on Porter's hypothesis and the NRBV, we postulate that country-level carbon policies may improve EP, and using this improved EP as a mediating tool, country-level carbon policies indirectly increase firms' value. Based on these statements, our first hypothesis is:

H_1: *Following walk channel, country-level carbon policies positively affect firms` value through decreased carbon emissions.*

2.2.2. Talk channel: country-level carbon policies, carbon disclosure and firm value

The "talk channel" constitutes a crucial component of the relationship between country-level carbon policies, carbon disclosure, and firm value. This channel is divided into two distinct yet interconnected parts, each representing a direct relationship. In the first part, it is postulated that a nation's carbon policies exert pressure on firms, compelling them to disclose more comprehensive information regarding their environmental performance (EP). In the second part, it is hypothesized that an increase in carbon disclosures directly contributes to positive effects on a firm's overall value.

In recent years, there has been a notable surge in calls for environmentally responsible practices. This trend can be largely attributed to the heightened levels of environmental pollution witnessed worldwide. Consequently, regulatory institutions are increasingly urging firms to provide detailed information regarding their environmental practices. In light of this backdrop, it becomes evident that an escalation in environmental regulations serves as a catalyst for

improved environmental disclosure, and in turn, contributes to increase the overall value of a firm.

The link between heightened environmental regulations and enhanced environmental disclosure is multifaceted. A pivotal study conducted by Deegan and Gordon (1996) sheds the light on this connection by demonstrating that lobby groups' growing concern about a firm's EP leads to a notable increase in its environmental disclosures. For example, multinational enterprises operating in emerging markets have strategically employed CSR reporting as a means to legitimize their organizations when expanding their operations into foreign markets (Tashman, 2018). This finding is further endorsed by Cho and Patten (2007), who argue that firms use environmental disclosure as a legitimizing tool. Moreover, firms with a comparatively weaker environmental performance tend to engage in a higher degree of environmental disclosure to mediate their environmental reputation (Cho et al., 2012). This emphasis on legitimacy is vital for securing the loyalty of international stakeholders, including investors and customers, who play a pivotal role in shaping an enterprise's financial outcomes. Chinese firms actively employ a disclosure strategy to attract or retain influential stakeholders (Lu and Abeysekera, 2014). Furthermore, heightened regulatory pressure in foreign markets compels emerging market multinational enterprises (EM-MNEs) to avoid decoupling corporate social responsibility (CSR) from their operations (Tashman, 2018). Consequently, increased regulation may be closely associated with an uptick in environmental disclosure across corporations.

Subsequently, an increase in environmental disclosure exerts a positive influence on a firm's economic performance. To illustrate this point, Lu and Abeysekera (2014) established a strong correlation between corporate social and sustainability reporting and key indicators such as firm size, industry classification, and profitability. This observation aligns with the fact that high-performing organizations are more inclined to disclose their EP to differentiate themselves in the eyes of investors and other critical stakeholders (Luo and Tang, 2014). Additionally, it is

worth noting that entities engaging in environmental disclosures often gain significant financial advantages (Wasara and Ganda, 2019). Consequently, environmental disclosures not only enhance a firm's reputation but also contribute to its financial prosperity.

In summary, the relationship between heightened environmental regulations and increased environmental disclosures serves as a powerful driver of positive economic outcomes for organizations. Some entities strategically leverage environmental disclosures as a tool to legitimize their businesses, especially when expanding into foreign markets. This practice not only attracts investors and customers but also bolsters the bottom-line of a firm. As we combine both components of the "talk channel," we further posit that by utilizing carbon disclosures as a mediating tool, country-level carbon policies indirectly exert a positive influence on firms' overall value. Based on these well-substantiated assertions, we formulate the following hypothesis:

H_2: *Following the "talk channel," country-level carbon policies positively affect firms` value through increased carbon disclosure.*

2.2.3. Walk then talk channels combined: carbon emissions and carbon disclosure

The integration of sustainability into corporate operations has become a pivotal component, particularly in the face of escalating adverse environmental impacts stemming from production processes. Consequently, governments and concerned stakeholders are increasingly advocating for environmentally friendly production practices. Complying with environmental regulations has made sustainability performance and environmental disclosure key parameters for defining desirable environmental practices. Past research outcomes have consistently indicated that environmental regulations act as a catalyst for both Environmental Performance (EP) and environmental disclosures.

For instance, the study conducted by Deegan and Gordon (1996) reveals that heightened concern from lobby groups regarding an organization's sustainability efforts prompts businesses to elevate the extent of their environmental disclosures. This observation is further corroborated

by the research conducted by Cormier et al. (2005), which posits that organizations' environmental disclosures have a positive association with public pressure. Given that both EP and disclosure have been linked to improved financial performance, it is reasonable to infer that there is a close association between EP and disclosure.

Organizations with a robust environmental performance are statistically more likely to report their sustainability efforts (Al-Tuwaijri et al., 2004). This association is emphasized by Patten (2002), who reports a substantial link between EP and its disclosures. Interestingly, multinational firms from developing markets, which may initially exhibit lower EP due to institutional and regulatory voids in their home countries, often significantly enhance their environmental disclosures upon expanding into foreign markets (Tashman, 2018). This escalation in environmental disclosure is inextricably tied to enhanced performance, driven by the more stringent environmental regulations often found in foreign markets.

Moreover, the fact that organizations actively engage in corporate disclosure to meet the expectations of influential stakeholders underscores the association between sustainability performance and disclosure. In accordance with the principles of stakeholder theory, Chinese firms seeking to attract or retain influential stakeholders employ a disclosure strategy (Lu and Abeysekera, 2014). However, it is important to note that a substantial number of companies that actively engage in environmental disclosures may sometimes engage in symbolic actions that do not necessarily reflect high levels of EP (Walker and Wan, 2012). Additionally, Cho et al. (2012) find that poor performers tend to disclose more. Nonetheless, despite these nuances, EP remains closely associated with disclosure practices.

The enhancement of EP as a response to stringent environmental regulations is widely recognized as a driver of a firm's financial outcomes. While EP often entails increased financial commitments for a firm, the pursuit of innovative and technology-driven environmental practices has been shown to enhance firms' Financial Performance (FP) and foster sustainable

value in the long term (Zhang and Chen, 2017). This demonstrates that environmental practices directly contribute to a company's profitability. Similarly, increased environmental disclosures also positively impacts a firm's FP. Research by Gatimbu and Wabwire (2016) establishes that environmental disclosures exert a substantial influence on financial outcomes. Environmental disclosure enables enterprises to uncover hidden environmental costs, which are often concealed as overheads within the conventional accounting framework (Gatimbu and Wabwire, 2016). This newfound awareness allows firms to identify cost-saving opportunities, leading to increased efficiency and effectiveness. These findings align with the results of a survey conducted among Malaysian firms, which concluded that there is a significant association between sustainability disclosure and an entity's profit margin (Nor et al., 2016). However, it's worth noting that research by Deswanto and Siregar (2018) indicated that environmental disclosure may not always influence an organization's financial outcomes and market value.

This practice aligns with the fact that the incorporation of desirable environmental procedures, encompassing both EP and disclosure, positively impacts a corporation's FP in both developed and underdeveloped nations (Manrique and Martí-Ballester, 2017). The body of evidence underscores the notion that both EP and disclosures contribute to enhancing a firm's FP (Al-Tuwaijri et al., 2004). Consequently, it is reasonable to assert that an enterprise that actively pursues both sustainability performance and disclosure is likely to achieve high levels of economic performance and growth. Thus, it is appropriate for a firm to implement and maintain both sustainability performance and disclosure practices to bolster its bottom line. Building on these positive assumptions derived from two key channels, we propose the following hypothesis:

H_3: *Following the combination of the "walk then talk channels," country-level carbon policies positively affect firms` value.*

2.3. Research method

2.3.1. Sample and data

Our sample consists of data from different sources. We collect financial data from DataStream and environmental data from Trucost. For country-level carbon policies, we use EV climate and energy scores which is obtained from EPI. We initially collected 9,638 observations for the year 2014. After balancing the data for missing observations our sample is finally reduced to 4681 observation from 71 countries. 860 observations belong to USA followed by Japan and China with 500 and 351 observations respectively. We winsorized financial data at the level between 1% and 99%. Data summary of variables are presented in Table 2.1 and sample distribution across countries and sectors are presented in the Table 2.3.

2.3.2. Variables

2.3.2.1. Independent variable: country's carbon policy

We rely on EV climate energy scores to measure country carbon policies. These indicators measure nation's abilities to reduce carbon emissions through evaluating trends in carbon intensity per KWH. This trend is measured against relevant economic indicators such as purchasing power parity and gross domestic product and the score is given based on underperformance (lower score) and high performing (higher score) in all these indicators. This index is a subset of EPI and is developed by Yale Centre for Environmental Law and Policy. This measure is more concerned about carbon emissions rather than general environmental concerns. It depicts country`s carbon policies and countries are ranked based on their efforts and policies to control carbon and other toxic gases emissions. Table 2.2 shows the country rankings, where a country with less carbon emission is ranked high whereas a country with high carbon emission is ranked low in the index (Marsat et al, 2022).

Table 2. 1 Summary of Variables

Variables	Description	Source
Tobin`s Q	Log (Tobin`s Q) for calculating Firm`s value. (Market value of equity + book value of assets - book value of equity - balance sheet deferred taxes)/book value of assets.	DataStream
Market/Book	Log(Market value of equity / book value of equity)	DataStream
Country Carbon policy/ EV Climate Energy	This indicator measures country`s ability to cut down the intensity of carbon emission over time. EV climate and energy not only appraise carbon intensity but it also assesses level of energy relative to country`s economic and sustainable development.	Yale Centre for Environmental Law and Policy.
Carbon Disclosure	The source of direct carbon emissions is identified and divided into Trucost estimates and company disclosures. The flag details the source of data disclosure and whether Trucost had to perform an adjustment to convert the data into a standardized figure is captured and stated.	Trucost
Carbon Emissions	The total external environmental costs of the company (direct and indirect) divided by the company's turnover/revenue.	Trucost
Size	Ln(book value of total assets)	DataStream
ROA	EBITDA/book value of assets	DataStream
Leverage	Book value of debt / book value of assets	DataStream
Sales growth	(Sales in year t / sales in year (t-1))	DataStream
R & D full	R&D expenditures / sales	DataStream
R&D dummy	Equals 1 if R & D is non-available, zero otherwise	DataStream
DumIndustry	Used industries (Consumer Discretionary, consumer staples, energy, financials, health care, industrial, information technology. Materials, real estate, telecommunication services and utilities) as dummy variable.	DataStream

The scoring method does not primarily depend on countries' economic development, rather it is based on their carbon emissions. The EV index takes into account and ranks developed countries with high GNI per capita, based on their trends of carbon emissions. This group of countries includes OECD states in Europe, U.S, Japan, Australia, and Canada. These states are ranked based on their engagements in reducing carbon emissions. Whereas developing countries are scored on change in trend of carbon intensity. For countries in this group ranks are measured based on the need for slowed growth in emissions. For example, as indicated in Table 2.2. China and India are emerging economies that demand more industrialization and

emit more carbon than other developing countries. The scores for these countries are measured based on changes in their trend of carbon emissions over the years. Countries that slow rates of emissions growth are placed higher in the scoring index than those with increasing growth in emissions. In a nutshell, this indicator measures a country`s ability to cut down carbon emission over time. EV index is not considered as proximity to target but rather a relative global position of countries and their carbon reduction policies.

We use EV index for year 2014 because data and indicators have undergone many improvements in that year. Several developments and enhancements over past versions of the Index have been included. This report moves from a specialized technical style to a more exploratory methodology. These different restatement of climate and energy indicators offers account for differing economic and development status across the world's countries. Furthermore, the 2014 index positions 178 nations like never before. Together with improvements on indicators, better data and more inclusion in this report makes the results more important for global environmental management. The 2014 EPI's climate and energy issue category becomes even more relevant for policymaking than those of past versions (EPI, 2014).

Table 2. 2 Countries and their EV climate energy scores

Country Name	EV climate energy score	Country Name	EV climate energy score
Argentina	16.79	Mauritius	29.91
Australia	47.67	Mexico	51.35
Austria	62.09	Morocco	49.4
Bahrain	39.57	Netherlands	53.32
Belgium	64.47	New Zealand	62.94
Brazil	53.82	Nigeria	70.55
Bulgaria	48.18	Norway	75.65
Canada	59.85	Oman	21.64
Chile	35.92	Pakistan	44.33
China	65.16	Papua New Guinea	89.98
Colombia	43.49	Peru	16.71
Croatia	63.26	Philippines	35.73
Cyprus	61.92	Poland	60.53
Czech Republic	65.82	Portugal	80.68
Denmark	67.22	Qatar	70.93
Egypt	61.05	Romania	62.82
Estonia	56.71	Russian federation	61.02
Finland	62.24	Saudi Arabia	46.63
France	49.83	Serbia	62.92
Germany	62.77	Singapore	86.85
Greece	59.79	Slovenia	54.59
Hungary	66.87	South Africa	49.87
India	35.24	Spain	81.84
Indonesia	45.25	Sri Lanka	54.62
Ireland	75.01	Sweden	77.34
Israel	41.86	Switzerland	78.14
Italy	63.41	Taiwan	57.69
Japan	43.54	Thailand	46.05
Jordan	65.68	Turkey	46.52
Kazakhstan	43.49	Ukraine	27.78
Kuwait	42.23	United Arab Emirates	33.86
Lebanon	40.43	United Kingdom	54.24
Lithuania	51.02	United States of America	56.45
Luxembourg	56.75	Venezuela	43.59
Malaysia	40.24	Vietnam	44.51
Malta	55.32		

Table 2. 3 Country and sector wise observations

Countries	No of Observations	Sectors	No of Observations
USA	860	**Energy**	282
Japan	500	**Materials**	513
China	351	**Industries**	824
United Kingdom	323	**Consumer discretionary**	772
Australia	294	**Consumer Staples**	364
Canada	203	**Healthcare**	273
France	193	**Financial**	584
Taiwan	181	**IT**	449
Switzerland	164	**Telecommunication**	121
India	158	**Utilities**	237
Germany	137	**Real Estate**	262
Others	1317		

2.3.2.2. GHG impact ratio

The motivation for using this variable comes from the fact that there are negative economic impacts of GHG. Along with this, GHG has an adverse effect on climate change including environmental and social impacts. GHG are released as a result of meeting demands for heat, electricity and transport. Fossil fuels contain significant amounts of carbon that are normally released during combustion. Regarding proxy variable for EP, we use firms` GHG impact ratio (Hatakeda et al., 2012, Busch and Hoffmann, 2011) as proxy for carbon emissions. It is measured as the ratio between total external environmental costs of the company (direct and indirect) divided by the company's turnover/revenue. It is the ratio between the total GHG emissions (in tons) and a firm's sales (in US$). Direct emissions cover all GHG emissions from on-site production processes, direct combustion of fossil fuels in boilers and furnaces, and on-site power generation. Indirect emissions cover all GHG emissions from consumption of purchased energy (power, heat, steam). This standard measure allows easy comparison between companies, regardless of size, sector or geography. In this study, we use GHG total impact ratio as our mediating variable in walk channel. We also use GHG direct impact ratio to check for robustness.

2.3.2.3. Carbon disclosure

Internal and external stakeholders expect firms to disclose their GHG emissions and environmental policies. Such disclosures help stakeholders to know about firms` stringent policies for mitigating carbon emission. It is used by enterprises as a legitimacy tool as well. In carbon intense sectors GHG disclosures are highly linked to future financial gains. We obtain this data from Trucost where disclosure scores are derived from carbon disclosure project (CDP) (Luo et al., 2012, Matsumura et al., 2011, Saka and Oshika, 2014). The source of direct carbon emissions is identified and divided into Trucost estimates and company disclosures. The flag details the source of data disclosure and whether Trucost had to perform an adjustment to convert the data into a standardized figure is captured and stated. CDP data are designed and reported in a standard format that facilitates comparison across companies and industries. Large number of corporations had responded to this survey and made the results available to a wide range of audiences including policymakers, advisers, investors, corporations, academics and the public. In CDP firms report their global carbon emissions (measured in metric tons) resulted from scopes 1, 2, and 3 (CDP 2018).

2.3.2.4. Dependent variable: Financial performance

As we test impacts of carbon policies on firm value, we measure FP using Tobin`s Q. we use log of Tobin`s Q to account for its skewness (Wang et al., 2014, Konar and Cohen, 2001b, Marsat and Williams, 2011). Tobin`s Q is the measurement of firms` long-term valuation relative to the replacement cost of tangible assets. Tobin`s Q is computed as market value of assets divided by book value of assets. We further compute Tobin`s Q as book value of assets as market value of equity + book value of assets - book value of equity - balance sheet deferred taxes. For robustness check of using Tobin's Q, also we take the logarithm of market-to-book ratio calculated as market value of equity divided by its book value.

2.3.3. Control variables

We use size, leverage sales growth, industries (Wang et al., 2014), and ROA as control variables. Size of the company is an important determinant of environmental and financial practices. Large firms are more under observation by government for their taxation and legitimacy, while customers and shareholders have their own interests connected with firms' size. It is also mostly considered that larger firms are under mounting environmental pressure from stakeholders. Previous studies have used Size, Leverage and R&D as control variables (King and Lenox, 2001a). Leverage is defined as total debt divided by total assets. As a financial risk, it is expected that leverage may affect the EP-FP relationship. Moreover, R&D may also have an impact on the EP-FP link since it is anticipated to have an impact on profitability in the short- and long-term. We also include ROA and Industry dummy as control variables.

2.3.3.1. Multiple mediation model

To test our hypotheses, we rely upon generalized structure equation modeling (GSEM). As we use two mediating variables, GSEM approach is useful to test numerous linear relationships simultaneously. Mediation analysis is used to ascertain whether the link between two variables is fully or partially due to mediating variable (Baron and Kenny, 1986). Mediation also takes place when an initial variable drives mediating variable that mediating variable drives the second variable (Sobel, 1990). The coefficient of indirect effect explains the significance of mediator (Preacher and Hayes, 2008). We use two mediating variables (GHG impact ratio and carbon disclosure) in the model to explain indirect relationship between countries' carbon policies and firm value. Impact of independent variable on dependent variable through mediating variables could be measured by following three channels. Using generalized structural equation modeling, walk channel comprises indirect impact of EV climate energy impacts on Tobin`s Q via mediation by mediator (M1) GHG impact ratio. Similarly, in talk channel, we observe indirect impact of EV climate energy on Tobin`s Q via mediator (M2)

carbon disclosure. Finally, in walk then talk channels combined, we apply both mediators (M1 and M2) to compute indirect and total impact of independent variable on dependent variable. Following are set of equations we use to test our model.

$$Tobin`s\ Q_{it} = \beta_0 + \beta_1 EV\ climate\ energy_{it} + \beta_2 M1_{it} + \sum_{i=1}^{n} \beta_i X_{it} + e_{it} \quad (1)$$

$$Tobin`s\ Q_{it} = \beta_0 + \beta_1 EV\ climate\ energy_{it} + \beta_2 M2_{it} + \sum_{i=1}^{n} \beta_i X_{it} + e_{it} \quad (2)$$

$$Tobin`s\ Q_{it} = \beta_0 + \beta_1 EV\ climate\ energy_{it} + \beta_2 M1_i + \beta_3 M2_{it} + \sum_{i=1}^{n} \beta_i X_{it} + e_{it} \quad (3)$$

Where Tobin`s Q represents the value of the firm i, EV climate energy represents carbon policies of country of firm i. M1 is first mediating variable representing GHG ratio of firm. M2 is second mediating variable representing disclosure of carbon footprints. β represents regression coefficient of its respective variables. *X* represents the set of control variables (Size, Leverage, ROA, sales growth, R&D and industries) and ε is error term.

Table 2. 4 Summary Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	**N**	**Mean**	**p50**	**p25**	**p75**	**Max**	**Min**
Log (Tobin`s Q)	4,681	0.394	0.266	0.018	0.670	2.066	-0.583
Carbon Emissions	4,681	0.062	0.021	0.009	0.049	0.839	0.003
Disclosure	4,681	0.212	0.040	0.000	0.370	1.000	0.000
EV Climate Energy	4,681	0.554	0.564	0.477	0.610	0.818	0.352
Size	4,681	15.184	15.120	14.073	16.258	19.672	10.849
ROA	4,681	5.793	4.920	2.210	8.720	31.580	-34.610
Leverage	4,681	24.322	22.800	9.460	35.820	82.040	0.000
Sales Growth	4,681	1.049	1.014	0.934	1.095	3.041	0.428
RD_full	4,681	1.778	0.000	0.000	0.940	43.970	0.000
RD_dummy	4,681	0.622	1.000	0.000	1.000	1.000	0.000

Table 2.4 provides a comprehensive overview of variables used in this research. The dataset consists of 4,681 observations, making it a substantial and diverse sample for analysis. The variable "Log (Tobin's Q)" captures the logarithmic form of Tobin's Q, a measure of a firm's market value relative to its replacement cost. On average, this measure stands at approximately 0.394, indicating that firms tend to be valued at a level above their replacement cost. The median value (p50) is lower at 0.266. The range spans from a minimum of -0.583 to a maximum of 2.066, underlining the diversity in firm valuation within the dataset. The Carbon Emissions variable represents the extent of carbon emissions attributed to these firms. The dataset's average carbon emissions are around 0.062, indicating a non-negligible carbon footprint among the firms. The median value (p50) is slightly lower at 0.021. The range for carbon emissions is from a minimum of 0.003 to a maximum of 0.839, indicating substantial variation in emissions across the sample.

Disclosure represents the extent of carbon disclosure by firms, with an average (mean) value of approximately 0.212. This suggests that, on average, firms tend to disclose a considerable amount of information regarding their carbon-related activities. However, the median (p50) value is lower at 0.040. The data ranges from a minimum of 0.000 to a maximum of 1.000, showcasing diversity in disclosure practices. EV Climate Energy has an average score of approximately 0.554 with a median (p50) value of 0.564. The range spans from 0.352 (minimum) to 0.818 (maximum), indicating some variation in EV Climate Energy score across different countries. The remaining variables in the table, including Size, ROA, (Return on Assets), Leverage, Sales Growth, RD_full, and RD_dummy, provide additional insights into firm characteristics and financial performance metrics within the dataset. These summary statistics provide a foundational understanding of the dataset's composition and variation, setting the stage for further analysis and exploration of the relationships between these variables in the research study.

Table 2. 5 Correlation Matrix

	Tobin`s Q	EV Climate energy	GHG Emission	Disclosure	Size	ROA	Leverage	SG	RD_full	RD Dum
Tobin`s Q	1									
EV Climate energy	0.0222	1								
Carbon Emission	-0.128***	-0.0594***	1							
Disclosure	-0.0596***	0.0311*	0.0528***	1						
Size	-0.295***	0.00777	0.0462**	0.374***	1					
ROA	0.547***	-0.0225	-0.0410**	-0.00842	-0.160***	1				
Leverage	-0.202***	0.0240	0.160***	0.0718***	0.193***	-0.164***	1			
SG	0.0894***	0.0988***	-0.0532***	-0.0985***	-0.0536***	0.0706***	-0.000	1		
RD_full	0.262***	0.0439**	-0.0924***	-0.0578***	-0.106***	-0.0332*	-0.159***	0.0700***	1	
RD Dum	-0.188***	0.00654	0.0199	0.0361*	0.0491***	-0.0579***	0.107***	0.0162	-0.445***	1
N 4681										

$p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

2.4. Results and discussion

In this section, we discuss the relationship between countries' carbon policies, firms' environmental performance, and firms' financial performance. We specifically assess two direct relationships between institutional regulations (countries' carbon policies) and 1) firms' carbon emissions and 2) carbon disclosure. We also investigate the direct link between 1) firms' carbon emissions and 2) carbon disclosure and firm value. We further examine the indirect relationship between countries' carbon policies and firms' market value as mediated through both firms' carbon emissions carbon disclosure. The below attached Figure 2.2 and Table 2.6 illustrate the results of both direct and indirect relationships.

Figure 2. 2 Empirical Results

Source: Self-Constructed

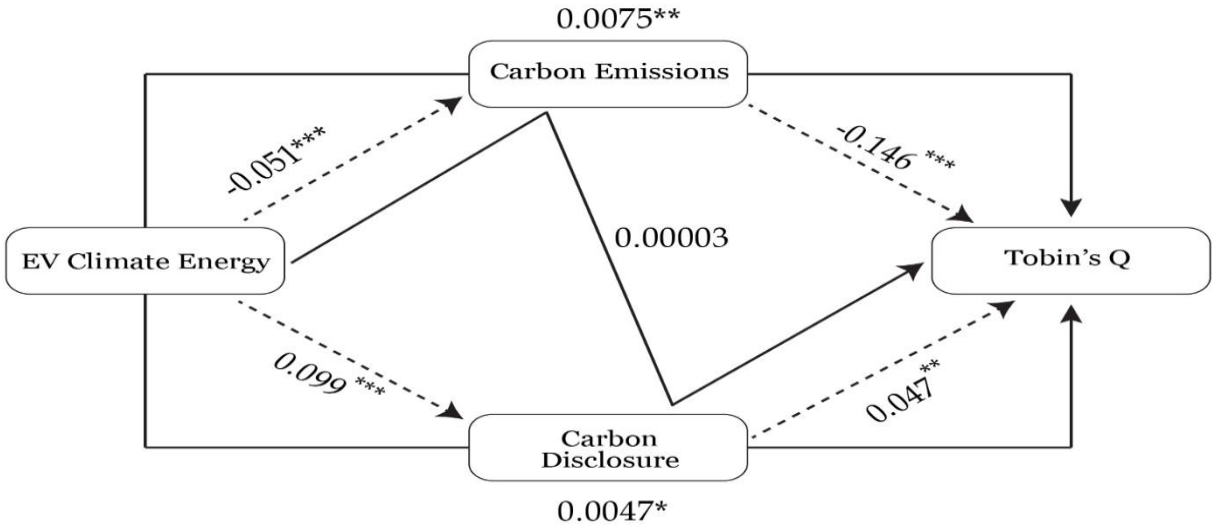


Table 2. 6 Computation of indirect results after bootstrap

	EV-Climate energy		Tobin`s Q		Total Indirect
(WALK channel) Carbon emissions	-0.051*** (0.015)	×	-0.146*** (0.051)	=	0.0075**
(TALK Channel) Disclosure	0.099*** (0.036)	×	0.047** (0.021)	=	0.0047*
(WALK then TALK combined)				=	0.00003
Difference					0.00278

2.4.1. Walk Channel

Results are presented in Table 2.6. We use path analysis to test our hypothesis to examine direct, indirect, and total effects among variables through two-level mediating model. Our first hypothesis H_1 is walk channel. In this channel, we examine whethrer carbon emissions indirectly mediates the relationship between a country`s carbon policies and Tobin`s Q. As illustrated in conceptual model H_1 is composed of two direct relationships. Results presented in Figure 2.2 show a negative relationship between EV climate energy and GHG impact ratio. It shows that one unit change in EV climate energy reduces GHG emissions costs by 0.051 points. These findings exhibit that stringent carbon policies improve firms` EP in terms of GHG

emissions. Similarly, we underline a negative link between GHG impact ratio and Tobin`s Q. One unit change in GHG impact ratio reduces Tobin's Q by 0.146 points. These results display that GHG emission is negatively related with FP. We cross-examined the results of these indirect relationships for H_1 through bootstrapping. Results are presented in Table 2.6. Statistically significant and positive results demonstrate that there is a positive indirect relation between EV climate energy and Tobin`s Q when mediated by GHG impact ratio. The results presented in Figure 2.2 depict that keeping all other things constant one unit change in EV climate energy will result in 0.0075 points change in Tobin's Q. These findings support hypothesis H_1 where we proposed that following walk channel, carbon policies indirectly affects Tobin's Q and hence improve the financial performance of the firms. .

These findings are not consistent with Walker and Wan (2012) who find no link between green walk (substantive environmental engagements) and FP. Our results are however in accordance with the findings of Porter hypothesis and NRBV. Proponents of Porter hypothesis and NRBV argue that country`s carbon policies enhance EP by mitigating carbon emissions. Firms can use improved EP as a resource to gain value. Regulations are great source of innovation that could foster eco-innovation (Porter and Van der Linde 1995, Anton, Deltas et al. 2004, Hermundsdottir and Aspelund 2021). Such innovation is not only compliance with stringent regulations but with innovation firms can improve their EP. It helps in restricting carbon emissions and improves efficiency. Firms that show positive intent towards protecting environment by reducing carbon emissions, will have a competitive advantage over its competitors and benefit from it financially. Similarly, some other examinations have also led to gauge the connection among lesser toxic emissions and firm value. Positive economic results for firms that contribute on environment were documented by (Cohen, Fenn et al. 1995, King and Lenox 2001). Mitigating carbon emissions improve EP. Improved EP increases firms` reputation, augments its sales, and thereby increases its overall value. In the same line

organizations with an abnormal state of GHG emissions have negative incentives in the market. Hence, mitigating carbon emission is an essential policy measure for higher firm value.

2.4.2. Talk Channel

Our second hypothesis H_2 examines talk channel. We investigate the indirect impact of EV climate and energy on Tobin`s Q through carbon disclosure. As illustrated in Figure 2.1, talk channel is represented by H_2. This hypothesis is composed of two direct relationships. Results for the first part in Table 2.7 show that there is a positive relation between EV climate energy and carbon disclosure. It shows that one unit change in EV climate energy increases disclosure by 0.099 points. This manifests that country level carbon policies motivate firms to disclose their carbon footprints. Similarly, results for second part demonstrate a positive relation between carbon disclosure and Tobin`s Q. It shows that one unit change in carbon disclosure increases Tobin's Q by 0.047 points. After computing these both results through bootstrapping, we find results of H_2 as statistically significant. Results explain that there is a positive direct and indirect impact of EV climate energy on Tobin`s Q mediated through carbon disclosure. The results presented in Figure 2.2 and Table 2.6 depict that keeping all other things constant a one unit change in EV climate and energy will result in 0.0047 points change in Tobin's Q. Backed by institutional theory and legitimacy theory, our findings support hypothesis H_2 where we propose that following talk channel, country level carbon policies indirectly and positively affect firm value.

Our findings are different from Walker and Wan (2012), where they conclude a negative link between environmental disclosures and FP. We analyze the link between disclosures and firm value and find a positive and significant link between them. We further find country-level carbon policies as one of the driving factors of disclosures which then positively affect firm value. As induced by institutional theory and legitimacy theory, not only for reducing toxic emissions and improved EP, country's` carbon policies are also important for carbon reporting.

These policies make it important for firms to disclose environmental information particularly, carbon related information. Besides compliance with policies, disclosures guarantee firms` legitimacy (Bebbington et al., 2008, Silva, 2021). Legitimacy enables firms to get favorable reception from its core stakeholders and build sense of satisfaction among them. Furthermore, legitimate firms can build their positive image and reputation among investors. As proposed by Freedman and Patten (2004), there is a positive market reaction from stakeholders for those organizations which unveil their carbon data. With the help of disclosures firms can avoid penalties, fines, and negative outcome from poor performance. Furthermore, Cho et al. (2012), argue that disclosures mediate negative impacts of poor environmental performance.

Finally, we examine both channels combined in H_3. To examine this relation, we place both of our mediating variables together in walk then talk channel scenario. Inconsistent with our assumption, we find that link between GHG impact ratio and carbon disclosure, is insignificant (0.00003) and very low. Our results are also not consistent with Cho et al. (2012), where they find negative link between EP and disclosure. Whereas this finding is unlike to the findings of Luo and Tang (2014) and Al-Tuwaijri et al. (2004), that show a positive link among EP and environmental disclosure. We do not segregate mandatory and voluntary disclosures in the data. Therefore, it is possible that pressure from institutions make such disclosures mandatory so, there cannot be any link between carbon emissions and carbon disclosures.

2.4.3. Walk vs Talk

We then examined the relationship between carbon emission + carbon disclosure on the financial performance of firms as assumed in H_3. Results revealed that walk then talk channels when examined together shows no significant results, but in order to study which one has a higher impact, we analyzed these channels separately. We perform F-test to check for difference in coefficients and for analyzing which channel is preferable. The results in table 2.6 exhibit that the coefficient of carbon emissions (walk channel) is 0.0075** whereas the coefficient of

carbon disclosure (talk channel) is 0.0047*. Our results show that difference between coefficients of these variables is 0.00278. This result show that there is no statistical difference in coefficients of walk and talk channels. So, it indicates that both channels are equally important for higher firm value and that high EP does not necessarily represent the high level of disclosures, and vice versa. As our results do not show a significant link between emission abatement and disclosures, this indicate that actual EP and disclosures are not significantly associated with each other. Splitting the results in both channels depict that magnitude of polices is higher on carbon disclosures (0.099***) than carbon emissions -0.051***. But while examining the link of carbon emissions and carbon disclosures on firm value, we find that carbon emissions have higher impact on firm value than carbon disclosure. Our findings are not coherent with findings of Cho et al. (2012), where they present that membership in DJSI and having positive environmental reputation is driven by what firms say and not by what firms do. Our results on the contrary explain that stakeholders are more concerned about what enterprises actually perform (walk) and say (talk). They prefer firms not only disclose their environmental engagements but also actually perform well environmentally and reduce toxic emissions. Stakeholders regard businesses that have built a positive reputation by performing well environmentally and disclosing it.

Table 2. 7 Disclosures and GHG Total Impact Ratio

VARIABLES	GHG emission	Disclosure	Tobin`s Q
Carbon emission		0.006	-0.146***
		(0.035)	(0.051)
Disclosure			0.047**
			(0.021)
EV climate energy	-0.051***	0.099***	0.133**
	(0.015)	(0.036)	(0.053)
Size	0.002**	0.073***	-0.051***
	(0.001)	(0.003)	(0.004)
ROA	0.000*	0.002***	0.035***
	(0.000)	(0.001)	(0.001)
Leverage	0.000***	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)
SG	-0.009	-0.069***	0.069***
	(0.006)	(0.014)	(0.021)
RD_full	0.000	0.001	0.021***
	(0.000)	(0.001)	(0.001)
RD_dummy	0.013***	0.041***	-0.020
	(0.004)	(0.010)	(0.014)
Industries	Yes	Yes	Yes
Constant	0.070***	-0.929***	0.646***
	(0.021)	(0.050)	(0.075)
Observations	4,681	4,681	4,681

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.10

2.4.3.1. Robustness Tests

We conduct extensive sensitivity tests by including two alternative variables to check the robustness of our results. Table 2.8 and 2.9 exhibit results for direct emissions and market-to-book value respectively. Firstly, instead of total GHG emissions we include direct GHG emissions. Reason for using this variable is to check whether direct emissions or indirect emissions majorly contribute in total emissions. We do not find a major difference in results but only a minor difference in statistical significance. Secondly, we replace Tobin`s Q with market-to-book value (Brown and Perry, 1994) to control for financial performance. We find that results are consistent with our initial results checked with Tobin`s Q.

Table 2. 8 Robustness GHG Direct Impact Ratio

VARIABLES	GHG direct emission	Disclosure	Tobin`s Q
Direct carbon emission		0.006	-0.115**
		(0.038)	(0.055)
Disclosure			0.047**
			(0.021)
EV climate energy	-0.047***	0.099***	0.135**
	(0.014)	(0.036)	(0.053)
Size	0.003***	0.073***	-0.051***
	(0.001)	(0.003)	(0.004)
ROA	0.000*	0.002***	0.035***
	(0.000)	(0.001)	(0.001)
Leverage	0.000***	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)
SG	-0.005	-0.069***	0.070***
	(0.006)	(0.014)	(0.021)
RD_full	0.000	0.001	0.021***
	(0.000)	(0.001)	(0.001)
RD_dummy	0.020***	0.040***	-0.019
	(0.004)	(0.010)	(0.014)
Industries	Yes	Yes	Yes
Constant	0.022	-0.929***	0.639***
	(0.019)	(0.050)	(0.075)
Observations	4,681	4,681	4,681

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.10

Table 2. 9 Robustness Market-to-book value

VARIABLES	GHG emission	Disclosure	M/B
Carbon emission		0.006	-0.448***
		(0.035)	(0.090)
Disclosure			0.130***
			(0.038)
EV climate energy	-0.051***	0.099***	0.267***
	(0.015)	(0.036)	(0.094)
Size	0.002**	0.073***	-0.053***
	(0.001)	(0.003)	(0.007)
ROA	0.000*	0.002***	0.049***
	(0.000)	(0.001)	(0.001)
Leverage	0.000***	-0.001***	0.007***
	(0.000)	(0.000)	(0.001)
SG	-0.009	-0.069***	0.136***
	(0.006)	(0.014)	(0.037)
RD_full	0.000	0.001	0.026***
	(0.000)	(0.001)	(0.002)
RD_dummy	0.013***	0.041***	-0.014
	(0.004)	(0.010)	(0.025)
Industries	Yes	Yes	Yes
Constant	0.070***	-0.929***	0.404***
	(0.021)	(0.050)	(0.134)
Observations	4,681	4,681	4,681

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.10

Results in this study are encouraging for a wide range of stakeholders like investors, managers/CEOs, regulating authorities, governments, and NGOs. Firms and investors can benefit from these policies to achieve their objectives. CEOs/managers can predict future financial gains through their current EP and trust of investors. For regulatory authorities, this provides information on country's` carbon policies and its consequences on GHG reduction. This further helps in formulating well defined environmental regulations to ensure eco-efficiency. For governments, it can be useful to understand that such policies help to limit carbon emissions and close gap to global GHG emissions target. Stringent carbon policies and controlling carbon emissions will ensure countries' reputation in international evaluating indexes. Furthermore, for NGOs primarily concerned with environmental issues these findings are useful. These help them in planning and executing different environmental projects not undertaken by other stakeholders. The results of positive link between carbon policies and its

impacts on firm values encourages firms to mitigate GHG emissions, disclose more information on carbon and achieve their financial objectives without bringing any harm to environment.

2.5. Conclusion and Implications

Primary objective of this study is to investigate indirect impact of country level carbon policies on firm value. This link between country level carbon policies and firm value is examined through three channels in a mediating model. In walk channel, it examines the mediating role of carbon emissions. In talk channel, it investigates this link through mediating role of carbon disclosures and in walk then talk channel combined by examining the mediating role of carbon emissions and carbon disclosure simultaneously. In this study the sample data consists of 4681 observations from 71 countries, the EV climate energy score is used as proxy for country level carbon policies which is obtained from EPI. The carbon emission data is used as measure of EP and Trucost disclosure as a measure of carbon disclosures. Tobin`s Q is taken as a proxy for firms` value.

Using generalized structure equation modelling, this research study finds that country carbon policies indirectly effect firms` value significantly and positively through walk and talk channels separately. While taking walk then talk channel combined, policies do not have significant impact on firms` value. Our results suggest that indirect positive effect is due to mediation of mitigating carbon emissions and more carbon disclosures. We argue that policies improve EP by reducing carbon emissions. Improved EP enhances reputation and attracts investors' attention towards firms` green growth. As a result, firms` value increases. These findings are in line with Porter hypothesis which argues that carbon policies encourage firms for technological change, eco-innovation and preserve environment (Rip and Kemp, 1998).

Furthermore, based on NRBV our results also show that EP is source of competitive advantage (Miles and Covin, 2000, Hartmann and Vachon, 2018). Together upholding with porter`s hypothesis and NRBV, carbon policies indirectly bring positive firm value. Moreover, as stated

by institutional theory, carbon policies push firms for more carbon disclosure. Complying with policies through high level of carbon disclosure increase firms` legitimacy, which according to legitimacy theory is source of high reputation. Hence, disclosures are to be a useful tool for reputation and gaining positive responses from stakeholders. It seems that more stringent carbon policies are helpful in reducing toxic emissions and encourage carbon disclosures. These policies result in increasing reputation, attracting investors, ensuring legitimacy and enhancing firms` value.

It appears that investors are using the emissions data of companies to examine their EP and react accordingly. This study suggests that emissions abatement and disclosures are equally important for firm value. As the results show no significant difference in the impact of actual performance (emissions abatement) and disclosures on FP where investors react indifferently to the actual emission abatement irrespective of disclosures.

Our findings have significant implications for the scientific community as well as for managers and decision-makers. First, while earlier research has considered how environmental performance affects business value, we also looked at the influence of carbon policies to reduce the emission and increase the firm value through a mediating and moderating study. This study adds knowledge that is useful for a sustainable environmental policy to decrease carbon emission and improve environmental performance. As demonstrated in our results, since the higher environmental performance has a positive impact on firm value, acting upon environmental protocols can be fruit-bearing for the firms in the long run.

Second, the identification of the low carbon emission strategy as the most important component in raising market value has a clear business strategy impact. Managers frequently struggle with how to allocate resources to various environmental initiatives. Managers will benefit from the empirical evidence showing a strong positive association between carbon policies and business

value since it will help them focus their strategy on boosting environmental by reducing environmental harm.

Third, the results of the cross-sectional regression give decision-makers important knowledge and insight into creating carbon policies that will encourage businesses to adopt environmental measures and keep improving their environmental performance. Enacting a law that requires businesses to consider carbon emission an important factor in their corporate strategies, and encourages conformists through subsidies, incentives, additional recognition, and rewards based on the level of reduction in carbon emission, may be one of the ways to encourage environmental conformity. This would encourage the businesses driving these environmental initiatives to become self-sustaining.

Chapter 3. Environmental performance and firm value: the moderating role of consumer environmental consciousness

Abstract

In an examination of the moderating impacts of consumer environmental consciousness, this study investigates the relationship between their environmental sensitivity and EP-FP link. Using data from Greendex Score and Thomson Reuters Asset4, our results demonstrate that consumer environmental consciousness negatively moderates the relationship between CEP and CFP. We assume that when firms' environmental engagements are not in line with the environmental expectations of environmentally conscious consumers, they are less productive. The study further explores different aspects of relationship between consumer environmental consciousness and EP-FP link.

Keywords: Environmental awareness, environmental consciousness, environmental performance, financial performance, firms` value, moderation.

JEL codes : L25, G32, Q51, R11, F64, Q01

3.1. Introduction

As we navigate the 21st century, the escalating challenges posed by climate change have catalysed a global response. The world is increasingly attuned to the urgency and necessity of addressing these challenges, resulting in a pervasive shift in societal, economic, and political spheres. Over the past few decades, there has been a discernible surge in environmental concerns among both individuals and organizations (Flammer, 2013, Ting et al., 2019). This increased environmental sensitization, coupled with the growing emphasis on carbon reduction initiatives at both global and national levels, has influenced consumer environmental consciousness into the forefront of corporate strategy (Fraj-Andres et al, 2009), driven resilience (Marsat et al. 2021) and enhanced financial performance. These drive firms to remain environmentally conscious. Firms that focus on reducing pollutant emissions, sourcing eco-friendly products, and implementing energy and water conservation, are often referred to as "green firms" (Hameed et al., 2021). The impact of such green initiatives extends beyond environmental benefits, permeating into the financial performance of these corporations (Ali et al., 2020; Chen and Ma, 2021).

Within the realm of research, academia, and managerial discourse, there is a resounding call for the improvement of corporate environmental performance (CEP) as a means to safeguard natural environment (Wagner, 2010, Sinkin et al., 2008). However, the question persists: does CEP enhance corporate financial performance (CFP), or does it constitute a resource drain that undermines a firm's CFP? Studies examining the link between CEP and firms' CFP have yielded mixed and inconclusive results (Margolis and Walsh, 2001, Horváthová, 2010). This inconclusiveness in outcomes can be attributed to a multitude of factors including heterogeneous empirical methods and variables employed in the investigation of EP-FP relationship. For instance, Al-Tuwaijri et al. (2004) used the ratio of recycled toxic waste to total generated toxic waste to measure environmental performance, while Guenster et al. (2006)

utilized eco-efficiency scores, and Earnhart and Lizal (2007a, b) focused on levels of air-pollutant emissions as indicators of environmental engagement.

While institutional and corporate factors have been widely explored in the EP-FP relationship, societal factors have received less attention in evaluating this relationship. The influence of regulations and sensitization may both directly and indirectly affect the consciousness of consumers into buying and consuming products. The sensitization functions in social sphere thus bringing or introducing a change in the outlook of people towards environment and business. Our study aims to investigate consumer environmental consciousness as a moderating societal factor in the CEP-CFP link.

Consumers occupy a pivotal role as key stakeholders in business operations, exerting a significant influence on firms' financial performance and overall value (Arian et al, 2023). Consumer behaviour has a direct impact on firms' financial performance and, consequently, their overall value (Freeman, 2010). Environmentally conscious consumers are willing to pay premiums for products and services offered by environmentally friendly firms (Conrad, 2005, Liu et al., 2012). We can posit that consumer environmental consciousness may drive consumers to actively seek out and support environmentally friendly firms. However, it remains unclear how consumer environmental consciousness influences the EP-FP relationship.

While prior research has demonstrated a positive impact of CEP on CFP (Majid et al., 2020), this relationship may weaken when consumers are highly environmentally conscious (Rehman et al., 2021). In fact, consumers now expect firms to engage in environmentally friendly practices as a baseline. If a firm's CEP falls short of these expectations, consumers may not be willing to pay a premium for their products, particularly given that eco-friendly products often entail higher production costs (Conrad, 2005). The study by Servaes and Tamayo (2013) sheds light on the role of customer awareness in the CSR-CFP relationship. However, their focused on the role of customer awareness on the firms' corporate social responsibility (CSR), rather

than specific environmental consciousness of consumers within a country. We assume that the "community" of consumers, in the current global market, not only influence the behaviour of firms into acting on the global environmental protocols but also function as an agent of social sanctions. Their stakes in the functions of firms may be resolute and capable of affecting the inherent motivation of firms for profit maximization and focus more on environmental guidelines. By assuming this, we believe that social action (consumer environmental consciousness) in the business sphere affects its environmental behaviour. As a whole, this study examines the CEP-CFP relationship by incorporating consumer environmental awareness as a potential moderating variable.

To explore this relationship, we employ the Greendex index score as a measure of consumers' country-level environmental consciousness and environmental scores from the Asset4 database as indicators of CEP. Drawing on a global dataset comprising 5,697 observations of 1,139 firms across 18 countries, we use Ordinary Least Square (OLS) regression to investigate the moderating effect of consumer environmental awareness on the EP-FP relationship.

While prior research has predominantly focused on firm-level and institutional factors, our study introduces societal factors that may influence firms' financial performance (Potrich et al., 2019). We provide insights into the significance of consumers' specific environmental consciousness in shaping the financial outcomes of a firm's environmental efforts. Our study underscores the potentially negative impact of consumer environmental consciousness on the CEP-CFP relationship.

Countries with higher consumer environmental consciousness can utilize these specific findings while formulating environmental policies and regulation strategies for firms to adhere to global environmental protocols to meet the sustainable and millennium development goals. Environmentally responsible corporates can be promoted and rewarded to create a collective conscience among all the firms by badges, incentives and subsidies. Bringing consumers in the

process of environmental accountability of firms can be introduced as an academic course in the higher education institutions.

The structure of this study is as follows: in section two, we provide a comprehensive review of the literature and outline the development of our hypotheses. Section three offers insights into our data and methodology, while section four presents our findings. We conclude our research with a detailed discussion and highlight avenues for future research in this domain.

3.2. Literature review and hypothesis development

The relationship between a firm's environmental policy and its financial performance has been extensively discussed in the literature. However, the findings from prior studies have been inconclusive, with some studies suggesting a positive link between corporate environmental performance (CEP) and corporate financial performance (CFP) (Albertini, 2013, Dixon-Fowler et al., 2013, Endrikat et al., 2014, Endrikat, 2016). While others find a negative relationship. (Jaggi and Freedman, 1992, Fisher-Vanden and Thorburn, 2011, Jacobs et al., 2010, Lioui and Sharma, 2012).

In addition, it is important to note that there are several factors at both the firm level and the country level that could influence the relationship between CEP and CFP. Wagner (2010) highlights the importance of firm-level factors including the relationship between firms' sustainable management and economic performance, while Xiao et al. (2018) emphasize the role of country-level factors. Inconsistencies in the findings of prior research may be attributed to heterogeneity in financial-environmental performance nexus (Horváthová, 2010), small sample sizes, and heterogeneity in CEP evaluations (Konar and Cohen, 2001a). Additionally, the CEP-CFP link may vary across different industries (King and Lenox, 2001b), and different penalizing factors including but not limited to environmental litigation process, toxic chemical releases, and financial penalties may also contribute to the inconsistency (Cohen et al., 1997).

Furthermore, prior research has paid less attention to the impact of societal factors on the CFP-CEP relationship (Xiao et al., 2018).

Consumers play a crucial role in influencing firms' environmental and financial performance. Schuler and Cording (2006) highlight the effects of consumers on firms' performance, suggesting that consumer demand for environmentally friendly products can drive firms to adopt more sustainable practices. Lin et al. (2014) also emphasize the importance of consumer behavior in shaping firms' environmental and financial performance. They argue that consumers' preferences for eco-friendly products can create market opportunities for firms that prioritize environmental sustainability.

Flammer (2015) argues that social programs can benefit firms in two ways. Firstly, consumers may be willing to pay a premium for "ethical" goods, such as eco-friendly products, which suggests that social programs may reduce the price elasticity of demand. This aligns with the concept of "green consumerism," where consumers actively seek out environmentally friendly products and are willing to pay a premium for them. Secondly, social programs may attract new customers who are socially conscious and environmentally friendly, thereby increasing demand and enhancing consumer loyalty. These arguments suggest that environmental engagements can accommodate the demands of sustainable responsive consumers, leading to increased sales growth, profitability, and competitiveness, ultimately translating into an increase in firm value (Flammer, 2015, Luo and Bhattacharya, 2006). This leads to postulate that country-level consumer environmental awareness positively moderates the effects of CEP on CFP.

However, Xiao et al. (2018) have documented that country-level sustainability performance negatively influences the financial consequences of CEP. They argue that in countries where environmental engagements are more institutionalized and sustainability performance is high, external stakeholders become less sensitive to improvements in firms' CEP. Stakeholders may consider CEP improvements as a firm's fiduciary duty and take them for granted. This finding

suggests that the financial benefits of high CEP may be mitigated in countries with a high level of sustainability performance.

It is thus possible that the financial benefits of high CEP may also be mitigated when consumers are more environmentally conscious. When consumers are highly environmentally conscious, they may have higher expectations from firms' environmental policies. If the environmental policies do not meet these high expectations, consumers may not perceive the CEP as significant. Consequently, consumers may not be willing to pay a premium for goods produced by high CEP firms. This is particularly relevant considering that eco-friendly products are often costlier to produce compared to conventionally produced products (Conrad, 2005). Titus and Bradford (1996) argue that consumers' sophistication and awareness do not guarantee their participation in ethical buying practices. Similarly, Carrigan and Attalla (2001) find in their survey that companies' social or environmental reputations do not necessarily influence consumers' purchase decisions.

Based on these arguments, we propose the following hypothesis:

H_1: *Country-level consumers` environmental consciousness negatively moderates the effect of CEP on CFP.*

3.3. Methodology

3.3.1. Sample and data

Our sample consists of data from different sources. We collected financial and environmental data from Trucost and Datastream Asset4. To measure country-level environmental consciousness, we used the environmental awareness index from Greendex. We initially collected 8,144 observations firms for 2008 to 2014. After balancing the data for missing observations, our sample was finally reduced to 5,697 observations of 1,139 firms from 18 countries. We winsorized the financial data at the level between 1% and 99% to mitigate the

effects of outliners. Data distribution across countries, Greendex index for 5 years are presented in table 3.1.

3.3.2. Variables

3.3.2.1. Country-level consumers' environmental awareness

We measure the country-level consumers' environmental consciousness by the Greendex index, which is the combined work of National Geographic Society and polling firm GlobeScan (Gratiela, 2013, Khan, 2012). This index is developed after an international research approach to measure and monitor consumer progress towards environmentally sustainable consumption. The Greendex is a worldwide tracking survey used over time to monitor and report changes in consumer behavior by replicating the research on an ongoing basis. The key objectives of this unprecedented consumer tracking survey are to provide regular quantitative measures of consumer behavior and to promote sustainable consumption. This report is based on the results of online interviews with approximately 1,000 consumers in each of the 18 countries, representing both developed and developing countries from different continents. This survey has been conducted by the National Geographic Society in 5 different years from 2008 to 2014. We use this database because we consider this represents the true picture of consumers` environmental behavior/awareness in a country and their sustainability consumption behavior. The Greendex scores are based on each respondent on the consumption patterns they report in the survey and compare average scores by country. The measurement technique of Greendex to assess the behavior of consumer in four major avenues including food consumption, transportation, goods and housing. Table 3.1 depicts the overall Greendex scores of the consumer behavior of 18 countries in five years between 2008 and 2014.

Table 3. 1 Greendex index, environmental consciousness score

Countries	2008	2009	2010	2012	2014
Argentina		54.7	54.2	54.4	55.4
Australia	47.8	50.5	50.3	49.2	49.5
Brazil	58.6	57.3	58	55.5	55.5
Canada	46.3	47.5	47.9	47.9	47.2
China	55.2	56.7	57.3	57.8	57.5
France	46.5	49.5	48.9	49	49
Germany	48.1	51.1	50	51.5	51.3
Hungary	51.7	53.3	54.1	54.4	54.8
India	58	59.5	62.6	58.9	61.4
Japan	47.4	49.3	49.7	48.5	48.4
Mexico	52.7	53.8	54.8	53.9	55
Russia	51.1	52	54.2	53.1	53.3
South Africa					52.2
South Korea		54.6	52.8	54.4	55.7
Spain	48	51.4	50.4	51.2	51.3
Sweden		51.1	50.7	49.7	50.9
United Kingdom	48.2	49.4	49.6	49.4	50.4
United States of America	42.2	43.7	45	44.7	44.6

Note: First conducted in 2008, the Greendex survey was expanded in 2009, with the addition of Argentina, South Korea and Sweden to Australia, Brazil, Canada, China, France, Germany, Britain, Hungary, India, Japan, Mexico, Russia, Spain and the United States. The same 17 countries were included in the 2012 survey. In 2014 South Africa was added to the survey, expanding its reach to the African continent. Eighteen-thousand consumers were polled online in 2014 (1,000 in each country).

3.3.2.2. Corporate environmental performance (CEP)

We use the environmental pillar scores data provided by Thomson Reuters ASSET4 as our proxy for firms' CEP. The ASSET4 research agency was founded in 2002 and this dataset includes about 5000 global public companies. ASSET4 has established a database that is said to provide transparent, objective, and auditable extra-financial information based on public disclosures from companies to assess corporate performance based on four pillars, including the EP pillar (Schäfer et al., 2006). Scores and data are provided transparently at all levels in

the ASSET4 framework. ASSET4 environmental scores are usually updated and are available every year and available as historical time series from 2002 onwards. Our sample contains annual environmental score data for every firm and year used in our dataset. ASSET4 rate environmental scores on a scale ranging from 100 % (good performance) to 0 % (bad performance) (Utz and Wimmer, 2014). According to ASSET4, the EP pillar reflects how a company uses management practices to generate long-term shareholder value. For example, EP includes how efficient a company is at using materials, energy and water, developing eco-efficient products and services, and preventing pollution. We also use subcategories (emission reduction, resource reduction and production innovation) of environmental pillar score for robustness. According to Asset4, 'emissions reduction' refers to the company's management commitment and effectiveness toward reducing environmental emission in the production and operational processes (Lys et al., 2015, Gupta, 2018). Whereas, 'resource reduction' is defined as a firm`s commitment and effectiveness toward achieving efficient use of natural resources in the production process. Finally, 'product innovation' measures the company's management commitment and effectiveness toward supporting the research and development of eco-efficient products or services.

3.3.2.3. Financial performance

To measure firms` financial performance, we employ Tobin's Q, computed as the market value of assets divided by the book value of assets. Tobin`s Q is the measurement of firms` long-term valuation relative to the replacement cost of tangible assets. Tobin's Q has been used widely in economics, finance, and strategy as a performance measure (Wang et al., 2014, Konar and Cohen, 2001b). It captures how much value the firm creates with its asset base. Because value is based on the present value of future expected cash flows, discounted at the required rate of return, it is already adjusted for risk. We further compute Tobin`s Q as the book value of assets

as the market value of equity + book value of assets - book value of equity - balance sheet deferred taxes. In our robustness section, for the robustness check of using Tobin's Q, we take a log of Market to book value (M/B) and return on assets (ROA) as a measure of performance.

3.3.2.4. Control variables

We aim to study the moderating effects of environmental awareness in the relationship between CEP and CFP. To do so, we control for a range of variables that affect financial performance. We use size (Orlitzky, 2001), leverage, R&D, and R&D dummy (Wang et al., 2014, Jiao, 2010) as control variables. These are determinants of firms` value and influence the profitability of firms (Gurbuz et al, 2010; Ntim, 2009; Lantz and Sahut, 2005). Therefore, these variables may have a likely effect in the relationship between dependent and independent variables. We also use R&D as our control variable which is obtained from Trucost. As R&D data of the firms is rare and this data may be unavailable in data source therefore, to control for the missing data we use R&D dummy (Fama and French, 2002). Previous studies have used Size, Leverage, and R&D as control variables to normalize the difference (King and Lenox, 2001a). A detailed description of the variables is given in Table 3.2.

Table 3. 2 Variables, Description and Sources:

Variables	Description	Sources
Greendex	This is an index developed after international research approach to measure and monitor consumer progress towards environmentally sustainable consumption. It is used to monitor and report changes in consumer behavior. The key objectives of this unprecedented consumer tracking survey are to provide regular quantitative measures of consumer.	National Geographic Society and GlobeScan
CEP (environmental pillar score)	Examines factors including resource usage and reduction; emissions and emissions reductions; environmental activism and initiative and product or process innovation (Three sub-pillar scores: emission score, resource use score and environmental innovation score)	ASSET4
Tobin`s Q	Log (Tobin`s Q) for calculating Firm`s value. (Market value of equity + book value of assets - book value of equity - balance sheet deferred taxes)/book value of assets.	Datastream
Market to book value	Log(Market value of equity / book value of equity)	Datastream
Size	Size is the logarithm of the company's year-end total assets.	Datastream
Leverage	Leverage is measured as total non-current debt divided by year-end total assets	Datastream
ROA	ROA (return on assets) is a measure of the company financial performance and profitability, assessed by the return on assets equal to fiscal year-end net income divided by year-end total assets.	Datastream
R & D	R&D expenditures / sales	Datastream
R&D Dummy	Equals 1 if R & D is non-available, zero otherwise	Datastream
Industry	Industry is a dummy variable that is equal to one if companies are classified as environmentally sensitive industries, and zero otherwise.	Datastream
Industry Dummy	Used industries (Consumer Discretionary, consumer staples, energy, financials, health care, industrial, information technology. Materials, real estate, telecommunication services and utilities) as dummy variable.	Datastream

3.3.3. Model

We analyze the effects of consumer environmental consciousness on EP-FP link by two methods. Firstly, we include interaction between Greendex and CEP in our baseline model. Secondly, we split the sample into low Greendex and high.

We use the following specification to evaluate the extent to which the degree of a country's environmental awareness affects the effect of a firm's EP on firms` value (Cheung et al., 2018) :

$$CFP_{it} = \beta_0 + \beta_1 CEP_{it} + \beta_2 Greendex_{it} + \beta_3 CEP_{it} * Greendex_{it} + \sum_{j=1}^{n} \beta_{ij} X_{ijt} + \varepsilon_{it}$$

Where CFP and CEP represent the financial performance and environmental performance of the firm i for year t, respectively. Greendex is the country-level environmental consciousness of the firm's country. β represents the regression coefficient of its respective variables. X represents control variables (Size, Leverage, R&D, and industries) and ε is the error term.

3.4. Results and discussion

3.4.1. Descriptive statistics of the variables

The descriptive statistics for the variable data used in this paper are shown in Table 3.3. The descriptive statistics in Table 3.3 showed the following: (1) The minimum value of Tobin`s Q in our data is 0.6, the maximum value is 5.8, and the average value is 1.5 which means that it has a positive skeweness which indicates a longer tail in the right. (2) The minimum value of the environmental scores (CEP) is 1.6, the maximum value is 93.6, and its average value is 49.7 which represents a negative skewness and indicates a longer tail in the left. In general, there is a large gap in the environmental responsibility score by listed companies. (3) The minimum value of the consumer environmental awareness (Greendex) is 42.2, the maximum value is 58.6, and the average value is 47.6 with a skewness of 0.596. This indicates that Greendex score has a longer tail in the right. We have also used alternative environmental performance proxies including resources use score, emission score, and innovative score to further evaluate the relationship between environmental performance and financial outcome of the firms as moderated through consumer environmental consciousness. With reference to emission score,

the mean is 55.3 with a maximum of 99.0 and skewness of -0.348. A negative skewness indicates that the score has a longer tail in the left which suggests that potentially some companies have lower emission scores relatively.

Table 3. 3 Descriptive statistics

VARIABLES	N	mean	p50	p25	p75	max	min	Skewness	Kurtosis
Tobin`s Q	5,697	1.500	1.197	1.005	1.669	5.808	0.608	2.637	11.361
CEP	5,697	49.717	51.950	28.790	71.430	93.640	1.670	-0.173	1.923
Greendex	5,697	47.692	48.200	44.700	49.500	58.600	42.200	0.596	3.873
Emission score	5,697	55.335	59.520	31.690	80.670	99.000	0.000	-0.348	1.971
Resource use score	5,697	53.905	57.450	29.410	80.170	98.980	0.000	-0.280	1.885
Innovation score	5,697	34.683	29.190	0.000	64.930	97.540	0.000	0.386	1.709
M/B	5,697	2.354	1.630	1.040	2.680	19.630	-1.497	3.784	22.025
ROA	5,697	5.473	4.680	1.830	8.430	29.040	-18.190	0.274	5.787
Size	5,697	16.230	16.022	15.183	17.174	20.724	12.914	0.550	3.270
Leverage	5,697	25.114	23.760	12.320	36.210	72.150	0.000	0.481	2.710
R&D	5,697	2.115	0.020	0.000	2.200	24.800	0.000	3.170	13.425
RD Dum	5,697	0.430	0.000	0.000	1.000	1.000	0.000	0.285	1.081

3.4.2. Consumer environmental consciousness, CEP and CFP

Our baseline model results are presented in Table 3.4. We use pooled OLS regression to analyze the moderating effects of firms` environmental performance on firms` value. We conduct extensive sensitivity tests by including alternative variables to check the robustness of our results. Firstly, for the CEP proxy, we use three sub-pillars of environmental score namely emissions reduction, resource reduction, and product innovation. These reliable data are widely used in international studies, for instance by Cheng et al., (2014), Lys et al., (2015), Gupta, (2018) or Marsat et al., (2020). Secondly, we also split our data set into low and high Greendex

scores to assess whether environmental performance and firm value remains consistent across different levels of consumer environmental awareness in countries. It adds to our understanding whether these findings are consistent across different degrees of consumer environmental awareness. Thirdly, we check the results by dividing the sample into high and low polluting firms. And finally, we conduct a test by replacing Tobin`s Q with market-to-book value (M/B value) and return on assets (ROA) to control for financial performance. We find that except for a minor difference in significance level results are consistent with our initial results checked with Tobin`s Q and CEP. Results for robustness are shown in table 3.5, 3.6 and 3.7.

Table 3. 4 OLS regression results with CEP

VARIABLES	Tobin`s Q	M/B	ROA
CEP	0.002***	0.006***	0.015***
Greendex	0.067***	0.257***	0.166
CEP × Greendex	-0.001***	-0.003***	-0.005***
Size	-0.171***	-0.340***	-0.965***
Leverage	-0.007***	0.005*	-0.072***
R&D	0.027***	0.026***	-0.023
RD Dum	-0.028	-0.227***	-0.878***
Constant	4.054***	6.846***	22.187***
Year & Country Fixed Effects	Yes	Yes	Yes
Observations	5,697	5,697	5,697
Adjusted R-squared	0.239	0.130	0.168

*** p<0.01, ** p<0.05, * p<0.10

As reported in Table 3.4, we find that both CEP and Greendex have a positive and significant direct effect on Tobin`s Q ($\beta = 0.002$, $p < 0.001$), ($\beta = 0.067$, $p < 0.001$) respectively. In support of our hypothesis $H_1$, our results also show that CEP decreases the positive effects on firms` value ($\beta = -0.001$, $p < 0.001$). This implies that with an increase in environmental consciousness, the positive effect of environmental engagements on CFP decreases. Opportunities linked to CEP might be less productive in countries where consumer environmental consciousness is high.

Table 3. 5 Robustness with environmental sub-pillars

VARIABLES Environmental sub-pillars	Tobin`s Q			M/B			ROA		
Emission Score	0.001***			0.005***			0.012***		
Greendex	0.062***			0.239***			0.123		
Emission Score × Greendex	-0.000***			-0.002***			-0.003***		
Resource Use Score		0.002***			0.007***			0.015***	
Greendex		0.058***			0.223***			0.066	
Resource Use Score × Greendex		-0.001***			-0.002***			-0.003***	
Env Innovation Score			0.000			-0.001			0.001
Greendex			0.044**			0.145**			0.037
Env Innovation Score × Greendex			-0.000**			-0.001**			-0.003***
Size	-0.170***	-0.174***	-0.160***	-0.344***	-0.356***	-0.287***	-0.964***	-0.977***	-0.845***
Leverage	-0.007***	-0.006***	-0.007***	0.005*	0.005*	0.005*	-0.071***	-0.071***	-0.071***
R&D	0.026***	0.027***	0.027***	0.025***	0.026***	0.028***	-0.025	-0.021	-0.019
RD Dum	-0.041*	-0.026	-0.040	-0.275***	-0.216***	-0.294***	-0.982***	-0.880***	-1.002***
Constant	4.051***	4.080***	3.933***	6.931***	6.982***	6.259***	22.249***	22.229***	20.868***
Year & Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,697	5,697	5,697	5,697	5,697	5,697	5,697	5,697	5,697
Adjusted R-squared	0.237	0.239	0.233	0.128	0.132	0.119	0.167	0.168	0.164

*** p<0.01, ** p<0.05, * p<0.10

To get a better understanding of the impact of CEP on firms` value, we also explore whether the effect depends on environmental performance dimensions. Therefore, we also use three sub-categories of the ASSET4 environmental score, namely emission reduction, resource reduction, and product innovation as dependent variables. As presented in Table 3.5, we find that the results of emissions reduction, resource reduction, and product innovation are in line with our baseline results.

Furthermore, we divide our sample into two sets based on environmental awareness: high Greendex group when environmental awareness is greater than its mean and low Greendex group when environmental awareness is less than the mean. As reported in Table 3.6, we find that high Greendex negatively moderates the relationship between CEP and firms` value (β = -0.005, $p < 0.001$). Whereas, in countries with low consumer environmental consciousness, CEP is a source of increasing firm value because consumers with high environmental consciousness consider CEP as an institutional duty and take it for granted (Xiao et al., 2018). We also conduct the test by dividing the data into high and low polluting firms. Results reported in Table 3.7, we find that the impact of consumers' environmental consciousness is negative in the relationship between CEP and firm value in both samples (high and low polluted firms).

Table 3. 6 Robustness with Greendex dummy

VARIABLES	Tobin`s Q	M/B	ROA
CEP	0.004***	0.016***	0.033***
Greendex_High	0.153***	0.510***	0.599
CEP × Greendex_High	-0.005***	-0.019***	-0.032***
Size	-0.170***	-0.336***	-0.960***
Leverage	-0.007***	0.005*	-0.071***
R&D	0.027***	0.026***	-0.022
RD Dum	-0.030	-0.240***	-0.901***
Constant	3.967***	6.574***	21.897***
Year & Country Fixed Effects	Yes	Yes	Yes
Observations	5,697	5,697	5,697
Adjusted R-squared	0.238	0.129	0.169

*** p<0.01, ** p<0.05, * p<0.10

Table 3. 7 Robustness with High and Low polluted firms

VARIABLES	Tobin`s Q		M/B		ROA	
	High	**Low**	**High**	**Low**	**High**	**Low**
CEP	0.002***	0.002**	0.012***	0.004*	0.006	0.018***
Greendex	0.054	0.078**	0.156*	0.353***	-0.021	0.285
CEP × Greendex	-0.001***	-0.001***	-0.003***	-0.003***	-0.005***	-0.005***
Size	-0.169***	-0.185***	-0.438***	-0.346***	-0.392***	-1.202***
Leverage	-0.006***	-0.006***	0.014***	0.002	-0.110***	-0.046***
R&D	0.025***	0.022***	0.050**	0.001	-0.124	-0.025
RD Dum	-0.086**	-0.040	-0.285**	-0.444***	-0.652**	-1.145***
Constant	3.884***	4.387***	7.553***	7.516***	14.491***	25.425***
Year & Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,841	2,856	2,841	2,856	2,841	2,856
Adjusted R-squared	0.192	0.281	0.126	0.151	0.181	0.190

*** p<0.01, ** p<0.05, * p<0.10

Our study suggests that consumers' environmental consciousness affects consumers` perceptions about CEP and its financial outcomes depending on how consumers see, interpret, and respond to firms` environmental actions. It helps to explain the inconsistent results on the CEP-firm value link in the literature and findings of this study show that financial effects of CEP are context-dependent (Barnett, 2007). With increasing environmental threats and concerns, consumers become more environmentally oriented and aware. Therefore, it will be difficult for firms to strengthen a firm-consumer relationship. As consumers' environmental consciousness in a country increases, firms in that country find it increasingly difficult to get financial benefits from their corporate environmental commitments. As a result, consumer environmental consciousness moderates the positive outcomes of CEP. Possible explanation

for consumers` environmental consciousness as negatively moderating the link between CEP and firms` value is consistent with the argument of Xiao et al (2018) .

3.5. Conclusion

This study adds new insight into the literature by including country-level environmental consciousness in the link between CEP and firms` value. The findings of this research show that the positive financial effect of CEP is negatively moderated by country-level consumers` environmental consciousness. In other words, the link between corporations` environmental engagements and a firm's value effect is less strong in environmentally oriented countries. For both researchers and firm managers, this study presents a more refined insight into the financial effect of investing in CEP. For policymakers who urge firms to improve their environmental performance, these findings show that corporations` financial return for their social and environmental engagements will steadily diminish over the period as the positive financial impacts of CEP decline. Encouragement of firms to development sustainable programs requires policymakers to formulate extrinsic financial incentives for the firms alongside non-monetary rewards such as legitimacy and reputation (Bansal and Ruth, 2000).

The findings of this study have significant implication for managers as well. Business gains value from the contribution of sustainable behavior, which keeps their relationships with stakeholders improving. It also emphasizes the significance of adopting and implementing environmental strategies for the business in terms of improving performance by integrating socially responsible behavior into business strategy. By putting money into eco-friendly practices, a company also enhances its reputation and fosters positive relationships with its clients and staff. Managers can get valuable insights about the role of environmental performance in the financial outcomes of firms as influenced by country contextual consumer environmental awareness. Managers can make more informed decisions by these findings

about the future course of environmental actions and investments in the operations of firm. Managers in environmentally conscious countries can guide resource allocation for environmental engagement based on contextual understanding of the countries pertaining to environmental awareness of consumers.

Chapter 4. Does environmental shareholder activism improve firm value?

Abstract

This study investigates the impact of environmental shareholder activism (ESA) on firm value and its moderating role in the link between a firm's carbon intensity and firm value. Using the environment-related shareholder proposals as a measure for ESA, we find a robust evidence that ESA improves a firm value, i.e., Tobin's Q and market-to-book value ratio. However, we further find that this relationship holds only for firms pertaining to carbon intensive industries. Furthermore, we find that ESA amplifies the negative impact of a firm's carbon intensity on its market value. We thus advance the existing literature by documenting that ESA is value relevant and it also moderates the link between a firm's environmental performance and its market value.

Keywords: Environmental shareholder activism; shareholder proposals; environmental performance; firm value; financial performance

4.1. Introduction

In recent decades, companies have faced increasing pressure from stakeholders to address environmental issues in their policies (Clark & Crawford, 2012). This pressure has been particularly evident in the form of environmental shareholder activism (ESA), as shareholders have become more sensitive to environmental concerns and have submitted a surge of environment-related proposals in recent years (Flammer et al., 2021). Activist shareholders play a crucial role in influencing corporate governance structures and decision-making processes (Stathopoulos & Voulgaris, 2016, Goranova & Ryan, 2014).

While ESA has been effective in pressuring managers to address environmental issues, its impact on firm value remains unclear. Previous studies have examined the impact of shareholder activism on firm performance, but they have not specifically focused on ESA (Boyson & Mooradian, 2011). Flammer et al. (2021) have explored the impact of ESA on climate risk disclosure and post-disclosure firm value, but a direct examination of the impact of ESA on firm value is lacking. Therefore, this study aims to fill this gap by investigating the direct impact of ESA on firm value.

Furthermore, if environmental shareholder activists seek to improve a firm's environmental performance, it is important to examine whether ESA moderates the effect of a firm's environmental performance on its value. This study also explores whether ESA amplifies the negative effect of a firm's carbon intensity (CI) on its value. Clark and Crawford (2012) have found that ESA improves a firm's environmental performance. This suggests that ESA may lead to higher firm valuation, as previous studies based on the natural resource-based view have shown a positive impact of environmental performance on firm value (Hart, 1995, Russo & Fouts, 1997). The argument put forth in this study is that when environmental shareholder activists target a firm, it provides new information to the market about the firm's improved environmental commitments. As a result, the market responds positively, leading to higher firm

valuation. Additionally, concerns have been raised about the agency problem that may arise from management's environmental engagements, as it can be difficult for shareholders to monitor problems arising of the agency of managers (Barnea & Rubin, 2010). However, shareholder activism strengthens the monitoring mechanism, mitigating the agency problem related to a firm's environmental engagements and potentially leading to higher firm valuation (Black, 1991; Pound, 1992).

The impact of ESA on firm value may differ depending on the firm's carbon intensity. Environmentally performing firms may find it easier to incorporate shareholders' pressure as they already have policies in place to address environmental concerns. On the other hand, carbon-intensive firms may face greater challenges and require more efforts and resources to meet shareholders' demands. Therefore, ESA may uncover additional compliance and emissions abatement costs, which can be referred to as the firm's latent environmental liabilities. This suggests that ESA may amplify the negative impact of a firm's carbon intensity on its value.

To measure ESA, this study draws inspiration from Flammer et al. (2021) and uses the presence of at least one environment-related shareholder proposal submitted in a given year as an indicator (1 if present, 0 if absent). The study employs OLS regression analysis on a sample of 2,281 firm-year observations from 2016-2017 to examine the impact of ESA on firm value, measured by Tobin's q and the market-to-book value ratio. The results provide robust evidence that ESA positively affects firm value.

However, additional tests reveal that ESA improves firm value only for firms in carbon-intensive industries. By introducing an interaction term between ESA and firms' carbon intensity, the study finds a significantly negative link between the interaction term and firms' market-to-book ratio. To ensure the robustness of the findings, the study also conducts regressions on a one-to-one nearest neighbor matched sample, which confirms the significantly

negative link between the interaction term and both measures of firm value, Tobin's q and the market-to-book ratio. These findings support the argument that ESA improves firm value while also amplifying the negative impact of a firm's carbon intensity on its value.

The contribution of this study lies in its focus on the effects of environment-related shareholder pressure, specifically environmental shareholder activism (ESA), on firm value. While previous studies have primarily examined financially motivated shareholder activism, this study specifically explores whether ESA improves firm value. By investigating the direct impact of ESA on firm value, this study fills a gap in the existing literature.

The findings of this study are particularly important as they reveal that ESA not only improves firm value but also amplifies the negative impact of a firm's carbon intensity on its value. This contributes to our understanding of the relationship between a firm's environmental performance and its value, as well as the role of non-financially motivated shareholder pressure in moderating this relationship.

The study builds on previous research that has shown the positive impact of environmental performance on firm value (Clark & Crawford, 2012, Russo & Fouts, 1997). It argues that when environmental shareholder activists target a firm, it provides new information to the market about the firm's improved environmental commitments. This leads to a positive market response and higher firm valuation. Additionally, the study addresses concerns about the agency problem that may arise from management's environmental engagements (Barnea & Rubin, 2010). It suggests that ESA, by strengthening the monitoring mechanism, can mitigate the agency problem and contribute to higher firm valuation.

The study also highlights the importance of considering the firm's carbon intensity in the context of ESA. It argues that environmentally performing firms may find it easier to incorporate shareholders' pressure as they already have policies in place to address environmental concerns. On the other hand, carbon-intensive firms may face greater challenges

and incur additional compliance and emissions abatement costs, which can negatively impact their value. By examining the interaction between ESA and firms' carbon intensity, the study provides insights into how ESA can amplify the negative impact of carbon intensity on firm value.

The rest of the paper is organized as follows. The second section discusses the relevant literature and hypothesis development. The third section describes data and the method used. The fourth section is dedicated to empirical results. The last section discusses the results and concludes the study.

4.2. Literature and hypotheses development

Over the past few decades, shareholder activism has emerged as a significant force in corporate governance, attracting considerable attention from researchers. Numerous studies have investigated the impact of shareholder activism on firms' financial performance (Stathopoulos and Voulgaris, 2016, Denes et al., 2017, Jara-Bertin et al. (2008) analyze the influence of large shareholders on firm value in family-owned firms and find that increased contestability of control among the largest shareholders enhances the value of family-owned firms. Rehbein et al. (2004) argue that shareholder activists often own a trivial number of shares and introduce resolutions that may not align with the interests of other shareholders (Rehbein et al., 2004). These studies highlight the complexities and heterogeneity of shareholder activism and its potential impact on firm value.

While shareholder proposals may not always receive majority support, shareholder activism, particularly in areas such as executive compensation, antitakeover provisions, and social and environmental practices, can exert pressure on managers to address shareholder demands (Flammer et al., 2021). Scholars such as Goranova and Ryan (2014) and Smith (1996) have argued that shareholder activism plays a crucial role in changing corporate governance structures and decision-making processes. Denes et al. (2017), in a comprehensive review of

literature spanning over 30 years, concluded that shareholder activism reduces agency conflicts and enhances a firm's financial efficiency, ultimately leading to an improvement in the target firm's value.

For example, Boyson and Mooradian (2011) found that shareholder activism improves short-term stock performance as well as long-term operating performance. Their research revealed significant changes in firms' performance when activists demanded alterations in corporate governance practices and reductions in excess cash. Drawing on agency theory, Boyson and Mooradian (2011) argued that activism encourages management to distribute excess cash through dividends or share buybacks, thereby enhancing the target firm's value. Other scholars have also posited that activism resolves monitoring and incentive problems, leading to improved firm performance. Black (1991) and Pound (1992) contended that shareholder activism can reduce agency and incentive costs by enhancing monitoring mechanisms.

Given the demonstrated effects of shareholder activism on governance, financial efficiency, and monitoring, it is reasonable to argue that environmental shareholder activism may also have a positive impact on firm value. Flammer et al. (2021) specifically examined the impact of environmental shareholder activism, measured by climate-related shareholder proposals, on climate risk disclosure and post-disclosure firm value. Their findings indicated that environmental shareholder activism enhances the disclosure of climate risk information and leads to an improvement in post-disclosure firm value. The authors suggested that increased disclosure serves as a tool for improving transparency, which in turn translates into higher firm valuation. When managers incorporate the demands of environmental shareholder activists, they may reassess firm policies to improve environmental performance. Clark and Crawford (2012) found that environmental shareholder activism improves a firm's environmental performance. Drawing on the natural resource-based view (Hart, 1995, Russo and Fouts, 1997) and the environment-as-a-resource framework (Flammer, 2013), it can be argued that high

environmental performance is likely to result in higher firm valuation. Therefore, when environmental shareholder activists target a firm, it is reasonable to expect that the firm may achieve higher valuation due to the indication of improved environmental performance in the future.

Furthermore, it appears that environmental shareholder activism also mitigates the perceived agency problem associated with a firm's environmental engagements, as evidenced by Barnea and Rubin (2010). These authors argued that environmental engagements may create an agency problem because it is difficult for shareholders to monitor managers. In response, managers may engage in environmental activities to mitigate the control mechanism (Surroca and Tribó, 2008, Fabrizi et al., 2014). As shareholder activism improves the monitoring mechanism (Black, 1991,Pound, 1992), environmental shareholder activism may also mitigate the agency problem related to a firm's environmental engagements. By encouraging managers to address environmental issues, environmental shareholder activism may further contribute to the mitigation of the agency problem and, consequently, an improvement in firm value.

In summary, when environmental shareholder activists target a firm, it signals to the market an expectation of improved environmental performance in the future, enhances the monitoring mechanism, and mitigates concerns about the agency problem associated with the firm's environmental engagements. Given that investors value these factors, it is posited that a firm will achieve higher valuation when environmental shareholder activists target it. Therefore, the following hypothesis is proposed:

***H_1**: When environmental shareholder activists target a firm, the firm's value increases.*

To meet the demands of environmental shareholder activists, it is suggested that management may be encouraged to reassess and adjust their business practices by adopting environmentally

friendly policies. However, this process may be easier for environmentally friendly firms that already have established environmental policies in place. Such firms may require fewer efforts and resources to fulfill the demands of environmental shareholder activists, potentially leading to higher valuation compared to their carbon-intensive counterparts. On the other hand, carbon-intensive firms may face greater challenges and need to invest significant resources in order to improve their environmental performance. This could involve substantial investments in environmentally friendly technologies and production processes.

Clarkson et al. (2015) and Chapple et al. (2013) attribute any future compliance or emissions abatement costs to the latent environmental liability of carbon-intensive firms. Therefore, when shareholder environmental activists seek improvements in a firm's environmental performance, it is likely to increase the firm's latent environmental liabilities. Drawing on the shareholders' expense view (Friedman, 1970a), an increase in a firm's latent environmental liabilities may result in a decrease in firm value. Consequently, it is argued that when environmental shareholder activists target a firm to act upon its social responsibility of conforming to environmental protocols, which may translate into increased firm value. Conversely, shareholder activism may also increase the negative effect of a firm's carbon intensity on its market value. Based on these considerations, the following hypothesis is proposed and examined:

H_2: *When environmental shareholder activists target a firm, the negative effect of the firm's carbon intensity on its value increases.*

4.3. Data and methodology

This section presents the methods and used variables to find out the relationship between environmental performance and financial performance along and moderated through environmental shareholder activism. We have employed a quantitative research design to unearth this relationship while using the Ordinary Least Square (OLS) regression. We have collected secondary data from Thomson Reuters Asset4 to enlist the indicators of environmental shareholder activism and Institutional Shareholder Services to incorporate data on the environmentalism of shareholders and its sub-indicators. We used descriptive to present the findings of the study and inferential statistics to deduce our results from these findings.

4.3.1 Variables and data sources

This section enlists the set of variables used to assess the relationship between environmental shareholder activism and EP-FP link. Our main independent variable was shareholder oriented environmental performance of companies, i.e. environmental proposals and carbon intensity. The dependent variable firm value that we measured through Tobin's Q and market-to-book value.

4.3.2. Dependent variable

4.3.2.1. Firm Value

We measure firm value by a given firm's Tobin's Q (denoted by Q), calculated as dividing market value of equity plus total liabilities by book value of equity and liabilities. Tobin's q measures a firm's long-term value relative to its tangible assets' replacement cost. Various studies, for instance, Wang et al. (2014), Konar and Cohen (2001b), employ Tobin's q to represent a firm value. As a robustness check, we also use a firm's market to book value ratio as measure of firm value, denoted by MB. We obtain the financial data from the Worldscope database for the calculation of both Q and MB.

4.3.3. Independent variables

4.3.3.1. Environmental Shareholder Activism

Following Flammer et al. (2021), we measure environmental shareholder activism (ESA) by the shareholder proposals. ESA is equal to 1 if a firm faces at least one environment-related shareholder proposal in a given year, otherwise equal to 0. We obtain shareholder proposals data from the Institutional Shareholder Services (ISS) database for the years 2016 and 2017. As the ISS compiles shareholder proposals for the S&P 1500 companies, therefore, we consider all the companies included in this index. The ISS distinguishes shareholder proposal on governance and socially responsible investment (SRI) topics. Within the SRI proposal, we then manually determine the environment related proposals by reading the description of each resolution provided in the data. In our baseline sample, 8 percent of the 2,281 firm-year observations have at least one environment-related shareholder proposal (the maximum is 6).

4.3.3.2. Carbon intensity

To examine our Hypothesis 2, we need a measure of firms' carbon intensity. We measure a firm carbon intensity by its carbon emissions obtained from the Trucost dataset, denoted by CI. The Trucost is one of the prominent agencies which collects thousands of publicly listed companies' environmental data on annual basis. Specifically, we measure CI by taking the sum of direct and first-tier indirect emissions (in tonnes) divided by the firm's revenues (million USD). The data from Trucost is used in many studies to represent the environmental impact of a firm's operations, for instance, used in Marquis et al. (2016), Delmas et al. (2015), Walls and Berrone (2017).

4.3.3. Control variables

There may be some other firms' factor that could attract shareholder activism and, hence, affect its link with firm value. Therefore, we include some control variables in our analysis to mitigate

this concern. We specifically control for the effect of firm's profitability, size, age, operational efficiency, leverage, research and development expenditures, and capital expenditures. Moreover, we also include a dummy for year and firms' industry in the analysis using two-digits SIC classification. We construct all the control variable from the Worldscope. We winsorized all the financial and environmental variable at their 1st and 99th percentile to mitigate the impact of outliers. We describe all the variables in Table 4.1.

Table 4. 1 Description of Variables

Variables	Description	Data source
Q	Tobin's q: market value of equity plus total liabilities divided by book value of equity and liabilities	Worldscope
MB	Market-to-book value ratio: market value of equity divided by book value of equity	Worldscope
ESA	Environmental Shareholder Activism: equal to 1 if a firm faces at least one environment-related shareholder proposal in a given year, otherwise 0	Institutional Shareholder Services (ISS)
CI	The carbon intensity of firms - the sum of direct and first tier indirect emissions (tonnes) scaled with firm's revenues (million USD)	Trucost
Control variables:		
ROA	Return on assets percentage	Worldscope
Size	Natural log of firm's total assets (in thousands).	Worldscope
Age	Natural log of years since incorporation	Worldscope
SG	Sales in current year divided by sales in previous year	Worldscope
DA	Percentage of total debts to total assets	Worldscope
CFO	Funds from operations divided by net sales	Worldscope
RD	R&D Expenditures divided by total sales	Worldscope
RDDum	A dummy – equals 1 if R&D data is available, otherwise zero.	
CAPEX	Percentage of capital Expenditures to total assets.	Worldscope

4.3.4. Descriptive statistics

We report the summary statistics and correlations in Table 4.2. On average, our sample firms' Tobin's Q and MB ratio equal to 2.31 and 4.28, respectively. Mean ESA is equal to .08, indicating that 8 percent of the sample firm-year observations have at least one environment-related shareholder proposal. However, ESA is insignificantly correlated to Tobin's Q and

significantly correlated to MB (p-value < 0.05). On average, CI (i.e., emissions in tonnes per million USD revenues) is equal to 0.2. The correlations show that CI is significantly negatively linked to both the firms' Tobin's q and MB ratio. On average, our sample firm-year observations have ROA and Size equal to 6.36 and $3.7 billion. The mean Age of 3.21 show that, on average, our sample firms' average age is equal to 24.77 years. On average, our sample firm-year observations have 28.32 percent debts of total assets and 18.52 percent cash flow from operation of total sales. On average, sample firms have invested 3.74% of their revenues in R&D and 12.43% of their assets in capital expenditures. A 0.44 mean of RDdum suggests that R&D expenditures data of 44 percent observations is available. Note that some of our control variables are highly correlated, for instance, CAPEX-CFO (0.52), and RDdum-RD (0.54), which may raise the multicollinearity issues. But excluding them from the regression does not affects the link between our main variables.

Table 4. 2 Summary statistics and correlations

		Mean	Median	SD	1	2	3	4	5	6	7	8	9	10	11	12
1	Q	2.31	1.83	1.53												
2	MB	4.28	2.73	5.08	0.56***											
3	ESA	.08	0	.26	-0.03	0.05*										
4	CI	.2	.08	.29	-0.20***	-0.13***	0.24***									
5	ROA	6.36	5.71	7.14	0.38***	0.21***	0.00	-0.08***								
6	Size	15.12	14.96	1.59	-0.31***	-0.02	0.36***	0.21***	-0.03							
7	Age	3.21	3.33	.62	-0.06**	-0.04	0.13***	0.15***	0.05**	0.25***						
8	SG	.06	.06	.16	0.19***	0.06**	-0.06**	-0.13***	0.16***	-0.08***	-0.20***					
9	DA	28.32	28.66	18.8	-0.30***	0.14***	0.03	0.10***	-0.12***	0.34***	-0.05*	-0.04				
10	CFO	18.52	14.41	14.62	0.01	-0.04	0.04*	0.05*	0.18***	0.21***	-0.05*	0.10***	0.22***			
11	RD	3.74	0	7.8	0.40***	0.20***	-0.03	-0.20***	-0.16***	-0.20***	-0.10***	0.10***	-0.20***	-0.07**		
12	RDdum	.44	0	.5	0.26***	0.16***	-0.01	-0.08***	0.00	-0.11***	0.03	0.02	-0.17***	-0.17***	0.54***	
13	CAPEX	12.43	3.74	26.64	-0.15***	-0.09***	0.00	0.10***	-0.16***	0.06**	-0.10***	0.03	0.22***	0.52***	-0.07***	-0.22***

N = 2,281. Q is the Tobin's q and MB is the market-to-book ratio. ESA represent environmental shareholder activism, equal to 1 if a firm faces at least one environment-related shareholder proposal in a given year, otherwise 0. CI represents firm's carbon intensity. ROA represents return on assets. Size and Age is the natural log of firm's assets and years since incorporation, respectively. SG is the sales in current year divided by sales in previous year. DA is the percentage of total debts to total assets. CFO represents funds from operations divided by net sales. RD is the R&D expenditures divided by total sales. RDdum equals 1 if R&D data is available, otherwise zero. CAPEX is the ratio of capital expenditure with firm's total assets. Industry and Year represents the fixed effect of industry and year, respectively. t-values are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.3.5. Method

In order to test our Hypothesis 1, we aim to examine whether environmental shareholder activism improves firm value. Employing the ordinary least squares (OLS) regression as a baseline model, we specifically estimate the following regression:

$$Firm\,Value = \alpha + \beta \times ESA_{it} + \mathrm{CI}it + \gamma' X_{it} + Industry_i + Year_t + \varepsilon_{it} \quad (1)$$

Where *i* and *t* indexes firms and years, respectively. *ESA* represents the environmental shareholder activism, equals 1 if a firm face at least one environment-related shareholder proposal in a given year otherwise equals zero. *Industry* represents a firm's industry fixed effects and *Year* represents year fixed effects. $\boldsymbol{X}$ is the vector of control variables with its respective coefficient $\boldsymbol{\gamma}$. The control variables include CI, ROA, Size, Age, SG, DA, CFO, RD, RDdum, and CAPEX. β is the coefficient of our primary interest because it measures a change

in firm value (yearly closing) after shareholder proposals (with in that year). A positive sign of β will indicate that environment-related shareholder proposals are improving firm value.

In our hypothesis 2, we examine whether the environmental shareholder activism intensifies the negative impact of a firm's carbon intensity on firm value. For this purpose, we include an interaction of ESA with CI in the previous baseline regression model. The relationship is expressed in the following equation:

$$Firm\,Value = \alpha + \beta \times ESA_{it} + \delta \times CI_{it} + \theta \times ESA_{it} \times CI_{it} + \gamma' X_{it} + Industry_i + Year_t + \varepsilon \quad (2)$$

In this model, ESA and CI are both our explanatory variables. We are interested in the coefficient of the interaction term between ESA and CI, i.e., θ. A negative sign of θ will indicate that environment-related shareholder proposals in a year increases the negative impact of a firm's carbon intensity on firm-year closing value.

4.4. Results

We report our results in Table 4.3. In first two columns, we estimate the equation (1) using two measures of firm value, Tobin's Q and market-to-book ratio (MB), respectively. The coefficients of ESA are significantly positive in both models, i.e., 0.393 (p-value < 0.01) and 1.512 (p-value < 0.01). As the firms' average Tobin's q and market-to-book ratio in our sample is 2.31 and 4.28 (see table 4.2), the coefficients of 0.397 and 1.51 indicate that the submission of at least one environmental shareholder proposal increases a firm's Tobin's q and market-to-book ratio by 17 and 35 percent, respectively. In support of our hypothesis 1, we thus find that environmental shareholder activism significantly improves firm value.

Table 4. 3 Impact of ESA and firms' carbon intensity on firm value

	(1)	(2)	(3)	(4)
	Q	**MB**	**Q**	**MB**
ESA	0.393***	1.512***	0.384***	2.217***
	(4.788)	(3.309)	(3.078)	(3.001)
CI	-.283***	-1.594***	-.287***	-1.266***
	(-3.610)	(-4.769)	(-3.43)	(-3.891)
ESA*CI			0.021	-1.671**
			(0.134)	(-2.197)
ROA	0.086***	0.208***	0.086***	0.205***
	(11.988)	(8.656)	(11.94)	(8.528)
Size	-0.198***	-0.105	-0.198***	-0.121*
	(-10.366)	(-1.517)	(-10.296)	(-1.772)
Age	0.042	-0.104	0.042	-0.089
	(0.982)	(-0.593)	(0.976)	(-0.509)
SG	0.691***	-0.001	0.691***	0.041
	(3.312)	(-0.001)	(3.303)	(0.049)
DA	-0.007***	0.077***	-0.007***	0.077***
	(-4.569)	(8.906)	(-4.567)	(8.921)
CFO	0.003	-0.037***	0.003	-0.036***
	(1.193)	(-2.964)	(1.187)	(-2.899)
RD	0.075***	0.150***	0.0750***	0.150***
	(9.440)	(5.242)	(9.438)	(5.241)
RDdum	0.017	0.761**	0.017	0.751**
	(0.193)	(2.29)	(0.194)	(2.261)
CAPEX	-0.003***	-0.002	-0.003***	-0.002
	(-3.234)	(-0.337)	(-3.236)	(-0.318)
Constant	4.056***	0.858	4.113***	0.997
	(12.593)	(.769)	(12.822)	(.879)
Observations	2281	2281	2281	2281
R-squared	.43	.192	.43	.194
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes

This table presents the estimation results for hypothesis 1 (in column 1 and 2) and 2 (in column 3 and 4). Q is the Tobin's q and MB is the market-to-book ratio. ESA represent environmental shareholder activism, equal to 1 if a firm faces at least one environment-related shareholder proposal in a given year, otherwise 0. CI represents firm's carbon intensity. ROA represents return on assets. Size and Age is the natural log of firm's assets and years since incorporation, respectively. SG is the sales in current year divided by sales in previous year. DA is the percentage of total debts to total assets. CFO represents funds from operations divided by net sales. RD is the R&D expenditures divided by total sales. RDdum equals 1 if R&D data is available, otherwise zero. CAPEX is the ratio of capital expenditure with firm's total assets. Industry and Year represents the fixed effect of industry and year, respectively. t-values are in parentheses. *** p<.01, ** p<.05, * p<.1

We report the results for estimating equation (2) in the last two columns of Table 4.3. The table shows that the coefficient of ESA is still significantly positive with the inclusion of an interaction between ESA and CI. Furthermore, the coefficient of carbon intensity (CI) is significantly negative, indicating that a firm's carbon intensity tends to mitigate its market value. To examine our hypothesis 2, we are interested in the coefficient of the interaction term

(θ) which is not significantly associated with firms' Tobin's Q. In column 4, the coefficient is, however, equal to -1.671 (p-value < 0.05). Which indicate that the submission of environment-related shareholder proposal is significantly intensifying the negative effect of a firm's carbon intensity on its market-to-book ratio. We find that environmental shareholder activism increases the negative effect of carbon intensity on a firm's market-to-book ratio but not on its Tobin's q. Thus, our findings so far partially support our Hypothesis 2.

4.4.1. Robustness

As a robustness check, we first estimate both the equations, on one-to-one nearest neighbor matched sample. The control variables are excluded because their effect is accounted for via matching. We find a close match of control firms that are not targeted by shareholders but seems like the targeted ones. Specifically, we use the propensity scores based on a firm's industry, year, and other controls for picking a nearest neighbor of a firm from our baseline sample. After using one-to-one matching, we successfully identified 172 matched firms to our targeted firms. OLS regression, performed on the matched sample, results are reported in Table 4.4. The coefficients of ESA are significantly positive. Moreover, the coefficients of interaction term are significantly negative in both models, indicating that ESA significantly intensifies the negative effect of CI on both measures of firm value, i.e., Tobin's q and market-to-book ratio. These tests on the matched sample are, thus, mostly corroborating our previous baseline estimations and strengthens our evidence in support of Hypothesis 2.

Table 4. 4 Impact of ESA and firms' carbon intensity on firm value on a matched sample

	(1) Q	(2) MB	(3) Q	(4) MB
ESA	0.197**	1.330*	0.336*	2.455*
	(0.005)	(0.110)	(0.032)	(0.251)
CI			-0.657**	-1.729
			(0.036)	(1.283)
ESA*CI			-0.371*	-2.589**
			(0.047)	(0.185)
Constant	1.758***	2.696**	1.813***	2.829**
	(.018)	(.111)	(.006)	(.194)
Observations	344	344	344	344
R-squared	.18	.114	.249	.173
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes

This table presents the estimation results for hypothesis 1 (in column 1 and 2) and 2 (in column 3 and 4) on a one-to-one nearest neighbor matched sample. ESA represent environmental shareholder activism, equal to 1 if a firm faces at least one environment-related shareholder proposal in a given year, otherwise 0. CI represents firm's carbon intensity. Industry and year fixed effects are included in all models, but controls are excluded as their effect is accounted for via matching. t-values are in parentheses. *** p<.01, ** p<.05, * p<.1

Secondly, we use the lag values of ESA in the baseline model to mitigate the risk of endogeneity. As presented in Table 4.5, the coefficients of lag ESA are still highly significant which confirms our baseline estimation results. However, the coefficients of the interaction term are no more significant. Overall, this indicate that a firm achieves higher valuation in the following year when targeted by environmental shareholder activists but its moderating role between firm's carbon intensity and its value seems unobservable after one year.

Table 4. 5 Impact of ESA (1 year lag values) on firm value

	(1)	(2)	(3)	(4)
	Q	**MB**	**Q**	**MB**
Lag ESA	0.322***	1.277***	0.284**	1.780**
	(4.192)	(2.743)	(2.392)	(2.328)
CI	-0.468***	-2.077***	-0.485***	-1.858***
	(-6.613)	(-6.464)	(-6.342)	(-5.891)
Lag ESA*CI			0.090	-1.210
			(0.621)	(-1.519)
ROA	0.088***	0.217***	0.088***	0.216***
	(14.938)	(10.49)	(14.91)	(10.361)
Size	-0.168***	-0.092	-0.167***	-0.103
	(-8.745)	(-1.244)	(-8.655)	(-1.396)
Age	0.002	-0.005	0.002	-0.005
	(1.303)	(-0.77)	(1.284)	(-0.714)
SG	0.005***	-0.001	0.005***	-0.001
	(2.914)	(-.138)	(2.906)	(-.108)
DA	-0.009***	0.062***	-0.009***	0.062***
	(-6.079)	(7.936)	(-6.079)	(7.938)
CFO	0.009***	-0.012	0.009***	-0.011
	(3.208)	(-0.917)	(3.180)	(-0.858)
RD	0.058***	0.118***	0.058***	0.117***
	(8.223)	(4.856)	(8.222)	(4.842)
RDdum	0.221***	0.892***	0.221***	0.890***
	(2.608)	(2.930)	(2.609)	(2.925)
CAPEX	-0.004***	-0.009	-0.004***	-0.009
	(-3.843)	(-1.258)	(-3.85)	(-1.241)
Constant	3.387***	.691	3.378***	.82
	(11.179)	(.606)	(11.11)	(.718)
Observations	2391	2391	2391	2391
R-squared	.442	.194	.442	.195
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes

This table presents the estimation results for hypothesis 1 (in column 1 and 2) and 2 (in column 3 and 4). Q is the Tobin's q and MB is the market-to-book ratio. Lag ESA represent environmental shareholder activism, equal to 1 if a firm faces at least one environment-related shareholder proposal in the previous year, otherwise 0. CI represents firm's carbon intensity. ROA represents return on assets. Size and Age is the natural log of firm's assets and years since incorporation, respectively. SG is the sales in current year divided by sales in previous year. DA is the percentage of total debts to total assets. CFO represents funds from operations divided by net sales. RD is the R&D expenditures divided by total sales. RDdum equals 1 if R&D data is available, otherwise zero. CAPEX is the ratio of capital expenditure with firm's total assets. Industry and Year represents the fixed effect of industry and year, respectively. t-values are in parentheses. *** p<.01, ** p<.05, * p<.1

4.4.2. ESA-Firm value link: sensitivity to high vs. low polluting industries

To examine whether environmental shareholder activism affects firm value differently in high or low polluting industries, we separately run our baseline regressions on partitioned samples. A high polluting industries' sample comprise firms that belong to high polluting industries,

namely, Construction, Manufacturing, Mining, and Transportation & Public Utilities, otherwise included in the low polluting industries sample. As reported in the first two columns of table 4.6, we find that environmental shareholder activism is significantly affecting the value (both Tobin's Q and market-to-book ratio) of firms pertaining to high polluting industries. However, the last two columns of table 4.6 show that environmental shareholder activism is not significantly improving firm value pertaining to low polluting industries. The coefficient for environmental shareholder activism is not statistically significant suggesting that in low polluting firms ESA does not have a significant impact on Tobin's Q and market-to-book ratio. Similarly, the interaction term coefficient is also not statistically significant which indicates that the cumulative effect of firm carbon intensity and environmental shareholder activism does not significantly affect Tobin's Q and market to book ratio in firms with lower pollution levels.

Table 4. 6 Impact of ESA on firm value in high vs. low polluting industries

	High polluting industries		Low polluting industries	
	(1)	(2)	(3)	(4)
	Q	**MB**	**Q**	**MB**
ESA	0.458***	2.740**	0.033	0.811
	(2.787)	(2.495)	(0.138)	(0.775)
CI	-0.317***	-1.484***	-0.739*	-1.543
	(-3.770)	(-4.220)	(-1.68)	(-0.997)
ESA*CI	-0.082	-1.996*	5.985	8.451
	(-0.439)	(-1.760)	(1.403)	(0.608)
ROA	0.067***	0.211***	0.123***	0.245***
	(8.104)	(7.001)	(9.357)	(5.729)
Size	-0.229***	-0.334***	-0.154***	0.105
	(-9.186)	(-3.305)	(-4.892)	(1.065)
Age	0.112**	0.257	-0.113*	-0.484*
	(2.004)	(1.202)	(-1.647)	(-1.735)
SG	0.767***	-1.438	0.606*	2.268**
	(2.868)	(-1.299)	(1.791)	(2.143)
DA	-0.005*	0.116***	-0.009***	0.043***
	(-1.929)	(8.570)	(-4.944)	(4.171)
CFO	0.005	-0.073***	0.001	-0.010
	(0.949)	(-3.001)	(0.31)	(-0.820)
RD	0.072***	0.165***	0.077***	0.125**
	(7.430)	(5.031)	(4.780)	(2.123)
RDdum	-0.113	0.128	0.216	1.638*
	(-1.272)	(0.388)	(0.950)	(1.893)
CAPEX	-0.004**	0.013	-0.001	-0.004
	(-2.021)	(0.878)	(-1.489)	(-1.101)
Constant	4.402***	2.468	4.134***	.864
	(10.818)	(1.627)	(8.188)	(.519)
Observations	1356	1356	925	925
R-squared	.412	.227	.494	.219
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes

This table presents the estimation results for high vs. low polluting industries. Q is the Tobin's q and MB is the market-to-book ratio. ESA represent environmental shareholder activism, equal to 1 if a firm faces at least one environment-related shareholder proposal in a given year, otherwise 0. CI represents firm's carbon intensity. ROA represents return on assets. Size and Age is the natural log of firm's assets and years since incorporation, respectively. SG is the sales in current year divided by sales in previous year. DA is the percentage of total debts to total assets. CFO represents funds from operations divided by net sales. RD is the R&D expenditures divided by total sales. RDdum equals 1 if R&D data is available, otherwise zero. CAPEX is the ratio of capital expenditure with firm's total assets. Industry and Year represents the fixed effect of industry and year, respectively. t-values are in parentheses. *** p<.01, ** p<.05, * p<.1

4.5. Discussion and conclusion

In this study, we aim to investigate whether environmental shareholder activism improves firm value. We also examine whether environmental shareholder activism amplify the negative effects of a firm's carbon intensity on its market value.

As shareholder proposals persuade managers to address the shareholder demands (Flammer et al., 2021), we argue that environmental shareholder activism may force managers to engage in environmental activities. Thus, environmental shareholder activism may specifically provide an indication regarding improvement in the target firm's future environmental performance. Since high environmental performance achieves higher valuation, based on the natural resource based view (Hart, 1995, Russo and Fouts, 1997), we argue that environmental shareholder activism may thus improve a firm value. Furthermore, environmental shareholder activism may also reduce the concerns of Barnea and Rubin (2010), arguing that management's environmental engagements may create agency problem because it seems difficult for shareholders to monitor them. As shareholder activism improves the monitoring mechanism (Black, 1991, Pound, 1992), we argue that environmental shareholder activism may mitigate the agency problem specifically related to a firm's environmental engagements, hence, leading to improvement in firm value.

Furthermore, the above arguments suggest that management may feel pressure to improve a firm's environmental performance when environmental shareholder activists target a firm. However, it may be easy for an environmentally performing firm to fulfil their demands because policies are already in place. On the other hand, a carbon intensive firm may need more efforts and resources to fulfill the demands of environmental shareholder activists. Thus, when shareholders seek improvement in the environmental performance of a firm, this will uncover some additional future costs of the firm. Which we can attribute to the latent environmental liability of a firm (Clarkson et al., 2015, Chapple et al., 2013). Thus, when

environmental shareholder activists point out the future cost of a firm, i.e., latent environmental liability, market will adjust the firm value for this cost. Hence, we argue that environmental shareholder activism may amplify the negative effect of a firm's carbon intensity on its value as is evident by the insignificant impact of the joint ESA and CI on the Tobin's Q and market to book ratio.

To perform our empirical analysis, we proxy environmental shareholder activism by the environment-related shareholder proposals obtained from the Institutional Shareholder Services (ISS) database for period 2016-2017. We measure firm value by Tobin's q and market-to-book ratio. In line with the above arguments, we find that when environmental shareholder activists target a firm, the firm value improves substantially. Running the OLS regression over a sample of 2,281 firm-year observation, we found a 17 and 35 percent increase in firms' Tobin's q and market-to-book ratio, respectively. We found this relationship robust to tests on a one-to-one matched sample and taking the lag value of environmental shareholder proposal. We, however, find that this relationship holds only for firms pertaining to carbon-intensive industries.

To check whether environmental shareholder activism has a negative effect of a firm's carbon intensity on its value, we used two tests. We assessed that the coefficient for environmental shareholder activism is not statistically significant in low polluting firms which suggests environmental shareholder activism does not have a significant impact on Tobin's Q and market-to-book ratio. We also investigated the interaction of ESA and CI in OLS regression on the Tobin's Q and market-to-book ratio. The joint impact of the interaction of environmental shareholder activism and carbon intensity is insignificant with Tobin's Q and market-to-book ratio. Overall, we thus find a sufficient evidence to support our hypothesis 2.

4.5.1. Implications

This study has some important practical implications for investors, managers, and regulators. As our findings show that environmental shareholder activism directly improves firm value, this may particularly encourage investors to submit more and more environment-related proposals. Our finding reveals that environmental shareholder activism indicate an improvement in the target firm's environmental performance, therefore, managers may need to act accordingly. If managers fail to fulfill the shareholders expectations, this may then negatively affect firm value in future. Furthermore, we find that environmental shareholder activism amplifies the negative impact of carbon intensity on firm value. This encourages managers to improve firms' environmental performance before becoming the target of environmental shareholder activists. As stakeholders seem more and more sensitive to the environmental issues (Flammer, 2013), it is highly possible that shareholders may target any firm. Our findings are also informative for regulators regarding the current status of environmental shareholder activism. Regulators may encourage investors to integrate the ESG-Climate factors into their investment processes and decisions since it does not deteriorate firm value

.

5. General Conclusion

Corporate environmental performance is one of crucial issues in present times due to its significant role in achieving sustainable development goals (SDGs) (IPCC, 2018). The present work has been dedicated to assess the relationship between the corporate environmental performances on its overall firm value. Several studies have discussed the relationship between EP-FP using different measures and variables. Some have come up with a positive relationship between environmental performance and financial performance (Jaggi and Freedman, 1992, Stanwick and Stanwick, 1998, Galema et al., 2008, Jacobs et al., 2010, Lioui and Sharma, 2012, Marsat and Williams, 2013), while others did not find the EP-FP link (Cohen et al., 1997, Waddock and Graves, 1997). Nevertheless, studies with a positive EP-FP link are more significant in terms of positive relationship between environmental performance and financial performance. (Albertini, 2013, Dixon-Fowler et al., 2013, Endrikat et al., 2014, Endrikat, 2016). Some studies have linked high environmental performance to insurance like benefits (Godfrey et al., 2009), easier access to investment (Nandy and Lodh, 2012, Cheng et al., 2014, Banerjee et al., 2019) and decreased capital costs (Heinkel et al., 2001, Sharfman and Fernando, 2008, Gupta, 2018, Chava, 2014). In addition, many studies have also suggested environmentally irresponsible behavior of the firms is penalized by the investors (Hamilton, 1995, Flammer, 2013, Krüger, 2015, Endrikat, 2016, Capelle-Blancard and Petit, 2019), which attracts the attention of the companies to the latent environmental liabilities (Clarkson et al., 2004, Chapple et al., 2013, Clarkson et al., 2015).

In the face of adverse impacts of climate change on human race, the world is getting more sensitized to its severity. Greenhouse gases are one of the main contributors of ozone layer depletion and increased rates of global warming. Carbon emission by industries and firms are one of the forms of human-induced gases. Advocacy towards environmental protocols is one

of the new normal of the 21st century and there seems no way to mitigate the impacts of climate change without acting upon the climate control strategies mentioned in Sustainable Development Goals (Sanchez Rodriguez, Ürge-Vorsatz and Barau, 2018). Several social actors are working to raise increased awareness about the importance of environmental protection and endorse green strategies on individual, institutional, and national spheres. We particularly studied the financial outcomes of firms as influenced by environment driven stakeholders such as country-level institutions, consumer environmental consciousness, and environmental shareholder activism. We assume that these stakeholders affect the environmental performance of firms which may improve the financial performance of those firms and may ultimately translate into amplified firm value. To study these impacts of diverse stakeholders, we raised three specific research questions.

1. Does country-level carbon policies increase firms' value through high environmental performance?

2. Does consumers' environmental consciousness influence the relationship between environmental and firms' value?

3. Does environmental shareholder activism moderate the relationship between environmental and firms' value?

We first explore the influence of country-level carbon policies on environmental performance and its relationship with financial performance. Second, we study the moderating role of consumers' environmental consciousness on the link between environmental performance and firms' value. Third, we further study the influence of environmental shareholder activism on firms' value. Hence, the above questions investigate the link between EP and firm value using the influence of different stakeholders such as institutions, consumers, and shareholders.

Research Findings

In the first chapter, we introduced the environmental performance of companies and discussed their influence on several variables from different theoretical and empirical standpoints. There are ample empirical evidence showing a relationship between environmental performance and financial performance. On the one hand, shareholders' view high environmental performance as an over-investment of financial resources and may therefore reduce the companies' financial outcomes (Jacobs et al. 2010, Lioui and Sharma, 2012). On the other hand, natural resource based view endorses companies' environmental performance as an important mean to increase financial performance (Albertini, 2013, Dixon-Fowler et al., 2013, Endrikat et al., 2014, Endrikat, 2016). We propose to better understand the relationship between environmental performance and financial performance by investigating the role of key stakeholders in this relationship.

We investigate each question in different chapters (Chapter 2, 3 and Chapter 4). Firstly, employing a Generalized Structural Equation Modelling (GSEM), we examine the mediating role of both firms' carbon emissions and environmental disclosure on the relationship between country-level carbon policies and corporate financial performance (CFP). We first assess the direct relationship of country level carbon policies on environmental performance and environmental performance on financial performance. Our results reveal that country level carbon polices improve firms' environmental performance by reducing carbon emission and increasing carbon disclosure. However, the direct relationship between environmental performance and financial performance of firms is negative as measured by Tobin's Q. Nevertheless, the indirect relationship between country-level carbon policies and financial performance as mediated through environmental performance is positive. Our findings thus show that country-level carbon polices reduce carbon emission which ultimately translates in

increased financial performance. Examining the talk-channel, our results also reveal a positive relationship between country-level carbon policies and firm value as mediated through carbon disclosure. Both the direct and indirect relationship between country-level carbon policies and firm value is positive as mediated through carbon disclosure. Finally our results show an insignificant impact of country-level carbon policies on firms' financial performance. To further validate the results, we conduct F-test to separately examine the relationship of these channels with financial performance. This result demonstrate that there is no statistical difference in coefficients of walk and talk channels.

In third chapter, we investigate whether consumer environmental consciousness effect the relationship between CEP and CFP. First, we analyze how consumer environmental awareness moderates the link between the firms' environmental performance and financial performance. We find that both firm's environmental performance and consumer environmental consciousness had a direct positive impact on financial performance. However, we also find that consumer environmental consciousness moderates the relationship between environmental performance and financial performance. Firms are considered as institutionally accountable to regulatory bodies and consumers take it for granted. That is why firms environmental performance may not directly translate into increased financial performance as moderated through consumer environmental consciousness.

The fourth chapter investigates the moderating role of shareholder activism in the relationship between corporate environmental performance and corporate financial performance. We argued that environmental shareholder activism influences the firms' carbon intensity. Shareholders share the social responsibility of environmental engagement and hence target the firms for their environmental performance. Our results indicate that submission of at least one environment related proposal by shareholders increased the Tobin's Q and Market-to-Book value by 17 and 35 percent, respectively. These findings approve our hypothesis of a positive

relationship between environmental shareholder activism and firms' value. Thus our findings support the hypothesis that environmental shareholder activism increases the financial performance of firms.

Keeping all variables together, we examined the role of different stakeholders in the relationship between corporate environmental performance and corporate financial performance. These stakeholders are institutions, consumers, and shareholders which are measured through country level carbon policies, consumers' environmental consciousness, and environmental shareholder activism respectively. First, our results indicate that country-level carbon policies indirectly increased firms' value through improved environmental performance i.e. less carbon emission and high carbon disclosure. Second, our results demonstrate that both environmental performance and consumers' environmental consciousness increase the firms' value when examined separately. Third, there is also a positive relationship between environmental shareholder activism and firm value as measured through shareholder environment related proposals and firms' carbon intensity.

Contributions

Our study contributes to the existing literature in a variety of ways by examining the mediating and moderating factors of different stakeholders' characteristics that can influence the relationship between environmental performance and firm value. This study contributes to the literature by examining the influence of institutions, consumers and shareholders on firm value. This study contributes to the literature on national, societal and firm level. The second chapter assess the role of institutional regulation and firms' environmental engagement which is a reflection of the relationship between national institutions and firms' environmental engagement as an influencing factor of firms' value. The third chapter evaluates the role of consumer environmental consciousness in improving firms' environmental performance which

reflects the interplay of society and firm in bringing about improved environmental performance and financial performance at a societal level. The fourth chapter investigates the role of shareholders in firms' environmental performance which highlights the firm-level influences on the environmental performance of firms and their financial performance. Overall, the study introduces an interplay of stakeholders (institutions, consumers, shareholders) performing at different (national, societal, and firm) levels influencing the relationship between corporate environmental performance and corporate financial performance.

The first essay contributes to our understanding of the relationship between policy and implementation. In parallel with our results i.e. the positive role of carbon emission and disclosure on the firm value, we contribute to the empirical understanding by analysing the intricacies of relationship between carbon policies and environmental performance at firm level. The empirical contribution of second essay provide us with new insights about this relationship at a societal level. By analysing the processes involved between consumers and firms in developing and developed countries, we contribute a comparative understanding of countries with higher and lower consumer environmental consciousness as moderators of EP-FP link. It enriches our understanding of the interplay of social factors and firm environmental behaviour. The third essay contributes to our knowledge at a micro-sphere, i.e. shareholders and firm practices. As we demonstrated in the results of third essay that shareholders' environmental activism improves financial performance through environmental proposals, we add empirical knowledge about the micro-application of macro policies i.e. environmental protectionism.

Practical implications

Our study has practical implications for several stakeholders such as global and national environmental regulatory institutions, awareness campaign organizations/ firm managers/ policymakers, and investors alike.

Firstly, as depicted in our results that there is an indirect relationship between regulatory bodies and environmental performance of firms which, in the long run, improves the financial performance of firms. These results have practical implications for global and national regulatory institutions in a way that they can utilize these results to create more informed regulatory guidelines for firms to adhere to environmental engagement modules. Policymakers can do this by introducing regulations and incentives that encourage firms to adopt environmentally friendly practices. Such regulations may include carbon taxes or emissions standards, while incentives may include tax breaks for firms that invest in renewable energy or other environmentally friendly practices. Since it is evident that regulations have a positive influence on the financial performance of firms, managers of the firms can benefit from these results to understand the channels that can mediate their EP-FP link. Moreover, governmental bodies can also utilize these results to formulate and enact more contextual polices for the environmental regulations of firms so that the environmental impacts be mitigated and companies keep growing financially. Our findings are also informative for regulators regarding the current status of environmental shareholder activism. Regulators may encourage investors to integrate the ESG-Climate factors into their investment processes and decisions since it does not deteriorate firm value.

The first essay has direct implications for scientific community, policy-makers, and managers. The effect of carbon policies in firms' reduced carbon emission and increased disclosure on the financial performance can be used by academics to further explore these processes from different methodologies for further enhancement of our empirical understanding between

environmental engagement and financial performance. Researchers can utilize these results to find new areas of investigation about the relationship between environment and finance at different business models.

Policy-makers can use the results about the positive role of firms' environmental engagement on its financial performance as a foundational condition for subsequent strategies about firm environmental behavior. Policy makers can formulate laws requiring firms to take carbon emission and disclosure as significant aspects of their corporate strategies and rewarding environmentally active firms through national recognition, financial incentives, subsidies, and rewards to further promote compliance to environmental protocols. Managers can utilize these results to identify low carbon emission strategies for raising their firm value. As our results demonstrated that carbon policies increase the firm value, managers can benefit from these results by acting more eco-friendly in their practice of doing business. Managers can also utilize these findings to perform consumer-oriented environmental practices so that there be an active relationship between firms' environmental performance and carbon policies as an instrument of gaining legitimacy and social recognition. By considering our findings managers may also rely on environmental initiatives as a source of self-sustainability.

Second essay has implications for academics, policy-makers, and managers. As our results demonstrated a moderating effect of consumer environmental consciousness on EP-FP link, Researcher can use these findings to come up with new approaches of explaining the moderation by applying different tools and methods. Policy makers can use these findings to enact policies for programs to improve the relationship between consumers environmental consciousness and firm environmental practices. Managers can use these findings to improve the sustainable behavior of firms to keep their relationship with stakeholders improved by incorporating socially responsible behavior in business strategy. Managers can adopt different

channels to increase the participation of consumers in the environmental process of firms so as to build a stronger collaboration.

Third essay has direct implications for shareholders, managers, and researchers. As demonstrated in our findings that shareholders' environmentalism directly improves the firm value, shareholders can perform their social responsibility of submitting more environmental proposals and also use other channels to improve the environmental performance of firms. Managers can use these results to act more eco-friendly because negligence on the part of managers may negatively affect firm value in the long run. We find that environmental shareholder activism amplifies the negative impact of carbon intensity on firm value. This encourages managers to improve firms' environmental performance before becoming the target of environmental shareholder activists.

Limitations and directions for future research

In spite of valuable insights generated by our study, there are some limitations of the study as well. The study primarily focused on the role of three main stakeholders, i.e., institutional policies, consumers and shareholders in the description of link between environmental performance and financial performance. The results of the studies are based on the insights of these three variables that limits its generalizability to the complete environmental factorization of firms' behaviors. Inclusion of other influencing variables such as employees, suppliers and firm-consumer relationship could further elaborate this relationship to increase its generalizability. A direction for future research is to explore the impact on environmental performance of other stakeholders, such as employees or suppliers. While our study focused on the relationship between environmental performance, consumer awareness, and firm value, other stakeholders may also be affected by a company's environmental performance. For example, a company with a strong environmental performance may have higher employee

engagement or supplier loyalty, which can also have an impact on the company's financial performance.

The empirical indicators of environmental performance as examined against financial performance used in this study are from Thomson Reuters Asset4. Previous studies have, however, demonstrated concerns about the prevailing disagreements regarding the validity of different rating agencies, such as Chatterji et al. (2016), it would be more comprehensible to employ alternative indicators of environmental agencies as shown by other agencies to ensure that EP-FP link does not yield different results. We did address the issue to some extent by incorporating data on carbon emission from Trucost dataset, yet it deems imperative to utilize alternative indicators to come up with yet a more inclusive understanding of the EP-FP link. Moreover, Thomson Reuters Asset4 calculates environmental scores by utilizing more than 60 indicators of environment, we encourage future researchers to further deconstruct this variable to gain a more thorough understanding of EP-FP link.

In addition, there is also a time limitation in the data used for this study as we have incorporated data for the year 2014 from Environmental Performance Index in the chapter 2, results of which cannot be generalized to the subsequent years. We may expand this research in conducting longitudinal studies to come up with more comprehensives patterns and trends of the relationships between environmental performance and firm value. Despite these limitations, we expect that our our study provides valuable insights into the relationships between environmental performance, consumer awareness, and firm value. Future research can build on our study by exploring other potential mediating or moderating factors that may influence these relationships, such as regulatory pressures, innovation, or supply chain management. Additionally, future research can explore the relationships between environmental performance, consumer awareness, and other performance measures, such as market share or profitability.

Similarly, we only employed secondary data to investigate this relationship between EP-FP which means that researchers have limited control over the quality and completeness of the data. We therefore encourage future researchers to incorporate primary data along with the secondary data to build a more grounded understanding of the EP-FP link specifically in terms of consumers' and shareholders' consciousness and consumer behavior. The incorporation of consumer behavior in the relationship between EP-FP will provide a more comprehensive understanding of the financial growth of the firm with their environmental engagements.

In conclusion, while our study provides valuable insights into the relationships between environmental performance, consumer awareness, and firm value, there are still limitations that need to be addressed in future research. By addressing these limitations and exploring other potential factors that may influence these relationships, future research can provide a more comprehensive understanding of the role of environmental performance in shaping firm performance and sustainability.

References

ABBASI, T., & ABBASI, S. A. 2011. De-carbonization of fossil fuels as a strategy to control global warming. *Renewable and Sustainable Energy Reviews,* 15(4), 1828-1834.

AHMED, M., & AZAM, M. 2016. Causal nexus between energy consumption and economic growth for high, middle and low income countries using frequency domain analysis. *Renewable and Sustainable Energy Reviews,* 60, 653-678.

ALBERTINI., 2013. Does environmental management improve financial performance? *A meta-analytical review*. *Organization environment* 26, 431-457.

ALI, Q., SALMAN, A., PARVEEN, S., & ZAINI, Z. 2020. Green behavior and financial performance: Impact on the Malaysian fashion industry. *Sage open*, 10(3), 2158244020953179.

AL-NAJJAR, B. & ANFIMIADOU, A. 2012. "Environmental policies and firm value." *business strategy and the environment* 21(1): 49-59.

AL-TUWAIJRI, S. A. 2004. "The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach.*" accounting, organizations and society* 29(5-6): 447-471.

AMBEC, S. & LANOIE, P. 2008. Does it pay to be green? A systematic overview. *Academy of management perspectives,* 22, 45-62.

An Eco-wakening- Measuring global awareness, engagement and action for nature

ANTON, W. R. Q., DELTAS, G. & KHANNA, M. 2004. Incentives for environmental self-regulation and implications for environmental performance. *Journal of environmental economics and management,* 48, 632-654.

ARIAN, A., SANDS, J., & TOOLEY, S. 2023. Industry and stakeholder impacts on corporate social responsibility (CSR) and financial performance: Consumer vs. Industrial sectors. *Sustainability*, 15(16), 12254.

BANERJEE, R., & GUPTA, K. 2019. The effect of environmentally sustainable practices on firm R&D: International evidence. *Economic Modelling,* 78, 262-274.

BANERJEE, R., GUPTA, K., & MCIVER, R. 2019. What matters most to firm-level environmentally sustainable practices: firm–specific or country–level factors? *Journal of Cleaner Production,* 218, 225-240.

BANSAL, P. & CLELLAND, I. 2004. Talking trash: legitimacy, impression management, and unsystematic risk in the context of the natural environment. *Academy of management journal,* 47, 93-103.

References

BANSAL, P., & ROTH, K. 2000. Why companies go green: A model of ecological responsiveness. *Academy of management journal*, 43(4), 717-736.

BARNEA, A., & RUBIN, A. 2010. Corporate social responsibility as a conflict between shareholders. *Journal of business ethics*, 97:71–86.

BARNETT, J. 2003. Security and climate change. *Global environmental change*, 13(1), 7-17.

BARNETT, J., & ADGER, W. N. 2003. Climate dangers and atoll countries. *Climatic change*, 61(3), 321-337.

BARNETT, M.L., 2007. Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of management review* 32, 794-81.

BARNEY, J. 1991. Firm resources and sustained competitive advantage. *Journal of management*, 17, 99-120.

BARON, R. M. AND D. A. KENNY. 1986. "The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations." *Journal of personality and social psychology* 51(6): 1173.

BAZILLIER, R., HATTE, S. & VAUDAY, J. 2017. Are environmentally responsible firms less vulnerable when investing abroad? The role of reputation. *Journal of comparative economics*, 45, 520-543.

BEBBINGTON, J., LARRINAGA, C. & MONEVA, J. M. 2008. Corporate social reporting and reputation risk management. *Accounting, auditing & accountability journal*, 21, 337-361.

BERMAN, E. & BUI, L. T. 2001. Environmental regulation and productivity: evidence from oil refineries. *Review of economics and statistics*, 83, 498-510.

BEUNZA, D., BECCARINI, I., FERRARO, F., & HOEPNER, A. 2022. The contingent role of conflict: deliberative interaction and disagreement in shareholder engagement. *Business Ethics Quarterly*, 33(1), 26-66.

BLACK, B. S. 1991. Agents watching agents: the promise of institutional investor voice. *Ucla l. Rev.*, 39, 811.

BOULSTRIDGE, E., & CARRIGAN, M. 2000. Do consumers really care about corporate responsibility? Highlighting the attitude—behavior gap. *Journal of communication management*, 4(4), 355-368.

BOYSON, N. M., & MOORADIAN, R. M. 2011. Corporate governance and hedge fund activism. *Review of derivatives research*, 14, 169-204.

BROWN, B. AND PERRY, S. 1994. "Removing the financial performance halo from fortunes "most admired" companies." *Academy of management journal*, 37(5): 1347-1359.

BUSCH, T. AND HOFFMANN, V. H. 2011. "How hot is your bottom line? Linking carbon and financial performance." *business & society*, 50(2): 233-265.

CAPELLE-BLANCARD, G. & PETIT, A. 2019. Every little helps? ESG news and stock market reaction. *Journal of business ethics*, 157, 543-565.

CARRIGAN, M., ATTALLA, A., 2001. The myth of the ethical consumer–do ethics matter in purchase behaviour? *Journal of consumer marketing*.

CDP. 2018. Progress on Corporate Commitments and their Implementation. Amsterdam: Climate Focus.

CESPA, G. & CESTONE, G. 2007. Corporate social responsibility and managerial entrenchment. *Journal of economics & management strategy*, 16, 741-771.

CHAHINE, S., FANG, Y., HASAN, I. & MAZBOUDI, M. 2019. Entrenchment through corporate social responsibility: Evidence from CEO network centrality. *International Review of Financial Analysis, 66.*

CHAPPLE, L., CLARKSON, P. M., & GOLD, D. L. 2013. The cost of carbon: capital market effects of the proposed emission trading scheme (ETS*). Abacus*, 49(1), 1-33.

CHATTERJI, A. K., DURAND, R., LEVINE, D. I., & TOUBOUL, S. 2016. Do ratings of firms converge? Implications for managers, investors and strategy researchers. *Strategic Management Journal*, 37(8), 1597-1614.

CHAVA, S. 2014. Environmental externalities and cost of capital. *Management science*, 60, 2223-2247.

CHEN, Y., & MA, Y. 2021. Does green investment improve energy firm performance? *Energy Policy*, 153, 112252.

CHEUNG, Y.-L., TAN, W., & WANG, W., 2018. National stakeholder orientation, corporate social responsibility, and bank loan cost. *Journal of business ethics* 150, 505-524

Chinese Social Sciences Citation
Chinese Social Sciences Citation Index (CSSCI)

CHO, C. H. &. PATTEN, D. M. 2007. "The role of environmental disclosures as tools of legitimacy: a research note." *Accounting, organizations and society* 32(7-8): 639-647.

CHO, C. H., GUIDRY, R. P., HAGEMAN, A. M., & PATTEN, D. M. 2012. Do actions speak louder than words? An empirical investigation of corporate environmental reputation. *Accounting, organizations and society*, 37(1), 14-25.

CHOI, B., LUO, L., & SHRESTHA, P. 2021. The value relevance of carbon emissions information from Australian-listed companies. *Australian Journal of Management*, 46(1), 3-23.

CHRISTIS, J. & WANG, Y. 2021. Communicating environmental CSR towards consumers: the impact of message content, message style and praise tactics. *Sustainability*, 13(7), 3981.

CLARK, C. E., & CRAWFORD, E. P. (2012). Influencing climate change policy: the effect of shareholder pressure and firm environmental performance. *Business & society*, 51(1), 148-175.

CLARKSON, P. M., LI, Y. & RICHARDSON, G. D. 2004. The market valuation of environmental capital expenditures by pulp and paper companies. *The accounting review*, 79, 329-353.

CLARKSON, P. M., LI, Y., PINNUCK, M., & RICHARDSON, G. D. 2015. The valuation relevance of greenhouse gas emissions under the european union carbon emissions trading scheme. *European accounting review*, 24(3), 551-580.

CLARKSON, P. M., LI, Y., RICHARDSON, G. D. & VASVARI, F. P. 2011. Does it really pay to be green? Determinants and consequences of proactive environmental strategies. *Journal of accounting and public policy*, 30, 122-144.

CLEFF, T. & RENNINGS, K. 1999. "Determinants of environmental product and process innovation." *Environmental policy and governance*, 9(5): 191-201.

COHEN, M. A., FENN, S. A. & KONAR, S. 1997. Environmental and financial performance: are they related? *Washington, dc: investor responsibility research center, environmental information service.*

COHEN, M. A., FENN, S., & NAIMON, J. S. 1995. Environmental and financial performance: are they related? *Washington, DC: Investor Responsibility Research Center, Environmental Information Service*

.

CONRAD, K., 2005. Price competition and product differentiation when consumers care for the environment. *Environmental and resource economics* 31, 1-19.

CORMIER, D., MAGNAN, M. & VAN VELTHOVEN, B. 2005. Environmental disclosure quality in large German companies: economic incentives, public pressures or institutional conditions? *European accounting review*, 14, 3-39.

CUNDILL, G., SMART, P., & WILSON, H. 2017. Non-financial shareholder activism: a process model for influencing corporate environmental and social performance*. *International Journal of Management Reviews*, 20(2), 606-626.

DAMERT, M., PAUL, A. & BAUMGARTNER, R. J. 2017. Exploring the determinants and long-term performance outcomes of corporate carbon strategies. *Journal of cleaner production*, 160, 123-138.

DE MENDONCA, T. R., & ZHOU, Y. 2019. Environmental performance, customer satisfaction, and profitability: a study among large us companies. *Sustainability,* 11(19), 5418.

DE PELSMACKER, P., DRIESEN, L., & RAYP, G. 2005. Do consumers care about ethics? Willingness to pay for fair-trade coffee. *Journal of consumer affairs,* 39(2), 363-385.

DE VILLIERS, C., NAIKER, V., & VAN STADEN, C. J. 2011. The effect of board characteristics on firm environmental performance. *Journal of Management,* 37(6), 1636-1663.

DEEGAN, C., & GORDON, B. 1996. A study of the environmental disclosure practices of Australian corporations. *Accounting and business research,* 26(3), 187-199.

DELMAS, M. A., NAIRN-BIRCH, N., & LIM, J. 2015. Dynamics of environmental and financial performance:the case of greenhouse gas emissions. *Organization & environment,* 28(4),374-393.

DELMAS, M., & TOFFEL, M. W. 2008. Organizational responses to environmental demands: opening the black box. *Ecological economics,* 68(5), 1182-1195.

DENES, M. R., KARPOFF, J. M., & MCWILLIAMS, V. B. 2017. Thirty years of shareholder activism: a survey of empirical research. *Journal of corporate finance,* 44, 405-424.

DESWANTO, R. B. & SIREGAR, S. V. 2018. The associations between environmental disclosures with financial performance, environmental performance, and firm value. *Social responsibility journal.*

DICK, A. S., & BASU, K. 1994. Customer loyalty: toward an integrated conceptual framework. *Journal of the academy of marketing science,* 22, 99-113.

DIXON-FOWLER, H.R., SLATER, D.J., JOHNSON, J.L., ELLSTRAND, A.E., ROMI, A.M., 2013. Beyond "does it pay to be green?" A meta-analysis of moderators of the cep–cfp relationship. *Journal of business ethics* 112, 353-366.

DÖGL, C. & HOLTBRÜGGE, D. 2014. Corporate environmental responsibility, employer reputation and employee commitment: an empirical study in developed and emerging economies. *The international journal of human resource management,* 25, 1739-1762.

DONALDSON, T. & PRESTON, L. E. 1995. The stakeholder theory of the corporation: concepts, evidence, and implications. *Academy of management review,* 20, 65-91.

DOWELL, G., HART, S., & YEUNG, B. 2000. Do corporate global environmental standards create or destroy market value? *Management science,* 46(8), 1059-1074.

References

DU, S., BHATTACHARYA, C. B., & SEN, S. 2010. Maximizing business returns to corporate social responsibility (CSR): The role of CSR communication. *International journal of management reviews,* 12(1), 8-19.

DUNN, S. 2002. Down to business on climate change: an overview of corporate strategies. *Greener management international,* 39, 27 – 41.

EARNHART, D., & LÍZAL, L. 2007. Direct and indirect effects of ownership on firm-level environmental performance. *Eastern European Economics,* 45(4), 66-87.

ENDRIKAT, J., GUENTHER, E., HOPPE, H., 2014. Making sense of conflicting empirical findings: a meta-analytic review of the relationship between corporate environmental and financial performance. *European management journal* 32, 735-751.

EPI. 2014. Full report and analysis. *CELP, new haven–palisades.*

FABRIZI, M., MALLIN, C., & MICHELON, G. 2014. The role of ceo's personal incentives in driving corporate social responsibility. *Journal of business ethics,* 124(2), 311-326.

FAMA, E. F., & FRENCH, K. R. 2002. Testing trade-off and pecking order predictions about dividends and debt. *Review of financial studies,* 1-33.

FILBECK, G., & GORMAN, R. F. 2004. The relationship between the environmental and financial performance of public utilities. *Environmental and resource economics,* 29(2), 137-157.

FISHER-VANDEN, K., & THORBURN, K.S., 2011. Voluntary corporate environmental initiatives and shareholder wealth. *Journal of environmental economics and management* 62, 430-445

FLAMMER, C. 2013. Corporate social responsibility and shareholder reaction: the environmental awareness of investors. *Academy of management journal,* 56, 758-781.

FLAMMER, C. 2015. Does product market competition foster corporate social responsibility? Evidence from trade liberalization. *Strategic management journal,* 36, 1469-1485.

FLAMMER, C., TOFFEL, M. W., & VISWANATHAN, K. 2021. Shareholder activism and firms' voluntary disclosure of climate change risks. *Strategic management journal,* 42(10), 1850-1879.

FREEDMAN, M. & PATTEN, D. M. 2004. Evidence on the pernicious effect of financial report environmental disclosure. *Accounting forum, Elsevier.*

FREEMAN, E.R., 1984. Strategic management: a stakeholder approach. *Boston: pitman 46*

FREEMAN, R. E. 2010. Strategic management: A stakeholder approach. *Cambridge university press.*

FRIEDMAN, M., 1970a. The social responsibility of business is to increase its profits. In: T*he new york times, pp.* 122-126.

FRIEDMAN, M., 1970b. A theoretical framework for monetary analysis. *Journal of political economy* 78, 193-238.

GALARRAGA, I., GONZALEZ-EGUINO, M., & MARKANDYA, A. 2011. The role of regional governments in climate change policy. *Environmental policy and governance*, 21(3), 164-182.

GALEMA, R., PLANTINGA, A. & SCHOLTENS, B. 2008. The stocks at stake: return and risk in socially responsible investment. *Journal of banking & finance*, 32, 2646-2654.

GATIMBU, K. K. & WABWIRE, J. M. 2016. "Effect of corporate environmental disclosure on financial performance of firms listed at Nairobi securities exchange, Kenya."

GIDDENS, A. 2009. Politics of climate change. *Polity*.

GODFREY, P. C., MERRILL, C. B. & HANSEN, J. M. 2009. The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis. *Strategic management journal*, 30, 425-445.

GORANOVA, M., & RYAN, L. V. 2014. Shareholder activism: A multidisciplinary review. *Journal of Management*, 40(5), 1230-1268.

GRATIELA, B., 2013. Sustainable consumption in the area of transportation. *Korea* 54, 54.4

GRAVES, S. B. & WADDOCK, S. A. 1999. A look at the financial-social performance nexus when quality of management is held constant. *International journal of value-based management, 12, 87-99.*

GRIFFIN, P. A., LONT, D. H. & SUN, E. Y. 2017. The relevance to investors of greenhouse gas emission disclosures. *Contemporary accounting research*, 34, 1265-1297.

GRIMMER, M., & BINGHAM, T. 2013. Company environmental performance and consumer purchase intentions. *Journal of business research*, 66(10), 1945-1953.

GUENSTER, N., BAUER, R., DERWALL, J. & KOEDIJK, K. 2011. The economic value of corporate eco-efficiency. *European financial management*, 17, 679-704.

GUENSTER, N., DERWALL, J., BAUER, R., & KOEDIJK, K., 2006. The economic value of corporate eco-efficiency. *Academy of Management Conference Paper. Available at SSRN: http://ssrn.com/abstract=675628.*

GUPTA, K., 2018. Environmental sustainability and implied cost of equity: international evidence. *Journal of business ethics* 147, 343-365

HAIR, J.F., BLACK, W.C., BABIN, B.J., ANDERSON, R.E., & TATHAM, R., 2006. Multivariate data analysis . *Uppersaddle river. Nj: pearson prentice hall*

HALL, N. 2015. Money or mandate? Why international organizations engage with the climate change regime. *Global environmental politics,* 15(2), 79-97.

HAMEED, W. U., NISAR, Q. A. & WU, H.C. 2021. Relationships between external knowledge, internal innovation, firms' open innovation performance, service innovation and business performance in the Pakistani hotel industry. *International journal of hospitality management,* 92, 102745.

HAMILTON, J. T. 1995. Pollution as news: media and stock market reactions to the toxics release inventory data. *Journal of environmental economics and management,* 28, 98-113.

HART, S. L. & AHUJA, G. (1996). "Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance." *Business strategy and the environment.* 5(1): 30-37.

HART, S. L. 1995. "A natural-resource-based view of the firm." *Academy of management review* 20(4): 986-1014.

HARTMANN, J. & VACHON, S. 2018. Linking environmental management to environmental performance: the interactive role of industry context. *Business strategy and the environment,* 27, 359-374.

HARTMANN, J., & UHLENBRUCK, K. 2015. National institutional antecedents to corporate environmental performance. *Journal of World Business*, 50(4), 729-741.

HASHMI, R., & ALAM, K. 2019. Dynamic relationship among environmental regulation, innovation, co2 emissions, population, and economic growth in OECD countries: a panel investigation. *Journal of cleaner production,* 231, 1100-1109.

HATAKEDA, T., KOKUBU, K., KAJIWARA, T. & NISHITANI, K. 2012. Factors influencing corporate environmental protection activities for greenhouse gas emission reductions: the relationship between environmental and financial performance. *Environmental and resource economics*, 53, 455-481.

HE, D., REN, S., & ZENG, H. 2021. Environmental labelling certification and firm environmental and financial performance: a resource management perspective. *Business Strategy and the Environment*, 31(3), 751-767.

HEEDE, R. 2017. Carbon producers' tar pit: *Dinosaurs beware*.

HEINKEL, R., KRAUS, A. & ZECHNER, J. 2001. The effect of green investment on corporate behavior. *The journal of financial and quantitative analysis*, 36, 431-449.

HERMUNDSDOTTIR, F., & ASPELUND, A., 2021. Sustainability innovations and firm competitiveness: a review. *Journal of cleaner production* 280, 124715.

HORBACH, J., RAMMER, C. & RENNINGS, K. 2012. Determinants of eco-innovations by type of environmental impact — the role of regulatory push/pull, technology push and market pull. *Ecological economics*, 78, 112-122.

HORVÁTHOVÁ, E., 2010. Does environmental performance affect financial performance? A meta-analysis. *Ecological economics* 70, 52-59

HTTPS://www2.deloitte.com/uk/en/pages/consumer-business/articles/sustainable-consumer.html
Index

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC). (2013). Summary for policymakers. Climate Change 2013: The physical science basis. Cambridge, UK: *Cambridge University Press.*

IOANNOU, I., & SERAFEIM, G. 2012. What drives corporate social performance? The role of nation-level institutions. *Journal of international business studies*, 43, 834-864.

JACOBS, B. W., SINGHAL, V. R. & SUBRAMANIAN, R. 2010. An empirical investigation of environmental performance and the market value of the firm. *Journal of operations management*, 28, 430-441.

JAGGI, B., FREEDMAN, M., 1992. An examination of the impact of pollution performance on economic and market performance: pulp and paper firms. *Journal of business finance & accounting* 19, 697-713.

JARA-BERTIN, M., LÓPEZ-ITURRIAGA, F. J., & LÓPEZ-DE-FORONDA, Ó. 2008. The contest to the control in European family firms: How other shareholders affect firm value. *Corporate governance: an international review*, 16(3), 146-159.

JENSEN, M. 2001. Value maximization, stakeholder theory, and the corporate objective function. *European financial management*, 7, 297-317.

JIAO, Y., 2010. Stakeholder welfare and firm value. *Journal of banking & finance 34, 2549-2561*

JIRAPORN, P. & CHINTRAKARN, P. 2013. How do powerful CEOs view corporate social responsibility (CSR)? An empirical note. *Economics letters*, 119, 344-347.

JONES, T. M. 1995. Instrumental stakeholder theory: a synthesis of ethics and economics. *Academy of management review*, 20, 404-437.

Kelly, T. G. (2021). Institutional investors as environmental activists. *Journal of Corporate Law Studies*, *21*(2), 467-489.

KHAN, A., 2012. A to z of green marketing in India. *International journal of management & information technology* 1, 46-52.

KIDWELL, B., & TURRISI, R. 2004. An examination of college student money management tendencies. *Journal of economic psychology,* 25(5), 601-616.

KING, A. A. AND LENOX, M. J. (2001a). "Does it really pay to be green? An empirical study of firm environmental and financial performance: an empirical study of firm environmental and financial performance." *Journal of industrial ecology* 5(1): 105-116.

KING, A.A., LENOX, M.J., 2001b. Lean and green? An empirical examination of the relationship between lean production and environmental performance. *Production and operations management* 10, 244-256

KOLK, A. & PINKSE, J. 2004. Market strategies for climate change. *European management journal,* 22(3): 304–314.

KOLK, A., & PINKSE, J. 2007. Towards strategic stakeholder management? Integrating perspectives on sustainability challenges such as corporate responses to climate change. *Corporate Governance: The international journal of business in society*, *7*(4), 370-378.

KONAR, S. & COHEN, M. A. 2001a. Does the market value environmental performance? *The review of economics and statistics,* 83(2), 281–289.

KONAR, S. & COHEN, M. A. 2001b. Does the market value environmental performance? *Review of economics and statistics,* 83, 281-289.

KPMG 2015. Currents of change: KPMG survey of corporate responsibility reporting 2015.*https://assets.kpmg.com/content/dam/kpmg/pdf/2016/02/kpmg-international-survey-of-corporate-responsibility-reporting-2015.pdf. Accessed 28 December 2017*

KRÜGER, P. 2015. Corporate goodness and shareholder wealth. *Journal of financial economics,* 115, 304-329.

LANOIE, P., PATRY, M. & LAJEUNESSE, R. 2008. Environmental regulation and productivity: testing the porter hypothesis. *Journal of productivity analysis,* 30, 121-128.

LANTZ, J. S., & SAHUT, J. M. 2005. R&D investment and the financial performance of technological firms. *International journal of Business*, 10(3), 251.

LEE, J. H., & CHO, J. H. 2021. Firm-value effects of carbon emissions and carbon disclosures—evidence from Korea. *International journal of environmental research and public health*, 18(22), 12166.

LEE, L. F., HUTTON, A. P., & SHU, S. 2015. The role of social media in the capital market: evidence from consumer product recalls. *Journal of accounting research,* 53(2), 367-404.

LIN, H., ZENG, S., MA, H., QI, G. & TAM, V.W., 2014. Can political capital drive corporate green innovation? Lessons from China. *Journal of cleaner production* 64, 63-72

LINNENLUECKE, M. K. 2017. Resilience in business and management research: A review of influential publications and a research agenda. *International Journal of Management Reviews*, 19, 4-30.

LINNENLUECKE, M. K., SMITH, T. & MCKNIGHT, B. 2016. Environmental finance: a research agenda for interdisciplinary finance research. *Economic modelling*, 59, 124-130.

LIOUI, A., & SHARMA, Z., 2012. Environmental corporate social responsibility and financial performance: disentangling direct and indirect effects. *Ecological economics* 78, 100-111

LIU, Z.L., ANDERSON, T.D., & CRUZ, J.M. 2012. Consumer environmental awareness and competition in two-stage supply chains. *European journal of operational research* 218, 602-613

LU, Y. & I. ABEYSEKERA, I. 2014. "Stakeholders' power, corporate characteristics, and social and environmental disclosure: evidence from China." *Journal of cleaner production* 64: 426-436.

LUO, L., & TANG, Q. 2014. Does voluntary carbon disclosure reflect underlying carbon performance? *Journal of contemporary accounting & economics*, 10(3), 191-205.

LUO, L., LAN, Y. C. & TANG, Q. 2012. Corporate incentives to disclose carbon information: evidence from the CDP global 500 report. *Journal of international financial management & accounting*, 23, 93-120.

LUO, X., & BHATTACHARYA, C.B., 2006. Corporate social responsibility, customer satisfaction, and market value. *Journal of marketing* 70, 1-18

MAJID, A., YASIR, M., YASIR, M., & JAVED, A., 2020. Nexus of institutional pressures, environmentally friendly business strategies, and environmental performance. *Corporate social responsibility and environmental management* 27, 706-716

MAJID, M. A. 2020. Renewable energy for sustainable development in India: current status, future prospects, challenges, employment, and investment opportunities. *Energy, sustainability and society*, 10(1), 1-36.

MANCHIRAJU, H. AND & RAJGOPAL, S. 2017. "Does corporate social responsibility (CSR) create shareholder value? Evidence from the Indian companies' act 2013." J*ournal of accounting research* 55(5): 1257-1300.

MANRIQUE, S. & MARTI-BALLESTER, C.P. 2017. "Analyzing the effect of corporate environmental performance on corporate financial performance in developed and developing countries.*" Sustainability 9*(11): 1957.

MARGOLIS, J.D., & WALSH, J.P., 2001. People and profits?: The search for a link between a company's social and financial performance. *Psychology press.*

MARQUIS, C., TOFFEL, M. W., & ZHOU, Y. 2016. Scrutiny, norms, and selective disclosure: a global study of greenwashing. *Organization science*, 27(2), 483-504.

MARSAT, S. & WILLIAMS, B. 2011. "CSR and market valuation: international evidence."

MARSAT, S. & WILLIAMS, B. 2013. CSR and market valuation: international evidence. *Bankers, markets & investors,* 123, 29-42.

MARSAT, S., PIJOURLET, G. & ULLAH, M. 2020. Is there a trade-off between environmental performance and financial resilience? International evidence from the subprime crisis. *Accounting & finance*.

MARSAT, S., PIJOURLET, G., & ULLAH, M. 2022. Does environmental performance help firms to be more resilient against environmental controversies? International evidence. *Finance Research Letters,* 44, 102028.

MARTOS-PEDRERO, A., JIMÉNEZ-CASTILLO, D., & CORTÉS-GARCÍA, F. 2022. Examining drivers and outcomes of corporate social responsibility in Agro-food firms. *Agricultural Economics*. 68(3), 79-86.

MATSUMURA, E. M., PRAKASH, R. & VERA-MUÑOZ, S. C. 2011. Voluntary disclosures and the firm-value effects of carbon emissions. *Manuscript submitted for publication.*

MATSUMURA, E. M., PRAKASH, R. & VERA-MUNOZ, S. C. 2014. Firm-value effects of carbon emissions and carbon disclosures. *The accounting review,* 89, 695-724.

MILES, M. P. & COVIN, J. G. 2000. Environmental marketing: a source of reputational, competitive, and financial advantage. *Journal of business ethics,* 23, 299-311.

MILNE, M. J., & PATTEN, D. M. 2002. Securing organizational legitimacy: an experimental decision case examining the impact of environmental disclosures. *Accounting, auditing & accountability journal,* 15(3), 372-405.

MIMURA, N. 2013. Sea-level rise caused by climate change and its implications for society. *Proceedings of the Japan Academy, Series B,* 89(7), 281-301.

MOHR, L. A., WEBB, D. J., & HARRIS, K. E. 2001. Do consumers expect companies to be socially responsible? The impact of corporate social responsibility on buying behavior. *Journal of consumer affairs*, 35(1), 45-72.

MOOSA, I. A. & RAMIAH, V. 2014. The costs and benefits of environmental regulation. *Edward Elgar publishing.*

MUHAMMAD, G. I., & ARYANI, Y. A. 2021. The impact of carbon disclosure on firm value with foreign ownership as a moderating variable. *Jurnal Dinamika Akuntansi dan Bisnis*, 8(1), 1-14.

MUNODAWAFA, R. T. & JOHL, S. K. 2019. A systematic review of eco-innovation and performance from the resource-based and stakeholder perspectives. *Sustainability,* 11, 6067.

MUSOVA, Z., MUSA, H., & MATIOVA, V. 2021. Environmentally responsible behavior r of consumers: evidence from Slovakia. *Economics & sociology*, 14(1), 178-198.

NANDY, M. & LODH, S. 2012. Do banks value the eco-friendliness of firms in their corporate lending decision? Some empirical evidence. *International review of financial analysis*, 25, 83-93.

NEL, W. P., & COOPER, C. J. 2009. Implications of fossil fuel constraints on economic growth and global warming. *Energy Policy*, 37(1), 166-180.

NGUYEN, J. H. 2018. Carbon risk and firm performance: evidence from a quasi-natural experiment. *Australian journal of management*, 43, 65-90.

NIE, G. Q., ZHU, Y. F., WU, W. P., XIE, W. H., & WU, K. X. 2022. Impact of voluntary environmental regulation on green technological innovation: Evidence from Chinese manufacturing enterprises. *Frontiers in Energy Research*, 10, 889037.

NOAA National Centers for Environmental Information, Monthly Global Climate Report for August 2023, published online September 2023, retrieved on September 24, 2023 *from https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202308*.

NTIM, C. G. 2009. Internal corporate governance structures and firm financial performance: Evidence from South African listed firms *(Doctoral dissertation, University of Glasgow).*

NYILASY, G., GANGADHARBATLA, H., & PALADINO, A. 2014. Perceived green washing: the interactive effects of green advertising and corporate environmental performance on consumer reactions. *Journal of business ethics,* 125, 693-707.

NYILASY, G., GANGADHARBATLA, H., & PALADINO, A. 2014. Perceived green washing: the interactive effects of green advertising and corporate environmental performance on consumer reactions. *Journal of business ethics,* 125, 693-707.

OECD 2016. Better policies for sustainable development 2016: a new framework for policy coherence. *OECD publishing Paris, France*.

ORLITZKY, M. 2001. Does firm size confound the relationship between corporate social performance and firm financial performance? *Journal of business ethics,* 33, 167-180.

PALMER, K., OATES, W. E. & PORTNEY, P. R. 1995. Tightening environmental standards: the benefit-cost or the no-cost paradigm*? Journal of economic perspectives,* 9, 119-132.

PAN, X., SHA, J., ZHANG, H., & KE, W. 2014. Relationship between corporate social responsibility and financial performance in the mineral industry: evidence from Chinese mineral firms. *Sustainability,* 6(7), 4077-4101.

PATTEN, D. M. 2002. The relation between environmental performance and environmental disclosure: a research note. *Accounting, organizations and society,* 27, 763-773.

PELOZA, J. 2006. Using corporate social responsibility as insurance for financial performance. *California management review,* 48, 52-72.

PICKETT-BAKER, J., & OZAKI, R. 2008. Pro-environmental products: marketing influence on consumer purchase decision. *Journal of consumer marketing,* 25(5), 281-293.

PILIGRIMIENE, Z., DOVALIENE, A., & VIRVILAITE, R. 2015. Consumer engagement in value co-creation: what kind of value it creates for company? *Engineering Economics,* 26(4).

POLONSKY, M. J., & ROSENBERGER III, P. J. 2001. Reevaluating green marketing: a strategic approach. *Business horizons,* 44(5), 21-21.

PORTER, M. E. & LINDE, C. V. D. 1995. Toward a new conception of the environment-competitiveness relationship. *The journal of economic perspectives,* 9, 97-118.

PORTER, M. E. 1991. Towards a dynamic theory of strategy. *Strategic management journal,* 12, 95-117.

POTRICH, L., CORTIMIGLIA, M.N., DE MEDEIROS, J.F. 2019. A systematic literature review on firm-level proactive environmental management. *Journal of environmental management* 243, 273-286

POUND, J. 1992. Beyond takeovers: politics comes to corporate control. *Harvard business review,* 70(2), 83-93.

POUND, J. 1992. Raiders, targets, and politics: the history and future of american corporate control. *Journal of applied corporate finance*, 5(3), 6-18.

PREACHER, K. J. & Hayes, A. F. 2008. "Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models." *Behavior research methods* 40(3): 879-891.

PRI. 2019. Taking stock: sustainable finance policy engagement and policy influence. Available: *https://www.unpri.org/sustainable-markets/regulation-map [accessed March 20, 2020]*.

PRI-NOVETHIC, P. 2017. Investor action on climate change–a PRI-NOVETHIC assessment of global investor practices.

RAHMAN, M., AZIZ, S., & HUGHES, M. 2020. The product-market performance benefits of environmental policy: Why customer awareness and firm innovativeness matter. *Business Strategy and the Environment*, 29(5), 2001-2018.

RAMANATHAN, R., HE, Q., BLACK, A., GHOBADIAN, A. & GALLEAR, D. 2017. Environmental regulations, innovation and firm performance: a revisit of the porter hypothesis. *Journal of cleaner production*, 155, 79-92.

RAMANATHAN, R., POOMKAEW, B., & NATH, P. 2014. The impact of organizational pressures on environmental performance of firms. *Business Ethics: A European Review*, 23(2), 169-182.

REHBEIN, K., WADDOCK, S., & GRAVES, S. B. 2004. Understanding shareholder activism: which corporations are targeted? *Business &Amp; Society*, 43(3), 239-267.

REHMAN, S. U., KRAUS, S., SHAH, S. A., KHANIN, D. & MAHTO, R. V. 2021. Analyzing the relationship between green innovation and environmental performance in large manufacturing firms. *Technological forecasting and social change*, 163, 120481.

REID, E. M. & TOFFEL, M. W. 2009. "Responding to public and private politics: corporate disclosure of climate change strategies." S*trategic management journal* 30(11): 1157-1178.

RENNINGS, K., & RAMMER, C. 2011. The impact of regulation-driven environmental innovation on innovation success and firm performance. *Industry and Innovation*, 18(03), 255-283.

RIP, A. & KEMP, R. 1998. Technological change. Human choice and climate change, 2, 327-399.

RUDYANTO, A. AND SIREGAR, S. (2018). The effect of stakeholder pressure and corporate governance on the sustainability report quality. *International Journal of Ethics and Systems*, 34(2), 233-249

RUSSO, M. V. & FOUTS, P.A. 1997. "A resource-based perspective on corporate environmental performance and profitability." *Academy of management journal* 40(3): 534-559.

SAKA, C., & OSHIKA, T. 2014. Disclosure effects, carbon emissions and corporate value. *Sustainability Accounting, Management and Policy Journal*, 5(1), 22-45.

SALMONES, M.G., CRESPO, A.H., & BOSQUE, I. 2005. Influence of corporate social responsibility on loyalty and valuation of services. *Journal of business ethics,* 61, 369–385.

SANCHEZ RODRIGUEZ, R., ÜRGE-VORSATZ, D., & BARAU, A. S. 2018. Sustainable Development Goals and climate change adaptation in cities. *Nature Climate Change*, 8(3), 181-183.

SCHÄFER, H., BEER, J., ZENKER, J., FERNANDES, P., 2006. Who is who in corporate social responsibility: a survey of internationally established rating systems that measure corporate responsibility. *Gütersloh, stuttgart: bertelsmann*

SCHULER, D. A. & CORDING, M. 2006. A corporate social performance–corporate financial performance behavioral model for consumers. *Academy of management review*, 31, 540-558.

SEN, S., & BHATTACHARYA, C. B. 2001. Does doing good always lead to doing better? Consumer reactions to corporate social responsibility. *Journal of marketing research*, 38(2), 225-243.

SERVAES, H., TAMAYO, A., 2013. The impact of corporate social responsibility on firm value: the role of customer awareness. *Management science* 59, 1045-1061

SHABBIR, M. S., & WISDOM, O. 2020. The relationship between corporate social responsibility, environmental investments and financial performance: evidence from manufacturing companies. *Environmental Science and Pollution Research*, 27, 39946-39957.

SHARFMAN, M. P. & FERNANDO, C. S. 2008. Environmental risk management and the cost of capital. *Strategic management journal,* 29, 569-592.

SHEN, M., HUANG, W., CHEN, M., SONG, B., ZENG, G., & ZHANG, Y. 2020. (Micro) plastic crisis: un-ignorable contribution to global greenhouse gas emissions and climate change. *Journal of Cleaner Production*, 254, 120138.

SHINGADE, S., RASTOGI, S., BHIMAVARAPU, V. M., & CHIRPUTKAR, A. 2022. Shareholder activism and its impact on profitability, return, and valuation of the firms in India. *Journal of risk and financial management*, 15(4), 148.

SHNAYDER, L., & VAN RIJNSOEVER, F. J. 2018. How expected outcomes, stakeholders, and institutions influence corporate social responsibility at different levels of large basic needs firms. *Business Strategy and the Environment*, 27(8), 1689-1707.

SILVA, S. 2021. Corporate contributions to the sustainable development goals: an empirical analysis informed by legitimacy theory. *Journal of cleaner production*, 292, 125962.

SINGH, B. R., & SINGH, O. 2012. Study of impacts of global warming on climate change: rise in sea level and disaster frequency. *Global warming—impacts and future perspective*.

SINKIN, C., WRIGHT, C.J., BURNETT, R.D., 2008. Eco-efficiency and firm value. *Journal of accounting and public policy* 27, 167-176

SMITH, J. B., & LENHART, S. S. 1996. Climate change adaptation policy options. *Climate research*, 6(2), 193-201.

SMITH, M. P. 1996. Shareholder activism by institutional investors: evidence from calpers. *The journal of finance*, 51(1), 227-252.

SOBEL, M. E. 1990. "Effect analysis and causation in linear structural equation models." *Psychometrika* 55(3): 495-515.

SONG, H., ZHAO, C., & ZENG, J. 2017. Can environmental management improve financial performance: An empirical study of A-shares listed companies in China? *Journal of cleaner production*, 141, 1051-1056.

STANWICK, P. A. & STANWICK, S. D. 1998. The relationship between corporate social performance, and organizational size, financial performance, and environmental performance: an empirical examination. *Journal of business ethics*, 17, 195-204.

STATHOPOULOS, K., & VOULGARIS, G. 2016. The importance of shareholder activism: the case of say-on-pay. *Corporate governance: an international review*, 24(3), 359-370.

SURROCA, J. & TRIBÓ, J. A. 2008. Managerial entrenchment and corporate social performance. *Journal of business finance & accounting*, 35, 748-789.

TASHMAN, P., MARANO, V., & KOSTOVA, T. (2019). Walking the walk or talking the talk? Corporate social responsibility decoupling in emerging market multinationals. *Journal of International Business Studies*, 50, 153-171.

TITUS, P.A., BRADFORD, J.L., 1996. Reflections on consumer sophistication and its impact on ethical business practice. *Journal of consumer affairs* 30, 170-194

TRIEBSWETTER, U. & HITCHENS, D. 2005. The impact of environmental regulation on competitiveness in the German manufacturing industry—a comparison with other countries of the European Union. *Journal of cleaner production*, 13, 733-745.

UN Doc. A/CONF.151/26 (vol. I), 31 ILM 874 1992

UNITED NATIONS. 1997. Glossary of environment statistics, studies in methods. *United Nation New York.*

UTZ, S., WIMMER, M., 2014. Are they any good at all? A financial and ethical analysis of socially responsible mutual funds. *Journal of asset management* 15, 72-82

WADDOCK, S. A. & GRAVES, S. B. 1997. The corporate social performance-financial performance link. *Strategic management journal*, 303-319.

WAGNER, M. 2010. The role of corporate sustainability performance for economic performance: a firm-level analysis of moderation effects. *Ecological economics*, 69, 1553-1560.

WALKER, K. & WAN, F. 2012. "The harm of symbolic actions and green-washing: corporate actions and communications on environmental performance and their financial implications." J*ournal of business ethics* 109(2): 227-242.

WALLS, J. L., & BERRONE, P. 2017. The power of one to make a difference: how informal and formal ceo power affect environmental sustainability. *Journal of business ethics*, 145(2), 293-308.

WANG, L., LI, S. & GAO, S. 2014. Do greenhouse gas emissions affect financial performance?–an empirical examination of Australian public firms. *Business strategy and the environment*, 23, 505-519.

WASARA, T. M. & GANDA, F. 2019. The relationship between corporate sustainability disclosure and firm financial performance in Johannesburg stock exchange (JSE) listed mining companies. *Sustainability*, 11, 4496.

WEAVER, G. R., TREVINO, L. K., & COCHRAN, P. L. 1999. Integrated and decoupled corporate social performance: Management commitments, external pressures, and corporate ethics practices. *Academy of management journal*, *42*(5), 539-552.

WEIWEI, T. 2007. Impact of corporate image and corporate reputation on customer loyalty: a review. *Management science and engineering*, 1(2), 57.

WENG, H. H., CHEN, J. S., & CHEN, P. C. 2015. Effects of green innovation on environmental and corporate performance: A stakeholder perspective. *Sustainability*, 7(5), 4997-5026.

WERNERFELT, B. 1984. A resource-based view of the firm. *Strategic management journal*, 5, 171-180.

WERTHER, W.B.JR., & CHANDLER, D. 2005. Strategic corporate social responsibility as global brand insurance. *Business horizons*, 48(4), 317–324.

WORLD ECONOMIC FORUM, W. THE GLOBAL RISKS REPORT. 2019. *World economic forum Geneva, Switzerland.*

XIAO, C., WANG, Q., VAN DER VAART, T., & VAN DONK, D.P., 2018. When does corporate sustainability performance pay off? The impact of country-level sustainability performance. *Ecological economics* 146, 325-333

YADAV, P. L., HAN, S. H. & RHO, J. J. 2016. Impact of environmental performance on firm value for sustainable investment: evidence from large us firms. *Business strategy and the environment*, 25, 402-420.

YEOH, R., & TANG, K. 2007. Cut carbon, grow profits: business strategies for managing climate change and sustainability. *London: Middlesex university press.*

YIN, K., LIU, L., & GU, H. 2022. Green paradox or forced emission reduction—the dual effects of environmental regulation on carbon emissions. *International Journal of Environmental Research and Public Health,* 19(17), 11058.

ZHANG, J., KANG, L., LI, H., BALLESTEROS-PÉREZ, P., SKITMORE, M., & ZUO, J. 2020. The impact of environmental regulations on urban Green innovation efficiency: The case of Xi'an. *Sustainable Cities and Society*, 57, 102123.

ZHANG, K. Q. & CHEN, H. H. 2017. Environmental performance and financing decisions impact on sustainable financial development of Chinese environmental protection enterprises. *Sustainability*, 9, 2260.

ZHAO, X., YIN, H. & ZHAO, Y. 2015. Impact of environmental regulations on the efficiency and co2 emissions of power plants in China. *Applied energy*, 149, 238-247.

ZHU, Q., & SARKIS, J. 2007. The moderating effects of institutional pressures on emergent green supply chain practices and performance. *International journal of production research*, 45(18-19), 4333-4355.