Environmental Performance and Financial Performance during COVID-19 Outbreak

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ABSTRACT

Global pressure on high-carbon emitting countries to adopt greener policies has increased significantly in recent years. However, the potential adverse effects of such efforts on the financial performance of firms have been a major concern. Therefore, companies may be reluctant to invest in environmental initiatives. In addition, during periods of financial distress, environmental-friendly investment projects may cease to be a priority for companies that have to cut their expenditures. The devastating effects of COVID-19 on the global economy have intensified the debate over the impact of adopting more environmentally responsible policies on the financial performance of companies.

This thesis, which examines the relationship between firms' environmental and financial performance, considering the effects of the COVID-19 pandemic, consists of two empirical parts. The first part examines our primary research question in the context of Chinese firms. The data were collected from Refinitiv Datastream and span the period of 2017-2020. In addition to the fixed-effects regression, the novel dynamic panel bootstrap corrected fixed-effects and panel corrected standard errors methods were utilized to test the hypotheses. Obtained results revealed two key findings. First, there is weak evidence that higher environmental performance increases firms' financial performance. Second, the relationship between environmental and financial performance is positive in the COVID-19 period. This finding means that firms should continue to invest in environmentally ethical and sustainable projects in times of crisis.

The second part investigates the mentioned relationship in the case of the United States tourism sector. To this aim, the data of 115 travel and entertainment companies from 2017 to 2020 were analyzed using fixed effects, robust least squares, and panel-corrected standard errors estimation methods. Empirical results reveal a U-shaped relationship between firms' environmental performance and financial performance. This finding implies that in times of financial distress, although the environmental goals may not be a priority for firms in the short run, better environmental performance will enhance financial performance in the long run.

Our findings extend the existing literature by showing that an environmentally friendly business model positively affects the firm's financial structure even in times of economic recession. We discuss the policy recommendations implied by the empirical results in the relevant sections of the thesis in detail.

Keywords: Environmental Performance; Financial Performance; Climate Change; COVID19; Economic Recession.

ÖZ

Yüksek karbon salınımı yapan ülkelere uygulanan daha çevreci politikalar benimsemeleri yönündeki küresel baskı son yıllarda giderek artmaktadır. Ancak, bu çabaların firmaların finansal performansını olumsuz yönde etkileyebileceği düşüncesi önemli bir endişe kaynağıdır. Bu nedenle, firmalar çevre konusundaki girişimlere yatırım yapmak konusunda isteksiz davranabilmektedir. Ayrıca, mali sıkıntı dönemlerinde harcamalarını kısmak zorunda kalan firmalar için çevre dostu yatırım projeleri öncelik olmaktan çıkabilmektedir. COVID-19'un küresel ekonomi üzerindeki yıkıcı etkileri, çevreye daha duyarlı bir politika benimsemenin firmaların finansal performansı üzerindeki etkileri konusundaki tartışmayı yoğunlaştırmıştır.

Firmaların çevresel ve finansal performansı arasındaki ilişkiyi COVID-19 salgınının etkilerini dikkate alarak inceleyen bu tez, iki ampirik bölümden oluşmaktadır. İlk bölüm, temel araştırma sorumuzu Çinli firmalar bağlamında incelemektedir. Bu bölümde kullanılan veriler Refinitiv Datastream'den toplanmış olup 2017-2020 dönemini kapsamaktadır. Hipotezlerin sınanmasında “sabit etkiler” regresyonuna ek olarak yeni geliştirilen “dinamik panel bootsrap düzeltilmiş sabit etkiler” ve “panel düzeltilmiş standart hatalar” yöntemleri kullanılmıştır. Analiz sonuçlarında iki önemli nokta dikkati çekmektedir. İlk olarak, çevresel performansın firmaların finansal performansını artırdığına dair zayıf kanıtlar elde edilmiştir. İkinci önemli bulgu ise COVID-19 döneminde çevresel performans ile finansal performans arasındaki ilişkinin pozitif olduğudur. Bu bulgu firmaların kriz dönemlerinde çevreci projelere yatırım yapmaya devam etmesi gerektiği anlamına gelmektedir.

İkinci bölüm, bahsedilen ilişkiyi Amerika Birleşik Devletleri turizm sektörü özelinde incelemektedir. Bu amaçla, 115 seyahat ve eğlence firmasının 2017-2020 arasındaki verileri "sabit etkiler", "dayanıklı en küçük kareler" ve "panel düzeltilmiş standart hatalar" yöntemleri ile analiz edilmiştir. Ampirik sonuçlar, firmaların çevresel performansı ile finansal performansı arasında U-şeklinde bir ilişki olduğunu ortaya koymaktadır. Bu bulgu, mali sıkıntı dönemlerinde, çevresel hedeflerin firma için kısa vadede bir öncelik olmaktan çıkabileceğini; fakat, uzun vadede çevresel performansın finansal performansı artırıcı bir rol oynadığına işaret etmektedir.

Bulgularımız, ekonomik durgunluk dönemlerinde bile çevre dostu bir iş modelinin firmanın finansal yapısını olumlu etkilediğini göstererek mevcut literatüre katkı sağlamaktadır. Ampirik incelemeden elde edilen bulgulardan yola çıkarak ortaya konan politika önerileri tezin ilgili bölümlerinde ayrıntılı şekilde tartışılmaktadır.

Anahtar Kelimeler: Çevresel Performans; Finansal Performans; İklim Değişikliği; COVID-19; Ekonomik Durgunluk.

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LIST OF ABBREVIATIONS

BCFE	Bootstrap Corrected Fixed-Effects
COVEP	Interaction between Environmental Performance and COVID-19
COVID-19	Coronavirus Disease
CSR	Corporate Social Responsibility
EP	Environmental Performance
ESG	Environmental, Social, and Governance Scores
FP	Financial Performance
GDP	Gross Domestic Products
GHGs	Greenhouse Gas
INF	Inflation Rate
LIQ	Liquidity
NRBV	Natural Resource Based View
PCSE	Panel Corrected Standard Errors
PSR	Political Stability
RBV	Resource-Based View
ROA	Return on Assets
ROC	Return on Capital
UN	Unemployment Rate
VACR	Voice and Accountability

Chapter 1

INTRODUCTION

Industrialization and human activities are thought to have contributed to around 1℃ of global warming compared to the pre-industrial revolution period (Allen et al., 2018). In the past century, our civilization's rising consumption of products has increased carbon dioxide levels by 129 parts per million (Tzouvanas, 2019). Given the current pace of CO2 emissions, global warming is projected to surpass 2℃ within the next 50 years (Rowbotham, 2014). The impacts of climate change on human welfare have elevated environmental issues to the top of political agendas. One hundred ninety-six nations, including all major carbon-emitting economies, signed the first legally binding climate pact during the COP21 climate summit in Paris in 2015. (UNFCCC, 2022). The major objective of the meeting was to keep the increase in global temperature to far below 2°C to reduce the impacts of global warming. Limiting the increase in temperature requires reducing greenhouse gas emissions (GHGs), particularly carbon emissions, and promoting sustainable development (UNFCCC, 2022). The "Glasgow Climate Pact," approved by 197 nations, was signed during the 2021 Glasgow climate change conference (COP26), which was held in 2021 and reaffirmed the decisions of COP21. The agreement called for greater GHG emissions reductions through reduced use of fossil fuels (UNFCCC, 2022). Therefore, major carbon-emitting nations like China are under pressure from other countries to restrict their use of fossil fuels in order to reduce carbon emissions (Alam et al., 2019).

Due to the energy required to manufacture products and services, businesses significantly contribute to carbon emissions. Businesses are under pressure from governments and policymakers to reduce their carbon footprint and perform better for the environment by increasing reuse and recycling, cutting pollution, and working to implement energy-efficient measures (Alam et al., 2019). Businesses' environmental performance (EP) has been extensively studied in the literature (Cheng and Liu, 2018; Duanmu, Bu, and Pittman, 2018; Zhang, 2021). Researchers observed that environmental policies result in reduced costs, better access to external resources, such as loans and financial markets, and reduced market risk (Jo and Na, 2012; Muhammad et al., 2015). However, the conclusions are still debatable after thirty years of theoretical and empirical research on the connection between EP and financial performance (FP) (Shen et al., 2019).

Theoretically, supporters of the natural resource-based perspective argue that firms that engage in more environmental activities would have a competitive edge over those that do not have environmental policies and initiatives (Hart, 1995). However, advocates of the neoclassical economic theory claim that improving EP leads to higher costs, which hampers financial success (Palmer, Oates, and Portey, 1995). Empirical evidence supporting the type of relationship between environmental and financial performance is still lacking (Brahmana and Kontesa, 2021). Furthermore, empirical publications evaluating the link between EP and financial success of enterprises are frequently conducted under normal economic conditions, with a scarcity of studies examining the association during adverse economic shocks.

The rise of the new COVID-19 virus from a national catastrophe in China to a global Pandemic caused one of the biggest global economic recessions since 1990 (Nguyen, Anh, and Gan, 2021). The COVID-19 outbreak prompted governments worldwide to implement tight measures to prevent the virus from spreading further, including national lockdowns, travel and transit restrictions, and company closures (Baker et al., 2020). This resulted in a sharp fall in economic growth, increased unemployment, disruptions in the demand and production chains, cash flow issues, and global corporate bankruptcies (Papadopoulos, Baltas, and Balta, 2020). However, the temporary drop in economic activity has resulted in a reduction in global carbon emissions, still the impact of the Pandemic on the transition to low-carbon enterprises and a green economy remains uncertain (Guérin and Suntheim, 2021). While the Pandemic may constrain enterprises' ability to invest in green initiatives, it may encourage a shift in investor and customer preferences toward green products, allowing firms to move to low-carbon production while maintaining performance (Guérin and Suntheim, 2021).

Following the 2008 global financial crisis, businesses faced an unstable internal climate and began to reconsider their position on EP (Gallego- Álvarez, García-Sánchez, and da Silva Vieira, 2014). Some researchers and managers feel that reducing investments in sustainable and environmental practices is the best technique to use in the event of a negative economic shock to minimize expenses and, as a result, preserve and enhance FP (Njoroge, 2009). Others claim that EP helps sustainable development and generates economic advantages (Brilius, 2010). Environmentally responsible businesses have access to critical resources and are trusted by stakeholders, even when economic conditions are unfavorable and general

market trust is low (Zeidan, Boechat, and Fleury, 2015). As a result, environmentally responsible firms' economic advantage and stakeholder confidence are valuable in times of turbulence (Godfrey, 2005). Furthermore, organizations with stronger EP have better stakeholder relationships and may use their resources more efficiently to achieve greater economic gain (Branco and Rodrigues, 2008). Examining the impact of organizations' environmental sustainability on their financial success during the COVID-19 worldwide Pandemic provides a complete knowledge of the link and valuable insights for stakeholders.

Besides presenting an updated literature review on the relationship between EP and FP, this thesis aims to investigate the nature of the link among the variables under adverse economic situation caused by the COVID-19 Pandemic. This thesis develops two empirical examinations with multiple aims and objectives. The first empirical chapter aim (chapter 3) is to examine the linear relationship between EP and FP under normal economic conditions and COVID-19 economic recession conditions in the case of China. To this aim, a panel consisting of 329 Chinese publicly traded enterprises from 2017 to 2020 was examined using multiple econometric techniques. The second empirical chapter's aim (chapter 4) is to investigate the linear and non-linear impact of EP on firms' financials under both adverse and normal economic conditions. Notably, we test if the EP of US tourism sector firms has a linear and non-linear relationship with the overall profitability level of firms. Thus, a panel of 115 US travel and leisure firms was utilized over the period 2017-2020.

Empirical papers' samples were chosen to represent different point of views. The holistic view of the first empirical paper provides us with findings generalizable to

all industries in China. While in the second empirical paper, we concentrate on a specific sector of the US economy, namely the tourism and leisure sector, to examine the in-depth relationship between financial and environmental performance under a strong negative economic shock affecting the tourism industry.

The study seeks to provide managers, academics, and policymakers, with an overview of the available literature on firm FP under climate change. Furthermore, climate-finance research is sparse; the bulk of studies may be classified as climate-economy literature. As a result, we add new empirical evidence to an important yet understudied area of the literature. The primary contributions of the research are empirical in nature. We specifically provide empirical evidence on the link between EP and FP under unfavorable economic conditions in regions that are heavily pollutant and dedicated to dealing with climate change, both China and the United States.

The remainder of the thesis is structured as follows. In Chapter 2, the literature is reviewed, including several underlying theories and frameworks along with a review of the empirical literature. Chapters 3 and 4 present the two empirical investigations. Chapter 3 has its own introduction, specific literature review and hypotheses, data and methodological techniques, findings and discussion, and finally a conclusion specific to the findings of the empirical study are presented. Chapter 4 presents the second empirical investigation starting with an introduction, data and methods, findings and discussion, and concluding remarks. The final part of the thesis concludes with the study's overall results, implications, and limitations.

Chapter 2

LITERATURE REVIEW

Businesses are under increasing pressure from a variety of stakeholders to become environmentally friendly and socially responsible in order to lessen their negative effects on the environment. As a result, many businesses have already heavily used environmental management techniques while creating their short- or long-term strategies in fiercely competitive marketplaces. However, the complex link between EP and FP and the lack of consensus within research findings has led to various rationales and theories attempting to explain this phenomenon. This chapter will highlight several arguments related to the issue and quickly cover a number of theoretical and reasoning streams that have been used to explain various links between EP and FP. Finally, literature-based empirical research on the EP-FP link and non-consensus results will be briefly explored.

2.1 Theoretical Background

As previously mentioned, several EP studies have produced mixed findings regarding how EP affects FP. Other than static and small-size data, factor omission, study methods, etc., another explanation can be that the conclusions in the studies are based on different theoretical underpinnings. This section offers a brief assessment of two important theoretical stances that were included in several earlier works' arguments.

2.1.1 Positive Impact Theories

The following section details the economic theories that justify EP's positive effect on FP. These theories are the resource-based view, the legitimacy theory, and the stakeholder theory. In addition, environmental strategies can be categorized into four strategies: accommodative, defensive, proactive, and reactive (Buysse and Verbke, 2003). Both the accommodative and proactive strategies advocate a positive effect of EP on FP. The positive impact of EP on FP is based on the idea that firms that engage in environmental practices reduce long-term operating costs, boost future profitability, and create entry barriers for new rivals; all of which contribute to a competitive advantage.

2.1.1.1 The Resource-Based View

Pioneer researchers like Rumelt (1984), Wernerfelt (1984), and Barney (1991) developed the resource-based view (RBV). According to the authors, a company's resources are allocated diversely and over a lengthy period. Wernerfelt (1984) defined resources as a company's tangible and intangible assets that are semi-permanently tied to the company; such as its brand, internal technological expertise, skilled labor employment, trade ties, machinery, production effectiveness, etc. According to Mac an Bhaird (2010), a firm's resources can be both tangible and intangible. These include human capital, organizational capital, and physical capital.

The unique characteristics of resources that should also be immovable as a source of long-term competitive advantage were described by these RBV advocates using the term "idiosyncratic." The variety of a firm's resources, in accordance with Barney, Wright, and Ketchen Jr. (2001), is what contributes to differences in corporate performance. Additionally, it has been suggested that RBV might help to clarify how

advantageous organizational traits like ongoing innovation and stakeholder involvement are linked to actively integrating environmental issues into strategy (Hart, 1997). The theoretical justification offered by Hart (1997) is in line with revisionists' claims that proactive environmental measures may increase resource productivity and improve profitability (Porter & Van der Linde, 1995).

Hart (1995) extends the resource-based view (RBV), arguing that standard RBV ignores environmental and natural resource restrictions when establishing a firm's competitive advantage from valued resources. RBV, which contends that firm-specific, scarce, and valuable resources or competencies are challenging to duplicate or replace, has been widely employed in strategic management research for three decades to explain corporate competitive advantages (Barney, 1986 and 1991; Wernerfelt, 1984). Where a company wants to gain a competitive edge in an era when human activity has an increasingly detrimental influence on the environment and natural resources, Hart (1995) argues that it must have the "capabilities that permit ecologically sustainable economic activity".

Within the context of NRBV; pollution prevention, product stewardship, and sustainable development are advocated as three interrelated environmental initiatives (Hart, 1995). Pollution prevention includes both pollution reduction and resource efficiency, including lean manufacturing and comprehensive quality management. As a result, FP may be raised by optimizing resource use and cutting costs. Product stewardship calls for the inclusion of all stakeholders within business operations, as well as all phases of the product value chain; from conception to disposal. To achieve sustainable development, it is necessary to prevent pollution and responsibly manage

products. These tactics can aid a business in establishing a solid reputation, differentiating its products from those of the competition, and ultimately enhancing operational and financial success.

Porter (1991) suggested that environmental controls can lead to a win-win scenario rather than a choice between EP and FP. Porter and van der Linde (1995) disregarded the idea of an economic-ecological trade-off. They asserted that pollution is a symptom of economic inefficiency, a resource waster and a form of business cost. A company may strengthen its management skills, expand its capacity for innovation, decrease its operating expenses, and ultimately improve its FP by lowering pollution and enhancing EP. The "Porter Hypothesis" is what is used to describe this.

According to Russo and Fouts (1997) research, unique, valuable, and inimitable resources should be available to meet social expectations. As a result, resources that support a cleaner environment will earn public legitimacy; increasing their competitiveness through higher sales of their goods and profitability. Environmental programs focusing on short-term end-of-pipe pollution prevention often fail to ensure regulatory compliance and increase profitability. This further establishes the relationship between resources and how financial and environmental performance relationships are influenced. However, businesses' capacity to make a profit is impacted when they move beyond compliance mode and concentrate on pollution prevention through effective techniques that emphasize resource conservation and process innovation. López-Gamero, Molina-Azorín, and Claver-Cortés (2009) added their support to this line of reasoning. They emphasized the significance of how environmental performance fosters the creation of new resources. The authors

contend that enterprises able to develop cutting-edge technologies, with low manufacturing emissions relative to competitors, could be able to gain instigator benefits upon improving their environmental reputation in the developing sustainable products marketplace and maximize their profit.

The RBV is subject to certain challenges, despite numerous empirical papers supporting the claim that business resources regulate the positive relationship between environmental and financial success. RBV arguments include infinite regress, according to Collis (1994). According to Collis (1994), second-order capabilities (creation of structures to facilitate innovative products) are valued more than first-order capabilities (innovating products), and RBV is entrenched on the notion that the firm will strive for second-order capabilities and that this can be expanded in continuity; thus steering firms to look for a limitless search of higher-order capabilities. Kraaijenbrink, Spender, and Groen (2010) countered this argument by denominating that people who view management as a constructive pursuit of certainty are the only ones who are affected by infinite regress. The claim of infinite regress is unfounded if management or economics are seen as open-ended practical pursuits.

Opponents of RBV claim that sustained competitive advantage is unattainable. According to Fiol (2001), businesses must constantly alter how they deploy their resources and abilities, resulting in continuous and transitory change. Every sustained competitive advantage, he claims, must compete at some point. Kraaijenbrink, Spender, and Groen (2010) argued that the RBV reasoning is based

on substantial findings rather than preliminary sources of asymmetrical statistics concerning the future valuation of existing resources.

2.1.1.2 The Stakeholder Theory

According to the stakeholder theory, companies are a part of a larger social system. An organization's ties and interactions with institutional mechanisms and diverse stakeholder groups are crucial to deciding how successful it is (Donaldson and Preston, 1995). In contrast to neoclassical economic theory, the stakeholder theory in social and environmental sciences takes into account the advantages for all associated stakeholders engaged, rather than just internal shareholders' profit maximization. According to the stakeholder theory, a company's existence is influenced by various stakeholders, including its consumers, workers, government, and many other socioeconomic groups (Lee, 2008). The ability of a company to meet the needs of all internal and external stakeholder groups determines its success (Marcus and Geffen, 1998). Businesses are under greater pressure than ever before to become greener and enhance their EP; to achieve sustainability, diverse stakeholders grow more and more conscious of the detrimental effects of human and commercial activity on the environment.

Companies may gain a competitive edge by meeting the green demands of those stakeholders by building a positive reputation, preserving longstanding relationships with their customers and suppliers, and attracting investors and talented workers (Stefan and Paul, 2008; Lankoski, 2008). All of these advantages may assist businesses in enhancing their operational effectiveness, innovation, and sales while lowering costs and increasing customer willingness to pay (WIP) (Hart and Dowell, 2011; Hillman and Keim, 2001). Therefore, enhancing a company's EP can

ultimately assist in raising its long-term FP. According to the stakeholder theory, a strong association between EP and FP has a theoretical foundation.

2.1.1.3 Other Theories and Strategies

The legitimacy theory better describes the ethical perspective of the link between EP and FP by implying that corporations are further inclined to declare environmental aspects such as economic, political, and social data to be able to legitimize corporate activities (Guthrie and Parker, 1989). This idea holds that businesses function in a society in which they contribute and must keep the general population informed regarding their environmental acts. As a result, corporations willingly choose to share social information to fulfill public demand. For example, reporting a company's environmental performance will help to ease external pressure on climate change. Transparent information about EP also implies that they must operate in an environmentally responsible manner to demonstrate their environmental awareness; hence, they anticipate an increased FP (Ben-Amar and McIlkenny, 2015). Large-emitting enterprises, on the other hand, will be penalized by society, and these corporations will circumvent disclosing such data (Lee, Park, and Klassen, 2015). As a result, according to the legitimacy theory, corporations that share environmental information are likely to experience a favorable relationship with the FP.

Moreover, Horváthová (2012) investigates the time impact of the EP by separating the environmental involvement into two sub-stages. According to Horváthová (2012), the competitive advantage seems to have a time-varying effect. As a result, firms are unable to balance investment costs in the near term, however, in the long-run, EP and FP will be positively associated; in other words, the Porter Hypothesis begins to have an effect after a significant length of time.

Turning to environmental strategies, both the accommodative and proactive strategies advocate a positive effect of EP on FP. An accommodative strategy indicates that firms are incentivized to engage with stakeholders regarding their environmental sustainability. Dawkins and Fraas (2011) also hypothesize that companies under the focus of the media are greater inclined to disclose environmental reports in hopes of reducing information asymmetry; as their actions are taken seriously by society and, as a result, stakeholders are enamored by highly apparent firms (Pfeffer and Salancik, 1978), an assertion sustained by the legitimacy theory. Thus, organizations build their brand's reputation by providing transparent information. The providence of transparent information offers a cost benefit as well as serves as a source of uniqueness (Porter, 1991).

Also, long-term proactive environmental objectives must be embraced by enterprises for competitive advantage to be established. Moreover, competitive advantage is highly improbable to be achieved in a short period of time (Aragón-Correa and Sharma, 2003). Similarly, the proactive environmental strategy focuses on the firm's level of environmental participation, implying that high proactive enterprises save money owing to advanced technologies and avoid regulation (Reinhardt and Stavins, 2010), an argument backed by the natural resource-based view.

2.1.2 Negative Impact Theories

Contrary to the preceding subsection, we now examine theories that contend investment in EP would harm FP. This group includes the following theories: The neoclassical theory, the agency theory, and the remaining two environmental strategies, reactive and defensive approaches. The negative association between EP and FP can be explained by the additional costs that enterprises must bear.

2.1.2.1 Neoclassical Economic Theory

Milton Friedman first put out the neoclassical economic theory (Lee, 2008), which is rooted in corporations' legal intent and shareholder priority (Ehrlich, 2005; Fisch, 2006; Springer, 1999). According to Friedman (1970), a company's duty is to maximize shareholder returns and sees social and environmental responsibilities as a breach of free business. Any action that can result in a reduction in the profit to shareholders is unacceptable (Reinhardt, Stavins, and Vietor, 2008). Firms incur additional expenditures due to their expensive EP projects and operations, which also use up a lot of financial resources (Palmer, Oates, and Portney, 1995; Walley and Whitehead, 1994). The costs and benefits of these EP initiatives might not be comparable (Preston and O'bannon, 1997; Waddock and Graves, 1997). EP efforts are typically viewed as voluntary and have a negative financial impact, which is conflicts with the company's aim to maximize profits (King and Lenox, 2002). Based on this analysis, researchers who hold a neoclassical economic view are opposed to any additional actions taken by a company to enhance its social and environmental performance instead of profit maximization for the simple reason that such actions place an additional financial burden on shareholders and lead to a cost disadvantage. Thus, spending on EP improvements typically results in lower FP. Studies in this category therefore presume that EP and FP have a negative connection. Due to the needless and avoidable expenditures involved, businesses that invested more resources in EP projects had fewer competitive benefits than those that invested less.

However, according to the stakeholders' theory, although a firm's expenses from its EP operations may short-term burden its owners' wealth and result in a temporary drop in profit, the firm's profit and survival are ultimately impacted by numerous

external stakeholders, including governments, customers, and other societal groups (Lee, 2008). Hence, the aim of a company's profit maximization and its EP are no longer insignificant or incompatible.

2.1.2.2 Other Theories and Strategies

Nollet, Filis, and Mitrokostas (2016) base their findings on agency theory. Claiming that managers possess the motivation necessary to participate in EP required to improve reputation, but shareholders are indifferent (Barnea and Rubin, 2010). Overinvestment, on the other hand, will result in a reduction in earnings and, as a result, a decrease in shareholder wealth. Jensen (2001) emphasizes that social responsibility can be viewed as an investment strategy that might result in greater shareholder wealth if management caution is used to maximize shareholder value, but this suggestion would better reflect the stakeholder theory, which was previously explored. According to the agency theory, if management opts to invest in EP in the future, this investment will directly remove earnings from the enterprise.

The two environmental techniques that argue a negative impact between EP and FP are the defensive and reactive approaches. The first is based on a negative link amongst FP and voluntary environmental disclosure (Brown and Deegan, 1998) because businesses are subjected to unwarranted criticism, which may be described as a counter-legitimacy theory. The second environmental strategy is reactive, which neglects environmental participation simply due to the large potential cost, and investment spent on other assets could create higher yields (Buysse and Verbeke, 2003), a reasoning consistent with neoclassical theory. Another argument to bypass EP is that if most firms adopt a clean operation, those that have not distinguished

themselves would ultimately acquire a competitive advantage. As a result, the link between EP and FP differs depending on the environmental plan.

2.2 Empirical Literature Review

The complicated nature of the EP-FP interaction has prompted several qualitative and quantitative investigations in the empirical academic literature. However, the findings of these studies are inconclusive, and there is still dispute over whether a firm's better EP enhances or degrades its FP. Overall, the research on the association between EP and FP yields conflicting results, ranging from a positive to a neutral to a negative relationship. Below, we will briefly list and explain some of the research in the literature relating to EP and FP.

2.2.1 Positive Relationship

Most EP investigations in the literature revealed a positive connection between different EP and FP indicators. The studies that came to the conclusion that various metrics or indicators connected to EP and FP were positively related include (Ann, Zailani, and Wahid, 2006; Bergmann et al. 2017; Brogi and Lagasio, 2019; Callan and Thomas, 2009; Carmona–Moreno, Céspedes-Lorente, and De Burgos-Jiménez, 2004; Clarkson et al., 2011; Dowell, Hart, and Yeung, 2000; Gangi, Daniele, and Varrone, 2020; Gómez-Bezares, Przychodzen, and Przychodzen, 2017; Hart and Dowell, 2011; Hillman and Keim, 2001; Hossain et al., 2015; King and Lenox, 2001; Konar and Cohen, 2001; Lee, Park, and Klassen, 2015; Lisi, 2015; Liu, 2020; Long et al., 2020; López-Gamero, Molina-Azorín, and Claver-Cortés, 2009; Manrique and Martí-Ballester, 2017; Margolis and Walsh, 2003; Margolis, Elfenbein, and Walsh, 2009; Marshall and Brown, 2003; Melnyk, Sroufe, and Calantone, 2003; Menguc and Ozanne, 2005; Mishra and Suar, 2010; Montabon, Sroufe, and Narasimhan, 2007; Nakao et al., 2007; Nishitani, 2011; Okafor, Adeleye, and Adusei, 2021;

Orlitzky, Schmidt, and Rynes, 2003; Peloza, 2006; Prado-Lorenzo et al., 2008; Preston, 2001; Qureshi et al., 2021; Rugman and Verbeke, 2000; Schaltegger and Synnestvedt, 2002; Simpson and Kohers, 2002; Sudha, 2020; Surroca, Tribó, and Waddock, 2010; Tarus, 2015; Wagner, 2005; Wahba, 2008; Weber, 2008; Yang, Hong, and Modi, 2011).

Similar results have been reached by several literature reviews and meta-analysis articles. Fifty-two empirical publications were analyzed by Albertini (2013), who found that there is a significant positive association between EP and FP. Dixon-Fowler et al. (2013) and Endrikat, Guenther, and Hoppe (2014) also supported these positive relations in their papers. The empirical literature supporting a positive association between EP and FP used diverse econometric methodologies such as ordinary least squares regression (Cordeiro and Sakris, 1997; Horváthová, 2012; Wahba, 2008), event studies (Klassen and McLaughlin, 1996; Ramiah, Pichelli, and Moosa, 2015; Yadav, Han, and Rho, 2016), and the probit and logit models (Clark and Crawford, 2012; Matsumura, Prakash, and Vera-Munoz, 2014), all drawing the same conclusion of a positive association amongst EP and FP.

2.2.2 Negative Relationship

However, a significant number of studies have also found a negative /association amongst EP and FP. These studies include those by (González-Benito and González-Benito, 2005; Brammer, Brooks, and Pavelin, 2006; Buallay, 2019; Dobre, Stanila, and Brad, 2015; Duque-Grisales, Aguilera-Caracuel, 2021; Filbeck and Gorman, 2004; Fisher-Vanden and Thorburn, 2011; Hassel, Nilsson, and Nyquist, 2005; Judge and Douglas, 1998; Karagozoglu and Lindell, 2000; Konar and Cohen, 2001; Crisóstomo, de Souza Freire, and de Vasconcellos, 2011; Moore, 2001; Ngwakwe,

2009; Repetto and Austin, 2002; Rodrigo, Duran, and Arenas, 2016; Sarkis and Cordeiro, 2001; Stanwick and Stanwick, 1998; Thomas, Repetto, and Dias, 2007; Vinayagamoorthi, Selvam, and Lingaraja, 2015; Watson et al., 2004). The main explanations offered in this collection of research for the negative EP-FP connection concentrate on the excessive and preventable expenses involved with EP measures that place businesses at a disadvantage. However, as only short-term relationships between EP and FP are examined, a more extensive study is required to support these findings.

2.2.3 Neutral Relationship

The number of research found no association between EP and FP in the literature is small. One possible explanation is that the authors did not submit the study or that journals are likely to reject papers with insignificant findings. Overall, the following research either confirmed a neutral relationship between EP and FP or concluded that finding a clear outcome is difficult (Aras, Aybars, and Kutlu, 2010; Bansal, 2005; Berman et al., 1999; Chetty, Naidoo, and Seetharam, 2015; Elsayed and Paton, 2005; Johnson and Greening, 1999; King and Lenox, 2001; Lanoie, Laplante, and Roy, 1998; Link and Naveh, 2006; Lucato, Costa, and de Oliveira Neto, 2017; McWilliams and Siegel, 2000; Moneva and Cuellar, 2009; Rodrigo, Duran, and Arenas, 2016; Santis, Albuquerque, and Lizarelli, 2016; Soyka and Feldman, 1998; Thornton, Kagan, and Gunningham, 2003; Vogel, 2005; Waddock and Graves, 1997; Zhang and Stern, 2007).

These studies frequently show no substantial association amongst EP and FP or that finding the exact relation is difficult owing to various systems or causes (Margolis and Walsh 2003). Vogel (2005) proposed that the link between EP and FP is context

contingent, which may modify the type or magnitude of the association. As a result, if the context is not stated while investigating the relationship, the results may be deceptive or insignificant. Some scholars have also hypothesized that the lack of relationships between EP and FP may be due to the exclusion of common factors of causation (Barnett, 2007).

2.2.4 Nonlinear Relationship

Another possible explanation for the neutral association seen in some research is a lack of precise model formulation as well as a sophisticated approach and technique in recognizing the underlying complexity between EP and FP. Therefore, authors such as Brammer and Millington (2008) claimed that depending on the extent of EP, a positive or negative link may exist. Additionally, they offered some empirical justification for a U-shaped association between EP and FP. Despite not directly hypothesizing a U-shaped link, they discovered evidence from the firm-level data that the greatest and lowest levels of EP were connected to the highest levels of FP.

The justification for a negative EP-FP link was given by Mittal, Sinha, and Singh (2008). The authors argued that if the predicted link between EP and FP is U-shaped, the negative association may have been seen earlier in the EP process since the cost of EP was responsible for the U curve's first downward slope. Nollet, Filis, and Mitrokostas (2016) experimentally demonstrated the presence of a U-shaped link between corporate governance and FP in US businesses, supporting Mittal, Sinha, and Singh's (2008) hypothesis. This is the first empirical discovery of a U-shaped relationship in the Corporate Social Responsibility (CSR) literature to date. Authors such as (Broadstock et al., 2018; Trumpp and Guenther, 2017; Misani and Pogutz,

2015) investigated the non-linear relationship and confirmed the existence of a complex non-linear relationship between EP and FP.

2.2.5 EP and FP Under Economic Recession

In the aforementioned research and discussion, it is explored how EP and FP connect to one another under ordinary market conditions, with most empirical papers indicating a positive link. However, the behavior of firms may have changed due to the global financial crisis (Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014). Managers and scholars agree that in tough economic times, cutting back on CSR activities investments is necessary to save funds, endure the financial shock, and boost financial performance (Jacob, 2012; Njoroge, 2009). A distinct body of evidence, however, supports the contrary behavior due to the positive effects CSR initiatives have on businesses' financial and operational success (Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014). Companies that engage in CSR initiatives effectively utilize their resources and talents to boost their financial benefits all while improving relationships with their stakeholders (Branco and Rodrigues, 2008). Similarly, Giannarakis and Theotokas (2011) contend that more investment in CSR initiatives can aid businesses in regaining customer confidence. Additionally, due to the beneficial impact of CSR activities in overcoming financial turbulence, lowering investment in CSR activities would be a misjudgment (Wilson, 2008).

There is limited empirical research on the link between CSR and FP during economic downturns (Petitjean, 2019), and the findings are inconsistent. One the one hand, several studies discovered that the connection was either adverse or neutral. To analyze the link between CSR and FP, Hirigoyen and Poulain-Rehm (2015)

examined data for 329 firms from 2009 and 2010. They concluded that there was a negative association between the variables. Simionescu and Gherghina (2014) discovered a similar inverse link between return on sales and CSR. Additionally, the authors were unable to obtain any connection between CSR and the majority of financial performance indicators. But they discovered that CSR had a favorable impact on earnings per share. Other research, on the other hand, verified the favorable nature of the relationship between CSR and FP. Lins, Servaes, and Tamayo (2017) demonstrate that stronger CSR performance is connected with higher returns, and that sound financial performance may be attributed to CSR initiatives that enhanced stakeholder trust despite the lower level of trust during the financial shock. Similarly, Selvi, Wagner, and Türel (2010) demonstrate the beneficial relationship between CSR and FP in Turkish firms both before and during the economic crisis. Simionescu and Dumitrescu (2014) revealed that improved CSR performance corresponds to greater FP in Romanian firms during a financial depression.

Regarding the nature of the interaction between EP and FP during challenging circumstances, there is a gap in the literature. Gallego-Álvarez, García-Sánchez, and da Silva Vieira (2014) analyzed the link and came to the conclusion that EP had a beneficial impact on FP during the 2008 financial crisis by using global data on carbon emissions from 89 firms. Furthermore, Petitjean (2019) looked at the relationship between EP and FP in the context of 58 US companies. The authors observed a strong connection between EP and FP during the 2008 financial crisis, but they were unable to verify the association between EP and FP overall.

Chapter 3

ENVIRONMENTAL AND FINANCIAL PERFORMANCE DURING COVID-19 OUTBREAK: INSIGHT FROM CHINESE FIRMS

3.1 Introduction

Effects of climate change on the welfare of humanity pushed environmental concerns to the top of governments' agendas. Ensuring sustainable global growth has become one of the most important goals of the international community in recent decades. For this purpose, governments signed the Paris climate agreement in 2015 and the Glasgow climate pact in 2021 (UNFCCC, 2022). The main target of these efforts was to limit the effects of global warming by holding the increase of global temperature to below 2°C. Reducing greenhouse gas emissions (GHGs), especially carbon emissions, are required to limit the temperature increase (UNFCCC, 2022). These developments have increased international pressure on high carbon-emitting countries (Alam et al., 2019). As the highest carbon-emitting country, China set ambitious goals to meet the targets of international treaties. Besides, in line with China's state policy, Chinese companies have been spending significant efforts to switch to a more environmentally friendly production model. Although these efforts are inevitable for sustainable growth, the financial burden of this transformation process for the firms is a paramount concern. The financial difficulties experienced by companies during the COVID-19 period have intensified these concerns

significantly. In times of financial distress, following environmentally sensitive policies may cease to be the priority of companies. Based on these concerns, our study reconsiders the relationship between companies' environmental performance (EP) and financial performance (FP) during the COVID-19 period.

Firms play a major role in carbon emissions through the energy use needed to produce goods and services. Pressures from governments and policymakers drove corporations to minimize their carbon footprint and better their EP (Alam et al., 2019). The effect of increasing the EP of companies on their FP is a vital field of study in the literature. Theoretically, the natural resource-based view theory claims that corporations with higher environmental activities will have a competitive advantage over those without environmental policies and efforts (Hart, 1995). However, supporters of the neoclassical economic theory argue that an increase in EP leads to increasing costs, which will hinder the FP (Palmer, Oates, and Portey, 1995). Theories that propose different and somehow contradictory arguments led to the intensification of empirical research in this field. Many researchers argue that there is harmony and even complementarity between an environmentally friendly business model and the firm's financial strength. The intense interest in the subject has led to many recent studies that contribute to this debate from different angles (Banerjee, Gupta, and McIver, 2019; Cheng and Liu, 2018; Duanmu, Bu, and Pittman, 2018; Ikram et al., 2022; Kordsachia, Focke, and Velte, 2021; Zhang, 2021). However, after three decades of theoretical and empirical research, the relationship between EP and FP is still inconclusive (Shen et al., 2019; Brahmana and Kontesa, 2021).

Another point that draws attention in the related literature is that the relationship between EP and FP has not been adequately examined in the case of adverse economic shocks. The crisis period affects the financial health of the firms and forces them to reconsider their priorities. For example, unfavorable market conditions following the 2008 global financial crisis harmed the financial health of the firms and led them to question their position on EP (Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014). Some researchers believe that investment reduction in environmental practices is the best strategy to follow in case of a negative economic shock to reduce costs and consequently maintain and improve FP (Njoroge, 2009). However, many others disagree with this argument. According to them, EP enhances FP even in a crisis period. EP contributes to sustainable development and yields economic benefits (Brilius, 2010). Environmentally responsible firms have access to crucial resources (Zeidan, Boechat, and Fleury, 2015) and are regarded by stakeholders as trustworthy, even if economic conditions are unfavorable and overall market trust is decreased (Lins, Servaes, and Tamayo, 2017). Therefore, the competitive advantage and stakeholders' trust gained by environmentally responsible corporations is valuable, especially in times of turmoil (Godfrey, 2005). In addition, firms with higher EP have a better relationship with their stakeholders and can use their resources more efficiently to generate greater economic benefit (Branco and Rodrigues, 2008). This discussion necessitates investigating whether there is a short-term trade-off between the firm's FP and EP under crisis conditions.

COVID-19 Pandemic has emerged as a global issue causing harm to human health and damaging environmental quality (Irfan et al., 2021). Besides, COVID-19 brought about economic problems similar to those in the 2008 Financial Crisis. The evolution

of the COVID-19 virus, from a national crisis in China to a global Pandemic, resulted in one of the worst global economic recessions since 1990 (Nguyen, Anh, and Gan, 2021). The outbreak of COVID-19 pushed governments worldwide to impose strict measures to prevent the further spread of the virus, including national lockdowns, travel and transportation restrictions, and business closures (Baker et al., 2020). These measures led to a drastic decline in economic growth, an increase in unemployment levels, disruptions in demand and production chains, cash flow problems, and bankruptcies of firms worldwide (Papadopoulos, Baltas, and Balta, 2020). Although the decline in economic activities caused a temporary decrease in the global carbon emissions level, the effect of the Pandemic on the transition to low-carbon firms and a green economy is still unknown (Guérin and Suntheim, 2021). On the one hand, COVID-19 ramifications have affected corporations and interrupted plans for sustainable development (Ikram et al., 2020). However, on the other hand, it can also motivate a shift towards green products in the preferences of investors and consumers, thus enabling companies to switch to low-carbon production without reducing their FP (Guérin and Suntheim, 2021).

Given the ambiguous nature of the relationship between EP and FP (Brahmana and Kontesa, 2021), the disastrous impact of COVID-19 on the financials of firms, and the lack of studies examining the influence of the Pandemic on the relationship between EP and FP; this article aims to bridge the gap within the EP literature and provide a more comprehensive understanding of this relationship. To this aim, we examine the effect of EP, represented by the environment pillar score of firms on FP, represented by return on assets, under unfavorable economic conditions, the COVID-19 global Pandemic. With this goal in mind, Chinese firms were chosen as our

sample for three main reasons; first, China had the first reported cases of the COVID-19 virus in 2019, and it was the first country to take precautionary measures to stop the spread of the virus. Thus, China is selected to avoid any misspecification and inaccuracies in our findings. Second, China is considered to be the world's highest emitting country of CO2 emissions and is under global scrutiny to decrease the emissions levels (WPR, 2022). Third, independent standard EP measurement is lacking in China (Shahab et al., 2018), which calls for an extended examination of EP of Chinese firms using third-party ratings to reveal the influence on FP, specifically under economic downturn conditions. Therefore, a panel of 329 publicly listed Chinese firms spanning from 2017 to 2020 was analyzed by using fixed-effects regression. In addition, macroeconomic variables and institutional quality variables were added to the empirical models to ensure the robustness of the results. Moreover, return on capital is used as a proxy for FP to confirm the validity of the results. Furthermore, both the Panel Corrected Standard Errors (PCSE) and Bootstrap Corrected Fixed-Effects (BCFE) were used to correct for any multicollinearity, heteroscedasticity, and autocorrelation in the error term of the analysis (Wooldridge, 2003) and further verify the robustness of our findings.

The rest of the study is structured as follows: The next section offers a review of the previous literature. Section 3 introduces the data and methodological techniques used, alongside the equations studied. Section 4 presents and discusses the study's findings, while the final section offers concluding remarks together with policy recommendations.

3.2 Literature Review

Corporate Social Responsibility (CSR) is defined as the consideration by corporations of responsibilities towards society beyond shareholders' profit-making (Petitjean, 2019). Following the pioneering study of Bowen (1953), the role of CSR, its' importance, and its' effect on society have been widely discussed. Some early studies emphasized the companies' duties toward society (Andrews, 1973); while others argued that companies should only focus on maximizing their benefits (Levitt, 1958). Since the ultimate goal of firms is to maximize profit, research has focused on the relationship between CSR and FP. Theoretically, the literature offers opposing points of view relating to the effect of CSR on FP.

Neo-classical economists advocate that investment in CSR activities lessens opportunities to use resources for firms' benefits (Friedman, 1970). Investing in CSR implies higher costs, which triggers conflict of interest between stakeholders (Greening and Turban, 2000), eventually hindering the FP of the firm (Palmer et al., 1995). In contrast, the resource-based view suggests that a company's resources are imitable, invaluable, non-substitutable, and unique (Barney, 1991). These resources allow the firm to engage in CSR investments to enhance its public reputation and brand image, boost customer trust, gain a competitive advantage, and increase FP (Bird et al., 2007). In addition, stakeholder theory asserts that investments in CSR activities can boost the relationship between corporations and their stakeholders (Ahmad, Mobarek, and Roni, 2021). Moreover, the theory suggests that CSR initiatives can enhance a firm's value in two ways; first, an increase in reputation due to higher CSR investment could boost sales, and second, shareholders' utility could

increase as a result of holding shares of a sustainable firm (Abdi, Li, and Càmara-Turull, 2022; Gillan, Koch, and Starks, 2021).

Empirically, the literature has produced mixed results examining the relationship between CSR and FP (Gillan, Koch, and Starks, 2021). The majority of the literature has reported a positive effect of CSR on FP (Brogi and Lagasio, 2019; Long et al., 2020; Okafor, Adeleye, and Adusei, 2021; Qureshi et al., 2021). In an extensive review of more than 250 academic studies, Margolis, Elfenbein, and Walsh (2009) concluded that the effect of CSR on FP is positive. Likewise, reviewing 52 papers, Orlitzky, Schmidt, and Rynes (2003) argued that CSR activities are likely to be financially viable for firms. Similarly, Friede, Busch, and Bassen (2015), with a vast meta-analysis of more than 2000 empirical studies, reveal a higher positive effect of CSR on FP in emerging economies compared to developed economies (65.4% compared to 38%).

Contrary to researchers supporting a positive relationship, a limited number of authors in the literature argue that the relationship between CSR and FP is negative or neutral (Buallay, 2019; Duque-Grisales, Aguilera-Caracuel, 2021; Rodrigo, Duran, and Arenas, 2016). The negative relationship is likely due to CSR activities without proper implementation or institutional support; increasing the costs of CSR activities and decreasing stakeholders' support (Abdi, Li, and Càmara-Turull, 2022). Studies finding a neutral relationship between CSR and FP maintain that the financial benefits of CSR activities are offset by the associated costs (Lahouel et al., 2019), or that the relationship is too complex to be measured (Margolis and Walsh, 2003).

Overall, the relationship between CSR and FP is widely discussed and well established in the literature, with most empirical studies reporting a positive influence of CSR on FP. More recently, the literature is shifting from the concept of CSR as a whole to specific dimensions, particularly the EP of firms due to environmental deterioration and climate change (Li et al., 2017). Climate change has attracted increased concerns from firms' stakeholders (Busch and Hoffmann, 2011). In addition, consumers, governments, and financial markets show accelerating concerns about the carbon emission levels of firms (Lee, 2012). Therefore, it is crucial to analyze the EP of firms and investigate its relationship with FP (Wang, Li, and Gao, 2014).

EP is defined as the corporations' commitment to actions and activities targeting protecting and improving the environment while fulfilling economic performance (Li et al., 2017). As underpinned by the natural-resource-based view (NRBV), firms can develop capabilities and resources that are rare, valuable, non-substitutable, and inimitable by managing stakeholder expectations through improved EP. Implementing environmental strategies can increase operational efficiency, productivity, and environmental reputation, leading to increased revenues while decreasing the environmental risks that can harm firm performance (Peloza, 2006). Furthermore, improved EP can reduce costs of environmental regulation compliance and elevate employees' productivity and morale (Qi et al., 2014). Moreover, EP improvements were found to lower financing costs (Sharfman and Fernando, 2008). In contrast, firms with low EP usually encounter shareholder boycotts, negative media exposure, and government penalties. For example, the Chinese Harbin Pharmaceutical Group was reported to release excessive amounts of hydrogen sulfide

gases; after the exposure, its revenues fell dramatically by 47.15% in 2011 and 46.62% in 2012 (Li et al., 2017). Likewise, Zijin Mining Group was accused of acidic wastewater leakage in 2010, and its stock price fell sharply after the incident (Li et al., 2017).

Analytically, despite multiple authors supporting a negative or neutral link between EP and FP (Lucato, Costa, and de Oliveira Neto, 2017; Santis, Albuquerque, and Lizarelli, 2016), many studies have found a positive relationship between a firm's EP and FP (Bergmann et al. 2017; Gangi, Daniele, and Varrone, 2020; Gómez-Bezares, Przychodzen, and Przychodzen, 2017; Liu, 2020; Manrique and Martí-Ballester, 2017; Nishitani, 2011; Sudha, 2020). Similarly, multiple literature surveys and meta-analysis papers have come to the same conclusion. Albertini (2013) analyzed 52 empirical papers and supported the positive relationship between EP and FP. Likewise, Dixon-Fowler et al. (2013), and Endrikat, Guenther, and Hoppe (2014) confirmed the positive links in their meta-analytical studies. According to the competing theories of neo-classical economists and the natural resource-based view discussed above, and based on the fact that the vast bulk of the empirical literature concluded a positive relationship between the variables of interest, we propose the hypothesis given below:

H1: Environmental Performance positively affects the Financial Performance of Chinese firms.

The literature mentioned above and the discussion are related to the relationship between CSR and FP, or more specifically EP and FP in normal market conditions, with a majority of empirical articles confirming a positive relationship. However,

after the global financial crisis, firms' behavior might have changed (Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014). Under unfavorable economic circumstances, managers and researchers believe that reducing CSR activities investments is essential to cut costs, survive the financial shock, and improve FP (Bansal, Jiang, and Jung, 2015). However, another stream in the literature endorses the opposing behavior because of the benefits that CSR activities have on firms' economic performance and the FP (Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014). Companies involved in CSR activities use their capabilities and resources efficiently and increase their economic benefits alongside enhancing the relationship with their stakeholders (Branco and Rodrigues, 2008). Similarly, Giannarakis and Theotokas (2011) argue that increased investment in CSR projects can help firms regain lost trust from consumers. Moreover, decreasing investment in CSR activities would be an oversight due to the positive effect of CSR activities on overcoming financial turmoil (Wilson, 2008).

The empirical literature on the relationship between CSR and FP in times of economic downturn is minimal (Petitjean, 2019), and the results are varied. On the one hand, some researchers found the relationship to be either negative or neutral. Hirigoyen and Poulain-Rehm (2015) utilize the data for 329 companies spanning from 2009 and 2010 to examine the relationship between CSR and FP, concluding a negative relationship between the variables. Similarly, Simionescu and Gherghina (2014) found a negative relationship between CSR and return on sales. The authors also could not find a significant relationship between CSR and most FP indices. However, they discovered that CSR positively affects earnings per share.

On the other hand, some studies confirmed the positive association between CSR and FP. Lins, Servaes, and Tamayo (2017) demonstrate that higher CSR performance is associated with higher returns, and sound FP might be from CSR activities which increased the trust of stakeholders despite the low level of trust during the financial shock. Likewise, Selvi, Wagner, and Türel (2010) verify the positive link between CSR and FP before and during the financial crisis in the case of Turkish companies. Similarly, Simionescu and Dumitrescu (2014) found that increased CSR performance leads to higher FP in Romanian companies during the financial downturn.

There is a gap in the literature regarding the nature of the relationship between EP and FP in times of turmoil. Although a few studies examine this relationship in periods of low trust, their findings are inconclusive. Gallego-Álvarez, García-Sánchez, and da Silva Vieira (2014) used international data on carbon emissions of 89 companies and concluded a positive effect of EP on FP during the financial crisis of 2008. In addition, Petitjean (2019) investigated the link between EP and FP in the case of 58 US firms. The authors could not confirm the relationship between EP and FP overall and found a weak association between EP and FP in the period of the financial crisis of 2008.

The mentioned studies examined the effect of the 2008 financial crisis on the EP - FP relationship. The COVID-19 period also had effects similar to those of the 2008 crisis, such as a low trust environment and financial distress. Hence, the impact of the COVID-19 Pandemic on the relationship between FP and EP has to be analyzed. This research tests the existence and the direction of the relationship between EP and FP in the case of Chinese companies, taking into account the most recent recession

due to the COVID-19 Pandemic, controlling for additional factors, and going beyond the carbon emission reduction of corporations. Accordingly, the hypothesis below is proposed:

H2: Environmental Performance positively affects the Financial Performance of Chinese firms during the COVID-19 Pandemic.

3.3 Materials and Methods

3.3.1 Data Description

This article examines the influence of EP on FP during an economic downturn, that is, the COVID-19 Pandemic period. Since COVID-19 Pandemic started in China, it seems indisputable to focus on Chinese-based firms to avoid any lead-lag effect in our results. Data for 329 Chinese companies were drawn from the Refinitiv database with a yearly frequency that spans from 2017 to 2020. As a measure of EP, the environmental pillar score of the Environmental, Social, and Governance (ESG) Refinitiv Eikon database is selected due to multiple reasons; first, to avoid biased disclosure problems and to rely on a third-party rating, ensuring the robustness of the measure (Han, Kim, and Yu, 2016), and second, to go beyond carbon emissions of firms and include both environmental innovation and resources use. To measure corporate FP, return on assets (ROA) is selected to represent profitability, as it is commonly used in previous literature (Buallay, 2019; Lucas and Noordewier, 2016; Wang and Sarkis, 2017) and reflects an efficient proxy of profitability (Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014). In addition, return on capital (ROC) is included as a measure of FP to verify the empirical results and confirm the validity of the findings.

To represent the recession period due to the COVID-19 Pandemic, we have defined a dummy variable (COVID), which takes the value of 1 in the years 2019 and 2020 and the value of 0 for the other periods included. In addition, an interaction variable between the COVID variable and EP is created (COVEP) to represent the EP of firms in the period of COVID-19 to test the second hypothesis. Moreover, several control variables are added to confirm the results and avoid misspecification. Control variables included fall under three categories; the first is firm performance variables. In line with the existing literature (Adegbite et al., 2019; Lahouel, Bruna, and Zaied, 2020; Zhang et al., 2020), we added three firm performance variables; namely, size represented by the logarithmic form of the market value (LMV), liquidity (LIQ) measured by current ratio, and leverage (TDTE) which is the ratio of total debt over total equity, all of which was obtained from Refinitiv Eikon database. The second category is macroeconomic variables, including the unemployment rate (UN) and inflation rate (INF) collected from the World Bank database (World Bank, 2022). Both inflation and unemployment are determinants of FP within the literature (Egbunike and Okerekeoti, 2018; Issah and Antwi, 2017), and their effect needs to be controlled for. The third category is institutional quality variables consistent with previous literature (Agostino et al., 2020; Hosny, 2017), including voice and accountability (VACR) and political stability (PSR) drawn from Worldwide Governance Indicators (WGI, 2022).

3.3.2 Model and Methodology

To test the hypotheses mentioned above of this study, we employ fixed-effects linear regression for panel data. This methodology ensures consistent estimators by preventing information related to fixed effects from being correlated with the model's variables. Following Baltagi (2008) and Hsiao and Sun (2000), fixed and random

effects specifications should be treated as an issue of model selection rather than hypothesis testing. In addition, the authors suggested that the choice between the two effects specification should depend on whether or not firms belong to the same population (Farsi and Filippini, 2004). Since the sample studied consists of Chinese firms with similar characteristics and in the same population, the fixed-effects linear regression model is assumed to be the most suitable. The main model equation assumes ROA to represent profitability and is shown below:

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \varepsilon_{it} \quad (1)$$

Models (2) and (3) include firm performance control variables and institutional quality control variables, respectively.

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \beta_7 INF_{it} + \beta_8 UN_{it} + \varepsilon_{it} \quad (2)$$

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \beta_7 PSR_{it} + \beta_8 VACR_{it} + \varepsilon_{it} \quad (3)$$

For robustness purposes, we utilized ROC as the proxy for FP to confirm the results drawn from previous models. Models (4) represent the main model with ROC as the dependent variable

$$ROC_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \varepsilon_{it} \quad (4)$$

Models (5) and (6) control for firm performance and institutional quality, respectively and are represented below

$$ROC_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \beta_7 INF_{it} + \beta_8 UN_{it} + \varepsilon_{it} \quad (5)$$

$$ROC_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \beta_7 PSR_{it} + \beta_8 VACR_{it} + \varepsilon_{it} \quad (6)$$

Moreover, we use the novel dynamic panel BCFE estimator to confirm the validity of the results. In contrast to panel estimation methods used in the literature that require a large time span for model estimations to be efficient, BCFE corrects any small-time dimension bias present in panel models (Sarkodie and Owusu, 2020). Model (7) represents the BCFE equation

$$ROA_{it} = \alpha + \beta_1 ROA(-1) + \beta_2 EP_{it} + \beta_3 LMV_{it} + \beta_4 LIQ_{it} + \beta_5 TDTE_{it} + \beta_6 COV_{it} + \beta_7 COVEP_{it} + \varepsilon_{it} \quad (7)$$

Furthermore, to validate our findings, PCSE models were employed to check the robustness of the model. PCSE corrects for heteroscedasticity, multicollinearity, and autocorrelation (Wooldridge, 2003). Models (8), (9), and (10) below are estimated with PCSE.

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \varepsilon_{it} \quad (8)$$

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \beta_7 INF_{it} + \beta_8 UN_{it} + \varepsilon_{it} \quad (9)$$

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 LMV_{it} + \beta_3 LIQ_{it} + \beta_4 TDTE_{it} + \beta_5 COV_{it} + \beta_6 COVEP_{it} + \beta_7 PSR_{it} + \beta_8 VACR_{it} + \varepsilon_{it} \quad (10)$$

3.4 Results

To examine the characteristics of the variables utilized within our empirical models, descriptive statistics and correlation coefficients are presented in Table 3.1. The minimum value of the environmental performance went up during COVID years while its variability increased from 0.873 to 1.903, indicating uncertainty in spending on EP. ROC has an average of 0.09 while ROA's average is 0.042. Table 3.1 shows

that the variable most correlated with the dependent variable ROA is the company size, while leverage was the most correlated with ROC. Although the majority of correlation coefficients are low, the correlation coefficients between VACR and UN, COVEP and UN, and COVEP and INF are high, with values of -0.98, 0.82, and 0.82, respectively. Thus, VACR and UN are not included in the same equation to refrain from any multicollinearity problem. Besides, the PCSE method is used to fix any possible multicollinearity issues and validate the robustness of the results.

Table 3.1: Descriptive Statistics and Correlation Analysis

	Mean	Max	Min	σ	ROA	ROC	LEP	LMV	TDTE	LIQ	UN	INF	PSR	VACR	COVEP
ROA	0.042	0.778	-2.343	0.100	1.00										
ROC	0.090	19.214	-2.071	0.589	0.12	1.00									
LEP	3.491	4.558	-1.833	0.873	-0.01	0.01	1.00								
LMV	10.389	15.546	4.949	1.238	0.26	-0.06	0.03	1.00							
TDTE	1.101	21.784	-9.784	1.591	-0.09	-0.12	0.06	-0.04	1.00						
LIQ	1.579	17.914	0.004	1.275	0.15	-0.02	-0.12	0.00	-0.24	1.00					
UN	4.575	5.000	4.300	0.268	-0.07	0.02	0.18	0.02	0.00	0.01	1.00				
INF	2.247	2.899	1.593	0.478	-0.09	0.01	0.17	-0.02	0.02	-0.02	0.49	1.00			
PSR	37.477	38.570	35.850	0.997	-0.01	0.01	-0.04	0.03	-0.02	0.01	0.35	-0.12	1.00		
VACR	7.159	9.180	4.830	1.596	0.07	-0.02	-0.16	-0.02	0.00	-0.01	-0.98	-0.49	-0.50	1.00	
COVEP	1.829	4.558	-1.715	1.903	-0.08	0.02	0.35	0.01	0.02	-0.04	0.82	0.82	0.25	-0.83	1.00

To ensure that omitted variables are not present, and to confirm that non-linear properties do not exist in the model, equation (1) was tested using the Ramsey RESET test, and the results are reported in Table 3.2. Findings from the Ramsey RESET test reveal that there are no omitted variables as the null hypothesis of no omitted variables is not rejected. Findings of the main analysis, using fixed-effects linear models, are presented in Table 3.3. Results regarding the base model, corresponding to equation (1) with ROA representing financial performance, suggest that EP has a significant positive effect on companies' FP. COVID Pandemic decreases FP overall; however, the interaction variable COVEP is positively significant, indicating that increased EP during the Pandemic boosts FP. Control variables, namely, size, leverage, and liquidity, were found to positively influence FP, confirming theoretical expectations. Macroeconomic and institutional quality robustness models (2) and (3) confirm the findings of the base model. Model (2) shows that EP, size, leverage, liquidity, and COVEP have a significant positive effect on FP, while COVID, unemployment, and inflation have a negative effect on the dependent variable. Similarly, model (3) findings support models (1) and (2), as the coefficient signs are consistent with one another. Additionally, an increase in political stability and voice and accountability were found to boost FP.

Table 3.2: Ramsey RESET Test Results

	Value	DF	Probability
T-statistic	0.605	1307	0.545
F-statistic	0.366	(1, 1307)	0.545
Likelihood ratio	0.368	1	0.544

Table 3.3: Determinants of Financial Performance (ROA)

ROA	*Base (1)*	*Macro variables (2)*	*Institutional variables (3)*
Constant	-0.2296******	-0.1882******	-0.343644******
	[0.0156]	[0.0185]	[0.0168]
	(-14.734)	(-10.188)	(-20.51)
EP	0.0026******	0.0043*	0.004288*
	[0.0008]	[0.0007]	[0.0007]
	(3.3837)	(6.5393)	(6.5393)
Size	0.0250******	0.0285*	0.028453*
	[0.0018]	[0.002]	[0.002]
	(14.004)	(14.39)	(14.39)
Leverage	0.0019******	0.0028*	0.002767*
	[0.0006]	[0.0001]	[0.0001]
	(3.058)	(21.268)	(21.268)
Liquidity	0.0041******	0.0041*	0.004080*
	[0.0009]	[0.0008]	[0.0008]
	(4.5481)	(5.0893)	(5.0893)
Cov	-0.0194******	-0.0106*	-0.015888*
	[0.0033]	[0.0022]	[0.0025]
	(-5.7886)	(-4.7426)	(-6.4655)
Covep	0.0021******	0.0027*	0.002700*
	[0.0009]	[0.0007]	[0.0007]
	(2.4013)	(4.0127)	(4.0127)
Unemployment		-0.0174*	
	-	[0.0004]	-
		(-43.335)	
Inflation		-0.0044*	
	-	[0.0002]	-
		(-19.535)	
Political Stability			0.0013******
	-	-	[0.0000]
			(35.555)
Voice and Acct.			0.0025******
	-	-	[0.0000]
			(72.557)

, **, * represent significance at 1%, 5%, and 10% respectively. Numbers in Brackets are standard errors, and numbers in parenthesis are t-values.*

Table 3.4 demonstrates the findings obtained from fixed-effects linear models (4), (5), and (6), in which ROC measures the dependent variable financial performance. EP was found to be statistically insignificant in all three models. The COVID Pandemic variable negatively influences FP in all models presented with a very high level of statistical significance. The interaction variable, COVEP, positively affects financial performance consistently in all the models estimated. Control variables size and leverage were statistically significant in each model with consistent signs. In the

macroeconomic model (5), inflation negatively influences FP. Model (6) confirms the positive effect of institutional variables on FP with both political stability and voice and accountability.

Table 3.4: Robustness of Determinants of Financial Performance (ROC)

	Base (4)	*Macro variables (5)*	*Institutional variables (6)*
Constant	-0.0798*****	-0.0558*****	-0.1072*****
	[0.0207]	[0.0203]	[0.0249]
	(-3.8631)	(-2.754)	(-4.3048)
EP	-0.0006	-0.0002	-0.0002
	[0.0017]	[0.0013]	[0.0013]
	(-0.3331)	(-0.147)	(-0.147)
Size	0.0196*****	0.0197*	0.0197*
	[0.0018]	[0.0018]	[0.0018]
	(10.922)	(10.683)	(10.683)
Leverage	-0.0306*****	-0.0302*	-0.0302*
	[0.0017]	[0.0014]	[0.0014]
	(-18.246)	(-21.218)	(-21.218)
Liquidity	-0.0011	-0.001	-0.001
	[0.0011]	[0.001]	[0.001]
	(-1.007)	(-1.0305)	(-1.0305)
Cov	-0.0291*****	-0.0280*	-0.0256*
	[0.0046]	[0.0038]	[0.0037]
	(-6.2756)	(-7.3082)	(-6.9289)
Covep	0.0098******	0.0097*	0.0097*
	[0.0012]	[0.0012]	[0.0012]
	(8.0835)	(8.4558)	(8.4558)
Unemployment		0.0012	
	-	[0.0011]	-
		(1.1185)	
Inflation		-0.0064*	
	-	[0.002]	-
		(-3.1904)	
Political Stability			0.0016*****
	-	-	[0.0002]
			(9.609)
Voice and Acct.			0.0003*******
	-	-	[0.0002]
			(1.7721)

, **, * represent significance at 1%, 5%, and 10% respectively. Numbers in Brackets are standard errors, and numbers in parenthesis are t-values.*

To ensure the robustness of the analysis, obtain efficient findings, and correct any biases within the results, we applied models (7); estimated with the use of BCFE. Models (8), (9), and (10), were analysed using PCSE. Robust findings obtained

through BCFE and PCSE are reported in Table 3.5. The models show that EP has no significant relationship with FP. However, all models confirm the positive link between the interaction variable COVEP and FP. In addition, the results of all robust models investigated display the recent pandemic's significant negative effect on FP. Control variable size is positively significant across all models, while leverage was found to be positively significant in model (7). Liquidity positively affects FP in models (8), (9), and (10). Model (9) confirms the negative influence of inflation and unemployment on FP, and model (10) verifies the positive effect of political stability and voice and accountability on FP.

Table 3.5: Robustness of Determinants of Financial Performance (ROA)

	BCFE	PCSE	PCSE	PCSE
	Base (7)	*Base (8)*	*Macro(9)*	*Inst. (10)*
C / L.ROA	-0.1082*** [0.0653] (-1.66)	-0.2122** [0.1075] (-1.97)	-0.0403 [0.1302] (-0.31)	-0.3516* [0.1183] (-2.97)
EP	0.0086 [0.0104] (0.83)	0.0022 [0.0033] (0.67)	0.0031 [0.003] (1.03)	0.0031 [0.003] (1.03)
Size	0.0368* [0.0115] (3.2)	0.0218** [0.009] (2.42)	0.0218** [0.0092] (2.37)	0.0218** [0.0092] (2.37)
Leverage	0.0130* [0.0021] (6.08)	0.0025 [0.0036] (0.69)	0.0026 [0.0036] (0.71)	0.0026 [0.0036] (0.71)
Liquidity	0.0018 [0.0043] (0.41)	0.0123* [0.0042] (2.96)	0.0124* [0.0043] (2.88)	0.0124* [0.0043] (2.88)
Cov	-0.0758* [0.0221] (-3.42)	-0.0560* [0.0115] (-4.88)	-0.0320** [0.0156] (-2.05)	-0.0524* [0.0127] (-4.12)
Covep	0.0113*** [0.0059] (1.9)	0.0102* [0.0034] (2.98)	0.0105* [0.0032] (3.25)	0.0105* [0.0032] (3.25)
Unemployment	-	-	-0.0335* [0.0107] (-3.13)	-
Inflation	-	-	-0.0151* [0.0084] (-1.81)	-
Political Stability	-	-	-	0.0032* [0.0012] (2.63)

Voice and Acct.				0.0030*
	-	-	-	[0.0011]
				(2.68)

, **, * represent significance at 1%, 5%, and 10% respectively. Numbers in Brackets are standard errors, and numbers in parenthesis are z-values.*

3.4.1 Discussion

The vast majority of studies in the literature show a significant relationship between a firm's EP and its FP. However, the interesting thing is that there is no consensus on whether this effect is positive or negative. This dichotomy can be observed in both empirical results and theoretical explanations. The relationship between the benefit and cost of an investment in EP determines the impact of this investment on FP. Studies claiming a positive relationship between these two variables receive support from NRBV and claim that EP affects companies positively in terms of reputation and productivity, which can lead to competitive advantage. In contrast, the other group bases its arguments on the neoclassical economic framework and argues that firms should focus solely on maximizing shareholder value.

The empirical literature on the type of relationship between EP and FP provides mixed findings. While a limited number of studies found a negative relationship between EP and FP (Lu and Taylor, 2016; Stoian and Gilman, 2017), the majority of researchers report a positive relationship (Abban and Hasan, 2021; Muhammad et al., 2015; Nishitani, Jannah, and Kaneko, 2017). Our first three models, where ROA represented profitability, suggest that EP positively influences FP for Chinese companies. However, robustness models (4) to (10) do not provide any significant coefficients regarding the EP - FP relationship, similar to some previous research (Lucato, Costa, and de Oliveira Neto, 2017; Venkatraman and Nayak, 2015).

Therefore, we can conclude that we have weak evidence to support the first hypothesis.

COVID-19 Pandemic had devastating effects on the overall economy. Previous studies emphasized the Pandemic's severe impact on companies' financials (Rababah et al., 2020). Similarly, all our models provide strong evidence of a significant negative impact of the COVID-19 Pandemic on the FP of Chinese firms. Some researchers examining the effect of EP on FP argue that investment in CSR activities should be postponed during financial distress (Karaibrahimoglu, 2010). Petitjean (2019) states that investors do not focus on EP during a crisis and are more interested in short-term survival. However, there are also opinions claiming that EP investments should be continued during crisis periods (Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014; Selvi, Wagner, and Türel, 2010). Our empirical findings show that FP became more responsive to EP during the COVID-19 Pandemic. This result supports Hypothesis 2 and states that higher EP could enhance the FP even under unfavorable economic conditions. This finding has a strong policy implication: investments in EP should continue in times of crisis as it is financially rewarding. Investment in CSR during economic turbulence can increase firms' ability to handle the impacts of the crisis, build a competitive advantage, develop a better relationship with stakeholders, and build greater confidence in the business (Branco and Rodrigues, 2008; Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014; Selvi, Wagner, and Türel, 2010). In addition, our study carries the literature in this field one step further by showing the accuracy of this view not only in financial crises but also under global Pandemic conditions such as COVID-19.

We used control variables to provide a more comprehensive picture of the nature of the EP-FP relationship. The coefficients of the control variables are significant and in line with the existing literature (Adegbite et al., 2019; Lahouel, Bruna, and Zaied, 2020; Zhang et al., 2020). A firm's funding sources and the size of its total assets might affect its financial and social performance (Udayasankar, 2008). Size has a positive link with FP implying that firms with more total assets achieve higher profits. This finding agrees with the previous literature stating that large companies earn more profits than small ones (Asimakopoulos, Samitas, and Papadogonas, 2009; Hirsch et al., 2014). Larger companies may leverage their bargaining power to lower the price of their supplies, increasing profitability by reducing their average cost. Similar to the previous literature (Berger and Di Patti, 2006; Boadi, Antavi and Lartey, 2013; Hirsch et al., 2014; Nunes, Viveiros, and Serrasqueiro, 2012), leverage and liquidity were found to influence FP significantly. Increased liquidity decreases insolvency risk and enhances firm performance (Pervan, Pervan, and Ćurak, 2019), while increased leverage increases resources available to invest, and when allocated efficiently, it maximizes profit.

We found a significant negative relationship between inflation and profitability. When unanticipated inflation occurs, businesses fail to adequately adjust prices, resulting in slower income growth relative to costs, and, eventually, a decline in profitability (Perry, 1992). Additionally, Inflation negatively affects a company's performance by altering taxes and borrowing costs (through higher interest rates) (Pervan, Pervan, and Ćurak, 2019). Demir (2009) and Pattitoni, Petracci, and Spisni (2014) reported a negative association between inflation and firm performance in Turkey and the European Union, respectively. Most of our models indicate

unemployment has a detrimental effect on FP. According to Okun (1963), an increase in the unemployment rate corresponds to a roughly three folds decrease in real output. Lower real output reduces the purchasing power of consumers and, ultimately, diminishes firm profitability. The negative impact of the unemployment rate on firms' profitability is also supported by Bekeris (2012) and Zouaghi, Sánchez-García, and Hirsch (2017). Our findings show that institutional quality boosts FP. This finding agrees with Phi et al., 2021 and Yasar, Paul, and Ward, 2011 who demonstrated that a rise in institutional quality may aid in the expansion of businesses.

3.5 Conclusion

This study empirically examines the link between EP and FP, which has been the focus of an ongoing discussion over the past three decades, by considering the effect of the COVID-19 Pandemic. Although growing evidence implies that increasing EP can be financially rewarding, this claim has been mainly tested in normal market conditions. Therefore, whether being green is rewarding financially during a crisis period is an important question for stakeholders. To tackle the aforementioned question, we analyzed 329 companies from the Chinese market for the 2017 – 2020 period. We used the environmental pillar score of ESG to represent EP and the interaction variable COVEP to proxy EP during the COVID-19 period. FP was measured using two main indicators: return on assets (ROA) and return on capital (ROC). Fixed-effects regression models were employed to test the hypotheses. In addition, both the BCFE and PCSE methods were used to endorse the findings.

The results from our main models demonstrated that higher investment in EP could stimulate the FP of Chinese firms. Besides, obtained findings reveal a strong, robust

association between EP and FP during financial turmoil. All ten models examined throughout the study unveil that increased EP could boost FP in times of economic distress. These findings suggest that firms should proceed to invest in sustainable projects to improve their EP. This will enhance their relationships with their stakeholders and result in superior FP amid an economic downturn. Large corporations with more funding sources have higher profitability than small firms. In addition, improved liquidity reduces the risk of insolvency and improves corporate performance. Macroeconomic variables inflation and unemployment hampers FP. However, enhanced institutional quality measures promote FP.

3.5.1 Policy Implications

Our findings propose noteworthy policy recommendations. First, a well-designed EP strategy has the potential to assist the firm in achieving a fair and ethical image, increasing the firm's legitimacy, decreasing stakeholders' financial cost sensitivity, and gaining a competitive advantage over other firms. Second, stakeholders' perceptions of a firm's EP influence their behavior and trust. Firms' ethical image is crucial in times of crisis; if a company is ethical and has an effective EP strategy, relationships with stakeholders will improve, which will be financially beneficial. Moreover, stakeholders' perceptions of a firm's ethical image influence their investment behavior and level of trust.

These findings imply that corporations should adopt specific EP programs that are relevant and meaningful to stakeholders, establish efficient communication with stakeholders, and raise awareness of their EP projects to improve brand loyalty and increase trust despite unfavorable market conditions. Managers need to pay closer attention to the stakeholders' sustainability expectations and design a proactive

environmental strategy to increase benefits. At this point, there are also duties falling on regulators. Chinese regulators should provide investors access to firms' ethical reports, EP projects and strategies, environmental ratings, third-party reports, and ratings. This would encourage businesses to implement environmental initiatives to improve their reputation. Furthermore, the government's costs of implementing and monitoring environmental laws could be reduced, since stakeholders would act as external auditors.

Besides, the information obtained from the control variables in our models could be a guide for both companies and policymakers. Firms' financial management should make efficient use of the financial resources available, handle day-to-day liquidity needs, and ensure the availability of an adequate level of liquid assets to boost profitability. In addition, firms should aim for higher growth rates in total assets, as this will increase their bargaining power and market share. Leverage can be used to invest in profitable projects, improving a company's financial performance. Moreover, to strengthen the financial performance of firms, the Chinese government should provide a healthy macroeconomic environment with low inflation and unemployment. To this aim, government officials should make the necessary arrangements for taxation of the private sector, subsidies to employers, and education/training support. In addition, monetary policy should be implemented in line with the stated objectives.

Chapter 4

ENVIRONMENTAL AND FINANCIAL PERFORMANCE UNDER COVID-19: US TOURISM SECTOR CASE

4.1 Introduction

The tourism and leisure sector is frequently praised for creating jobs, generating foreign currency, and boosting the Gross Domestic Product (GDP) of the nation's economy. The sector contributed 9.9 percent of all employment worldwide in 2017. (Scowsill, Turner, and Freiermuth, 2017). In addition, with more than 1.3 billion visitors visiting an international location each year, tourism is increasingly vital, providing 10.4% of the global GDP and 7% of all exports (UNWTO, 2018). However, despite being praised for its economic benefits, the industry is heavily criticized for its failure to conform to sustainable standards that are often recognized as "Sustainable Tourism." (Mullis, 2017). The tourism industry is responsible for 8% of global greenhouse gas emissions (Lenzen et al., 2018). However, estimates for the future are considerably greater, as by 2030, there will be an increase in the number of visitors visiting different parts of the world (UNWTO, 2019). Very few tourism businesses have incorporated the sustainability agenda into their organizational rules and procedures when assessing economic advantages against social and environmental consequences (Moscardo and Murphy, 2014). The rather delayed approach of tourism corporations and visitors to implementing sustainable tourism, along with the repercussions of "over-tourism," have led to either limitation on

visiting hours or the implementation of permanent or temporary prohibitions on tourist arrivals at several well-known locations (Oklevik et al., 2019).

Tourism is an industry that is heavily reliant on the natural environment (Curtin and Busby, 1999). Studies have stressed the significance of the environment in tourist activities and development (Butler, 2008). It has also expressed worry about the effects of tourism on natural resources (Shunnaq, Schwab, and Reid, 2008). The significance of tourism in creating or managing greenhouse emissions was highlighted during multiple United Nations Climate Change Conferences throughout the years. If global warming occurs as predicted, winter sports vacations, island vacations, and summer vacations would be severely impacted. It is almost certain that the geography of the tourist business will alter drastically as a result (UNFCCC, 2010).

Without a doubt, it is critical that all businesses include sustainable practices in their economic decisions, particularly the tourism industry, whose whole future is reliant on the preservation of natural balance, the culture, and the resources of the regions where the firms are located (Moscardo and Murphy, 2014). The urge for an increase in sustainable activities is higher now that firms are under immense pressure to lower their impact on the environment. The term "sustainable tourism" comes from the Brundtland Commission's 1987 report, which prescribes it as "growth that necessitates the needs of the present without jeopardizing future generations' ability to meet their own needs" (Brundtland, 1987).

Like most other sectors of the economy, the tourism sector has reacted to societal alternations by becoming increasingly aware of its part in society and its duties to the

community (Kasim and Ismail, 2012); and some enterprises in the industry have adopted and implemented sustainable programs. This has resulted in a significant shift for the tourism sector, especially as it is becoming a routine exercise for organizations, particularly for those firms that are traded to be assessed based on both environmental and financial performance by stakeholders. As a result, it has become the standard for corporations to adopt environmental efforts and to report their performance achieved through the pursuit of such programs (Berens, Riel, and Rekom, 2007). Although presently, there is no consensus on the link between corporations' environmental activities and financial performance, numerous corporations are implementing this standard as such regardless.

According to conventional economic theory, businesses should strive to comply with minimum, legally required environmental standards and should avoid investing resources, whether financial or otherwise, in environmental efforts (McCain, 1978). According to this viewpoint, voluntarily adopting environmental efforts hinders profitability since funds are shifted from investments that can be easily quantified to activities that are usually challenging to quantify. Additionally, these expenditures often do not result in quick and direct economic returns (Walley and Whitehead, 1994). One proponent of this viewpoint was the well-known economist Milton Friedman, who contended that businesses' social obligation is to raise profits since they have a fiduciary responsibility to improve shareholders' wealth. Further, according to Friedman (1970), businesses should solely participate in environmental activities if they result in measurable economic gains (Friedman, 1970). The current stakeholder economic approach, which contends that businesses should embody and improve environmental efforts as intrinsic factors of their corporate strategy, has

challenged this perspective in recent years and is gradually replacing it. In fact, a modern idea that it "pays to be green" - proposing that businesses with adequately implemented environmental efforts reap long-term cumulative economic benefits - has begun to oppose the economic view of minimal compliance (Clarkson et al., 2011).

According to the stakeholder theory, businesses ought to voluntarily support environmental initiatives as they enable the achievement of long-run financial benefits from the acquisition of competitive advantages and the creation of "green-goodwill" (Salop and Scheffman, 1987). This viewpoint has acquired a lot of traction in recent years, partly due to society's growing awareness of the detrimental effects of commercial activities on the environment. The need for companies to rethink their business strategy and management procedures and to include environmental activities as key strategic components have been highlighted by this awareness. Environmental initiatives are commercial methods created to lessen, alleviate, or even completely eradicate the harmful environmental externalities connected to the production and consumption of goods and services in the tourist sector (Jackson, 2010; Jackson, 2014).

On the other hand, scholars have been actively debating and disputing this relationship. Some studies have found positive associations (Allouche and Laroche, 2005; Berman, Wicks, and Jones, 1999; De Bakker, Groenewegen, and Den Hond, 2005; Jackson and Hua, 2009; Johnson and Greening, 1999; Margolis and Walsh, 2003; Orlitzky, Schmidt, and Rynes, 2003; Preston and O'Bannon, 1997; Raihi-Belkaoui, 1992; Roman, Hayibor, and Agle, 1999); whereas others have reported

contradictory findings (Bromiley and Marcus, 1989; Davidson and Worrell, 1990). Others, however, have seen no link between environmental activities and financial performance (Allouche and Laroche, 2005; Freedman and Jaggi, 1982). Therefore, we hypothesize the following:

H3: Environmental Performance influences the Financial Performance of US tourism firms.

Moreover, most of the literature examined the link between EP and FP under normal economic conditions. However, the dramatic economic consequences of the COVID-19 Pandemic on the tourism and leisure sector (Duro et al., 2021) have made the re-evaluation of the relationship between EP and FP in this sector during financial distress necessary. Thus, we hypothesize:

H4: Environmental Performance significantly impacts the Financial Performance of US tourism firms under COVID19 conditions.

This research aims to fill the existing gap in the literature by investigating the effect of EP on the FP of the US tourism and leisure sector in a non-linear framework under unfavorable economic conditions resulting from the COVID-19 Pandemic. Several control variables and methods are used to ensure the robustness of the results.

4.2 Data and Methodology

The suggested non-linear framework can be represented by a quadratic form of the regression model, where EP is represented by both linear and quadratic terms (Trumpp and Guenther, 2017). The two equations formulated using different proxies to represent FP are presented below:

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 EP^2{}_{it} + \beta_3 COV_{it} + \beta_4 COVEP_{it} + \sum_{n=1}^{m} \beta_n X_{n,it} + \varepsilon_{it} \quad (11)$$

$$ROC_{it} = \alpha + \beta_1 EP_{it} + \beta_2 EP^2{}_{it} + \beta_3 COV_{it} + \beta_4 COVEP_{it} + \sum_{n=1}^{m} \beta_n X_{n,it} + \varepsilon_{it} \quad (12)$$

Where return on assets (ROA) and return on capital (ROC) represent FP, the environmental pillar score of environmental, social, and governance (ESG) Refinitiv Eikon database was selected to measure EP, COV is a COVID-19 dummy variable taking the value of 1 in 2020 and 0 otherwise, COVEP is an interaction variable representing EP during COVID-19, X represents control variables including size (a logarithmic form of market value), liquidity (current ratio), and leverage (a logarithmic form of long-term debt), and ε is the error term. After filtration and exclusion of firms that did not have environmental performance scores, a panel of 115 US travel and leisure firms was utilized over the period 2017-2020. All data was gathered from the Refinitiv Eikon database.

To investigate models (11) and (12), we employed a fixed-effects regression model preventing any correlation between regressors and information related to fixed-effects. According to Baltagi (2008), effects specifications should be a model selection issue and not hypothesis testing. In addition, Hsiao and Sun (2000) argue that since the Hausman test does not have a clear alternative hypothesis, the classic sampling theory does not apply. The model is considered suitable due to the similar characteristics of tourism firms included in the analysis. Moreover, to validate our findings, we used both robust least squares (Robust LS) and panel-corrected standard errors (PCSE). Robust LS reduces the sensitivity of conventional regression methods to outliers and reflects the correct statistical relationship between the variables

(Yohai, 1987); while PCSE corrects for any autocorrelation, heteroscedasticity, and multicollinearity in the residuals (Wooldridge, 2003).

4.3 Empirical Findings

To confirm the lack of omitted variables and ensure non-linear specification of the model, equation (11) was tested using the Ramsey RESET test, and the results are reported in Table 4.1. Findings show that before adding the quadratic function of EP, the null hypothesis of no omitted variables can be rejected, indicating the existence of an omitted variable. However, when the quadratic term of EP is included in the equation, the Ramsey RESET test indicates the lack of omitted variables in the equation, as the null hypothesis of no omitted variables cannot be rejected. Table 4.2 presents the empirical findings of the fixed-effects regression, Robust LS, and PCSE for model (11). According to the obtained results, the linear form of EP significantly negatively affects FP. However, EP^2 is found to have a significant positive impact on FP. Thus, the relationship between FP and EP is best represented by a U-shaped pattern. This finding indicates that an increase in EP investments affects FP negatively until EP reaches a certain threshold value, but after this threshold is exceeded, the relationship becomes positive and higher investment in EP enhances FP. COV dummy variable has a significant negative relationship with FP as expected. In addition, the significant negative link between FP and the interaction variable COVEP points out that increased spending on EP during financial distress reduces FP of tourism firms. The models are all best fitted and have adequate R-squared values.

Table 4.1: Ramsey RESET Test Results

Before EP^2	Value	DF	Probability
T-statistic	2.087**	452	0.0374
F-statistic	4.356**	(1, 452)	0.0374
Likelihood ratio	4.412**	1	0.0357
After EP^2	Value	DF	Probability
T-statistic	1.501	451	0.134
F-statistic	2.254	(1, 451)	0.134
Likelihood ratio	2.293	1	0.130

, **, * represent significance at 1%, 5%, and 10% respectively.*

Table 4.2: Determinants of Financial Performance in US Tourism Firms (ROA)

ROA	Fixed-effects	Robust LS	PCSE
Constant	0.258337*	-0.297271*	-0.15055**
EP	-0.00188**	-0.001608*	-0.001544*
EP^2	0.000031*	0.000013*	0.000018*
Leverage	-0.019885*	-0.002528*	-0.0014620
Size	0.006047*	0.027842*	0.017588*
Liquidity	-0.0037***	-0.000014*	-0.0013949
Cov	-0.071766*	-0.082354*	-0.096818*
Covep	-0.000865*	-0.000414*	-0.000556*
R^2/Rw^2	0.812626	0.522845	0.6250
F-statistic/Rn^2/Wald	12.1147*	2770000*	1017.68*

, **, * represent significance at 1%, 5%, and 10% respectively. R^2 is the R-squared statistic for both Random effects and PCSE, Rw^2 is a better measure of fit in the case of Robust-LS (Renaud and Victoria-Feser, 2010). F-statistic, Rn^2, and Wald tests measure if the model is best fitted for fixed-effects, Robust-LS, and PCSE, respectively.*

Empirical findings for model (12) are presented in Table 4.2. Results for model 12 confirm the U-shaped association between EP and FP. This finding is in line with Tan et al., (2017) as well. Besides, Robust LS estimations signify that an increase in EP during the COVID-19 Pandemic can decrease the FP of the firms. All control variables have expected signs aligning with the theoretical literature.

Table 4.2: Determinants of Financial Performance in US Tourism Firms (ROC)

ROC	Fixed-effects	Robust LS	PCSE
Constant	1.587011**	-0.434074*	-0.30342**
EP	-0.00341**	-0.001834*	-0.00299**
EP^2	0.000079*	0.000015*	0.000038*
Leverage	-0.142483*	-0.006172*	-0.0103***
Size	0.027132*	0.042774*	0.037948*
Liquidity	0.0016200	-0.000409*	0.0027420
Cov	-0.156906*	-0.137027*	-0.232647*
Covep	-0.0006280	-0.000384*	-0.0001520
R^2/Rw^2	0.761178	0.446157	0.4067
F-statistic/Rn^2/Wald	8.90314*	1240000*	6568.35*

, **, * represent significance at 1%, 5%, and 10% respectively. R^2 is the R-squared statistic for both Random effects and PCSE, Rw^2 is a better measure of fit in the case of Robust-LS (Renaud and Victoria-Feser, 2010). F-statistic, $Rn^{2,}$ and Wald tests measure if the model is best fitted for fixed-effects, Robust-LS, and PCSE, respectively.*

4.4 Discussion

Our research confirms that investment in EP inhibits FP until EP reaches a certain level. This might be due to two reasons; the first one is related to the stakeholder theory, asserting that stakeholders' attention and reward depend on the level of firms' EP. When a firm reaches the level of EP that is compatible with stakeholders' expectations, it will reap financial gains through competitive advantage and goodwill. The second explanation is related to tourism companies' environmental strategies. If firms only react to new regulations and compliance requirements and try to minimize costs (reactive environmental strategies), this strategy may accrue more costs than benefits. However, the firms that use the development of dynamic capabilities and market leadership (proactive environmental strategies) improve competitive advantage and in turn, can have higher benefits than costs (Alonso-Almeida, Bremser, and Llach, 2015; Tan et al., 2017).

Our research also provides evidence of a negative association between EP and FP in times of COVID-19 economic downturn. Investment in corporate social responsibility, particularly in the tourism and leisure sector, should be postponed in situations of economic distress, which deteriorates firms' balance sheets. Under crisis conditions, an investment reduction in environmental and sustainable practices can reduce costs and maintain or even improve FP (Karaibrahimoglu, 2010). Results are in line with Petitjean (2019), who argued that investors are more focused on short-term survival than higher EP in crisis conditions.

4.5 Conclusion

This study utilizes fixed-effects, robust LS, and PCSE estimation methods to examine the non-linear relation between EP and FP in the tourism and leisure sector of the United States from 2017 to 2020. The fact that the sample used covers the period of COVID-19 allows us to present more comprehensive findings regarding our research question. We propose a U-shaped relationship between EP and FP, that is, the relationship is negative until EP reaches a certain threshold, and after that the effect becomes positive. In addition, the finding that the impact of EP on FP during the COVID-19 period was negative implies that a decrease in EP investments under adverse economic conditions would support FP.

Obtained findings lead us to several policy recommendations. The U-shaped relationship between EP and FP suggests that during adverse financial conditions, it is advisable to reduce investment in environmental performance and focus on the firm's survival. However, making progress in environmentally sound and sustainable business practices should remain the long-term strategic goal of companies. Managers need to pay closer attention to the stakeholders' sustainability expectations

and design a proactive environmental strategy to increase benefits. Moreover, governments should motivate touristic firms in environmental protection investing by designing a subsidy policy to enhance environmental performance.

Chapter 5

CONCLUDING REMARKS

The overwhelming majority of research in the body of literature demonstrates that a firm's EP and FP have a significant relationship. The intriguing fact relating to this relationship is that there is disagreement about whether this impact is positive or negative. Both empirical findings and theoretical justifications illustrate this contradiction. The relationship between benefit and cost determines the effect of an investment in EP on FP. According to studies that suggest a connection between these two factors, EP improves businesses in terms of production and reputation, which may provide them a competitive advantage. The opposing side, however, based its claims on the neoclassical economic framework and contends that businesses should concentrate only on maximizing the company's worth and shareholders value.

COVID-19 Pandemic had a catastrophic impact on the economy as a whole. Previous research stressed the Pandemic's devastating financial impact on businesses (Rababah et al., 2020). Some scholars studying the impact of EP on FP propose that during times of financial difficulty, investment in CSR initiatives should be postponed (Karaibrahimoglu, 2010). According to Petitjean (2019), amid a crisis, investors are less concerned about EP and more concerned with short-term survival. However, some argue that EP investments should be maintained during times of

crisis, as it provides a competitive advantage to the firm (Gallego-Álvarez, García-Sánchez, and da Silva Vieira, 2014; Selvi, Wagner, and Türel, 2010).

Given the uncertainty of the relationship between EP and FP, the catastrophic repercussions of COVID-19 on firm finances, and the scarcity of studies investigating the effect of the Pandemic on the relationship between EP and FP, the goal of this dissertation is to bridge the gap in the EP literature and establish a stronger thorough understanding of this relationship. This thesis empirically investigates the relationship between EP and FP while considering the effects of the COVID-19 Pandemic. While increasing evidence suggests boosting EP can be financially advantageous, this assertion has mostly been tested in normal market circumstances. As a result, whether being green is financially lucrative during an economic recession is an important element for stakeholders. To tackle the main research question, we considered two case studies.

In the first case study, we investigated the impact of EP, as represented by a firm's environment pillar score, on FP, as represented by return on assets, in the context of adverse economic conditions, the COVID-19 worldwide Pandemic. Fixed-effects regression was implemented to analyze a panel of 329 publicly traded Chinese enterprises from 2017 to 2020. To confirm the robustness of the results, firm-specific variables, macroeconomic factors, and institutional quality variables were included to the empirical models. Moreover, return on capital (ROE) is employed as a proxy for FP to verify the results. Furthermore, the Panel Corrected Standard Errors (PCSE) and Bootstrap Corrected Fixed-Effects (BCFE) methods were employed to account

for any multicollinearity, heteroscedasticity, and autocorrelation in the error term of the analysis (Wooldridge, 2003) and to further validate our findings.

Findings from the first case study showed that more investment in EP might stimulate Chinese enterprises' FP. Furthermore, the data show a significant, robust relationship between EP and FP during financial instability. In times of economic difficulty, all ten models analyzed in the study demonstrate that increasing EP can enhance FP. These findings imply that enterprises should continue to spend in the long-term, in effort to enhance their EP. This will improve their ties with their stakeholders and result in better FP during financial turbulence. Large enterprises with numerous financing sources are more profitable than small businesses. Furthermore, increased liquidity lowers the danger of insolvency and increases company performance. Inflation and unemployment are macroeconomic issues that impede FP. However, improved institutional quality indicators encourage FP.

In the second case study, we focused on the tourism sector of the United States by including a panel of 115 US travel and leisure firms over the period 2017-2020. In this case study, we investigated the effect of EP on the FP in a non-linear framework under unfavorable economic conditions resulting from the COVID-19 Pandemic. We employed a fixed-effects regression model to the tourism and leisure sector of the United States from 2017 to 2020. Fixed-effects regression prevents any correlation between regressors and information related to fixed-effects. Moreover, to validate our findings, we used both robust least squares (Robust LS) and panel-corrected standard errors (PCSE). Robust LS reduces the sensitivity of conventional regression methods to outliers and reflects the correct statistical relationship between the

variables. Furthermore, size, leverage, and liquidity were used as control variables to ensure robustness.

Findings of the second case study suggest a U-shaped relationship between EP and FP, in which the effect is negative until EP reaches a particular level and then becomes positive. Furthermore, findings also show a negative relationship between EP and FP during a COVID-19 economic turmoil. Investment in corporate social responsibility, particularly in the tourism and leisure sectors, should be delayed in times of economic adversity that take a toll on enterprises' financial sheets. Under crisis situations, reducing investment in environmental and sustainable practices can decrease costs while maintaining or even improving FP.

Our research suggests some significant policy recommendations. First, in both cases, achieving progress in environmentally sound and sustainable business practices should remain a company's long-term strategic aim. Managers must pay more attention to stakeholders' expectations for sustainability and develop a proactive environmental strategy to maximize benefits. A well-designed EP strategy might help the company establish a trustworthy reputation, boost its legitimacy, enhance stakeholders' financial cost tolerance, and gain an edge over rival companies.

How stakeholders view a company's EP affects their behavior and level of trust. In the case of China, in times of financial turbulence, a firm's ethical reputation is essential; if a company is ethical and has a successful EP strategy, relationships with stakeholders will improve, which will be profitable. Additionally, stakeholders' opinions of a company's ethical reputation affect their degree of trust and investment decisions. However, in the case of the tourism sector of the United States, The U-

shaped link between EP and FP shows that during difficult financial times, it is best to limit investment in environmental performance and focus on business survival.

Also, findings suggest that businesses should implement customized EP programs that are meaningful and relevant to stakeholders, create effective stakeholder communication, and enhance awareness of their EP projects to build brand loyalty and trust despite challenging market conditions. Moreover, Investors should be able to read companies' ethical reports, EP programs and plans, environmental ratings, and third-party reports and ratings. This would motivate companies to adopt environmental initiatives to enhance their reputation. Furthermore, governments should encourage firms in environmental protection investing by designing a subsidy policy to improve environmental performance.

This research explored the link between EP and FP during COVID-19. However, the data availability issue prevented us from comparing the firm performance before and after the Pandemic. Indeed, a longer-term study is required to make this comparison. Furthermore, this study assessed the importance of a better economic environment on firm performance by considering the effect of macroeconomic variables and institutional quality. Because the institutional quality and macroeconomic variables data are at the country level, the impact of these variables at the provincial level couldn't be revealed. More specific studies using data that describes the institutional quality and the economic environment at the municipal level could complement our findings.

The findings of this thesis lay the groundwork for future studies. This research focuses on two case studies, and the generalization of our results to other economies

could be the subject of future papers. In addition, examining the effects of EP on FP under unfavorable economic conditions in various industries would be intriguing.

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