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ESG Versus Corporate Financial Performance: Evidence from East Asian Firms in the Industrials Sector

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ABSTRACT

Given the unsettled ESG-CFP (Environmental, Social, Governance-Corporate Financial Performance) relationship and the scarcity of research covering emerging markets firms and the impact of each of the ESG pillars on CFP while considering the industry sector categories, this paper is pioneer in investigating this relationship for 108 East Asian listed firms operating in the Industrials sector for the period extending from 2011 to 2017. The overall ESG scores together with their components are used to study their impact on CFP while considering accounting (Return on Assets (ROA) and Return on Equity (ROE)), and market measures (Stock Return (RET) and Price-to-Book ratio (PB)). We used panel corrected standard errors to address contemporaneous cross-correlations related to the panel cross-sections. Our findings showed that the ESG-CFP relationship depends on the ESG pillars, the type of CFP measures, and the industry nature. No relationship was detected between ESG and CFP when proxied by accounting measures while a concave relationship with RET and a convex relationship with PB were revealed. When ESG pillars were considered separately, a convex relationship was obtained between Environmental and accounting performances and between Governance and PB while a concave relationship was depicted between Social and accounting performances. At the industry level, ESG negatively impacted the market performance in the Transportation industry compared to no impact in the Capital Goods industry. Consequently, ESG investment decisions in East Asian firms must be well calibrated and planned out to avoid undesired financial outcomes, while a shift in the mindset of managers toward a better ESG development is necessary to attain short-term gains and sustainable fiscal and social advantages.

Keywords: ESG, Panel Regression Model, Corporate Financial Performance, CSR, Industrials Sector, Market and Accounting Measures, East Asian Countries

JEL Classification: C33, G3, G23, M2

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1. Introduction

Over the past decade and following the global financial crisis, the effect of climate change, and the many corporate scandals that took place around the world, governments, consumers and investors became more demanding and required transparency regarding all matters impacting environmental, economic and social dimensions. Thus, many companies started to publish sustainability reports, also known as corporate social responsibility (CSR) or environmental, social and governance (ESG) reports. Thousands of empirical studies have investigated whether the integration of the ESG concept into firm's core processes rewarded shareholders, yielded higher profits, and/or enhanced its valuation. Results remain ambiguous, inconclusive, and sometimes contradictory. While most of the studies found a positive relationship between CSR, ESG integrations and corporate financial performance (CFP) (Chelawat & Trivedi, 2016), few others found contradictory results reporting a negative (SoYeon et al., 2016) or even a U-shape relationship (Barnett & Salomon, 2012; Ferrero-Ferrero et al., 2016; Garcia et al., 2017). On the other hand, the studies conducted by country, region or industry, found a mixed ESG-CFP relationship (Auer & Schuhmacher, 2016; Baird et al., 2012; Barnett & Salomon, 2012).

Although the ESG-CFP question was amply analyzed, the existing literature did not succeed to cover many of its important aspects. Specifically, not only the inclusion of developing countries firms in the sample was not enough (Naimy & Bou Zeidan, 2019; Nyeadi et al., 2018), but also the corresponding results were mixed and inconclusive (Güler et al., 2010; Zhao et al., 2018). Also, the corporate governance dimension was often disregarded (Galbreath, 2013) and only the overall ESG score's effect on the CFP of firms was addressed while ignoring the pillar levels. Another important deficit is observed when the generalization of results is done based on several industries taken all together at once (Soana, 2011) despite the fact that ESG characteristics can significantly vary across industries.

To this end, the purpose of this paper is to extend the scope of earlier studies by elucidating such relationship and fill the existing literature gap by identifying how ESG aspects can impact CFP while measuring and analyzing separately the impact of the ESG components - environmental, social and governance - on the CFP of eight emerging countries' businesses in East Asia and providing empirical evidence for 108 listed firms operating in the Industrials sector for the period 2011-2017 while integrating accounting and market-based financial variables.

The paper proceeds as follows. Section 2 presents the literature review. Section 3 explains the methodology and describes the data. Section 4 presents the findings while Section 5 concludes and discusses the results' implications.

2. Literature Review

Since the mid of the twentieth century, more than 2,000 empirical studies were conducted to test the relationship between CSR and CFP and this number has been at an increasing trend (Friede et al., 2015). Orlitzky et al., (2003) presented a meta-analysis of 52 studies testing the relationship between corporate social performance (CSP) and CFP. The results confirm the positive relationship with the strongest one for the social dimension. According to the authors, this relationship is strongly confirmed by using accounting rather than market-based measures. Horváthová (2010) conducted a meta-analysis covering 37 studies examining the relationship between environmental CSR and CFP where half of them found a positive relationship and the other half found either a negative or an insignificant impact. Positive effect of CSR on CFP was found in the United States, the United Kingdom (Salama, 2005), Canada (Mahoney & Roberts, 2007), Greece (Karagiorgos, 2010), and in several other European countries (Moneva & Ortas, 2010). In fact, the correlation was overall positive, however when ESG was dissected according to its three pillars, it was revealed that CFP was not equally affected by each pillar separately. Governance scores exhibited a significant positive effect on CFP while both environmental and social scores showed a minor association with CFP.

Fauzi & Idris (2009) found a positive relationship in manufacturing companies listed in Jakarta Stock Exchange (Indonesia) for the year 2007 supporting both slack resource theory and good management theory. In Malaysia, Ahamed et al. (2014) supported the positive relationship between accounting

measures (return on assets (ROA) and return on equity (ROE)), and CSP. CSP was measured by the content analysis of annual reports based on environment, community, marketplace, and workplace dimension. Achim et al. (2016) investigated the relationship between corporate governance and CFP of 76 companies listed on the Bucharest Stock Exchange (Romania) between 2001 and 2011. CFP was measured by market capitalization, price-to-book ratio (PB), Tobin's Q, ROA, and ROE. They found a positive and significant relationship for all CFP measures except for ROE. Chelawat & Trivedi (2016) used a panel data regression on listed companies in India and found that companies with good ESG have a better CFP. Variables used to proxy CFP were return on capital employed (ROCE) and Tobin's Q while control variables were debt-to-equity ratio as a proxy for risk and the logarithm of total asset as a proxy for size. Miralles-Quirós et al. (2018) focused on the firms listed on São Paulo Stock Exchange (Brazil) for the period 2010-2015. The regression models included leverage (debt to equity ratio) and firm size as control variables. They stated that Brazilian investors favoured CSR activities as a value-enhancing tool. Zhao et al. (2018) used a panel regression model to explore the nature of the relation between ESG application and financial outcomes in the largest listed Chinese power generation groups over 10 years. Leverage and size were chosen as control variables. Although the authors faced a setback since the ESG disclosure reports in China were not clear nor deep and their scope was not vast, the quantitative approach proved that the relationship was positive.

A negative relationship between CSR and CFP was detected by Bird et al. (2007), Fisher-Vanden & Thorburn (2011), and SoYeon et al. (2016). Similarly, Güler et al. (2010) conducted their study on listed companies on Istanbul Stock Exchange (ISE) and measured CFP using accounting ratios (ROA, ROE and return on sales (ROS)) while including three control variables, mainly size, risk, and R&D. Content analysis of annual reports was also implemented to assess CSR. They found no association between CSR and CFP. Han et al. (2016) examined the CSR-CFP relationship on firms listed in the Korea Composite Stock Price Index (KOSPI) for the period 2008-2014 and identified a negative U-curve relationship between the environmental pillar and CFP, a positive inverse U-curve between governance pillar and CFP and no link between the social pillar and CFP. Garcia et al. (2017) studied the relationship between ESG and CFP for 365 listed companies in sensitive industries operating in the BRICS nations between 2010 and 2012. By using a panel data analysis, they found an inverted U-curve relationship between ESG and systematic risk, suggesting the presence of an optimal level of ESG. Barnett & Salomon (2012) studied a panel of data constituted of 3,100 firms from 1991 to 2006 using ROA as a measure of CFP. After controlling for firm size, debt ratio, R&D ratio and advertising intensity, the results showed that high CSR led to high CFP up to a certain point where CSR costs start to outweigh financial benefits.

Ferrero-Ferrero et al. (2016) explored the effect of ESG on CFP for firms listed in the EU-15 countries from 2002 to 2011 by applying the Generalized Method of Moments (GMM). They used the economic performance score to measure CFP and ESG pillars dimensions while controlling for size, capital expenditure, sales growth rate and debt level. They concluded that ESG activities increased economic performance until a well-defined ESG threshold supporting the presence of a nonlinear relationship between ESG and CFP.

Baird et al. (2012) confirmed that the CSR-CFP relationship differs from industry to industry and even by dimension within each industry. Surprisingly, Auer & Schuhmacher (2016) found that the relationship between stock return (RET) and ESG performance depends on the region in which the firm operates. While this relationship is positive in Asia-Pacific region and in the United States, it is less evident in Europe.

Actually, the positive relationship between CSR and CFP is ambiguous, and the payoff from investing in CSR is not guaranteed. While a positive relationship indicates that the investment is likely to pay off, a negative relationship suggests that CSR is a waste of money. The opposing results may be due to several factors, such as the definition of the CSR concept (Ruf et al., 2001), the omission of some control variables (McWilliams & Siegel, 2000), the poor measurement of CFP (Davidson & Worrell, 1990), and the sampling techniques (van Beurden & Gössling, 2008). Another justification for such results is related to the fact that potential benefits of implementing ESG activities may not be

cultivated immediately and it may take time to materialize with a negative short-term effect and positive long-term effect.

The objective of this paper is therefore to investigate the relationship nature between ESG and CFP for the selected sample of firms using accounting, market, and mixed-based measures of CFP while testing the contribution of each of the ESG pillars to the ESG- CFP link.

3. Methodology and Data

The sample is limited to 108 East Asian companies operating in the Industrials sector and pertaining to three industry groups namely, Capital Goods, Commercial and Professional Services, and Transportation, and are listed on the Thomson Reuters Global Emerging Markets and the DFA Emerging Markets Core Equity Portfolio for the period spanning from 2011 to 2017. The corresponding number of observations is 7,326 and are retrieved from Reuters Database. The list of the selected companies and countries is shown in Appendix A.

We opted to exclude US and European firms from the sample given the significant differences with regard to the institutional context and company profiles in advanced economies. While advanced economies are characterized by reliable enforcement of liability laws and efficient dissemination of information, emerging countries have limited enforcement of liabilities and little dissemination of information. Also, their capital markets are characterized by vigilant monitoring and disclosure rules which is not the case in emerging countries.

3.1. Selection of variables

*3.1.1. Dependent variable*s

The dependent variable is CFP and is measured using accounting and market-based measures (McGuire et al., 1988; Nelling & Webb, 2009; Velte, 2017). While accounting measures are sensitive to company specific risk, market measures are sensitive to systematic risk (McGuire et al., 1988). We opted to use both types of CFP measures in order to produce a coherent picture of the hypothesized relationships with ESG. ROA and ROE are selected as the accounting measures, RET as the market measure, and PB as the mixed measure.

3.1.2. Independent variables

CSR and corporate governance are not to be treated separately when studying CFP (Galbreath, 2013; Saltaji, 2013). Consequently, one variable that can represent both CSR and corporate governance at once is ESG. To evaluate the impact of ESG on CFP, we use the one-year lagged variables of ESG (ESG_{t-1}), (Graves & Waddock, 1994; McWilliams & Siegel, 2001). On the other hand, and in order to test which of the three components of ESG better contributes to CFP, we use each component distinctly: Environmental score (ENV_{t-1}), Social score (SOC_{t-1}), and Governance score (GOV_{t-1}). We also use the square of the lagged independent variables (ESG^2_{t-1}, ENV^2_{t-1}, SOC^2_{t-1}, GOV^2_{t-1}) to control for the presence of a U-curve relationship between ESG and CFP and verify potential nonlinearity (Brammer et al., 2006; Han et al., 2016; Nollet et al., 2016).

3.1.3. Control variables

We use the control variables to include company specific characteristics as potential determinants of CFP when studying ESG-CFP link (Velte, 2017 and Waddock & Graves, 1997). These variables are Firm Size (SIZE) (+), Unsystematic Risk (LEV) (-), Industry (IND), the lagged dependent variables (ROA_{t-1}, ROE_{t-1}, RET_{t-1}, PB_{t1}), and R&D. In fact, large firms might have a better profitability due to economies of scale and scope and might be related to the extent of stakeholders' expectations and concerns regarding socially responsible activities (Hillman & Keim, 2001). The unsystematic risk also known as specific firm risk is measured by the leverage ratio and therefore, firms with high levels of ESG incur lower costs of debt thus increase their CFP (Orlitzky & Benjamin, 2001). Similarly to SIZE, IND is

identified as an important control variable (Griffin & Mahon, 1997) since different industries operate in different contexts and face different social and environmental concerns and stakeholders' reaction to firms' ESG is related to the industry by itself. To this end and since there are three industry groups within the Industrials sector that we selected, we created three dummy variables to eliminate the effects of Industry. To address the endogeneity problem and capture the potential impact that past CFP might affect current CFP, we included all the lagged dependent variable in the regressions (Han et al., 2016). Finally, we considered R&D expenses, also known as innovation, since they can have an impact on the ESG- CFP relationship (McWilliams & Siegel, 2000).

All the dependent, independent and control variables together with their definitions, acronyms, and expected impact (sign) on ESG are depicted in Table 1.

Table 1. Summary of the variables with their expected sign

	Symbol	Definition	Expected Sign
Dependent Variables (CFP Measures)	$ROA_{i\,t}$	Return on Assets at time t of company i is defined as Net Income divided by Average Total Assets	
	$ROE_{i\,t}$	Return on Equity at time t of company i is defined as Net Income divided by Average Common Equity	
	$RET_{i\,t}$	Stock Return at time t of company i is defined as the Yearly Price change plus Dividends	
	$PB_{i\,t}$	Price-to-Book Value per share at time t of company i is defined as Current Market Price divided by Current Book Value per share	
Independent Variables	$ESG_{i\,t-1}$	Overall ESG score at time t-1 of company i. It ranges from 0-100 where a higher value indicates a higher ESG score. This score is based on 178 company level metrics which are grouped into 10 categories before rolling them up into the three pillars of ESG (Refinitiv, 2020).	Negative
	$ENV_{i\,t-1}$	Environmental score at time t-1 of company i This pillar is derived from a predetermined weighted score on indicators related to: (i) emission, (ii) innovation, and (iii) resource use	Negative
	$SOC_{i\,t-1}$	Social score at time t-1 of company I This pillar is derived from a predetermined weighted score on indicators related to: (i) workforce, (ii) human rights, (iii) community, (iiii) product responsibility.	Negative
	$GOV_{i\,t-1}$	Corporate Governance score at time t-1 of company i This pillar is derived from a predetermined weighted score on indicators related to: (i) management (ii) shareholders (iii) CSR strategy.	Negative
	$ESG^2_{i\,t-1}$	Overall ESG score square at time t-1 of company i	Positive
	$ENV^2_{i\,t-1}$	Environmental score square at time t-1 of company i	Positive
	$SOC^2_{i\,t-1}$	Social score square at time t-1 of company i	Positive
	$GOV^2_{i\,t-1}$	Corporate Governance score square at time t-1 of company i	Positive
Control Variables	$SIZE_{i\,t-1}$	Logarithm of Total Assets at time t-1 of company i	Positive
	$LEV_{i\,t-1}$	Total Debt divided by Total Assets at time t-1 of company i	Negative
	$ROA_{i\,t-1}$	Return on Assets at time t-1 of company i defined as Net Income divided by Average Total Assets	Positive
	$ROE_{i\,t-1}$	Return on Equity at time t-1 of company i defined as Net Income divided by Average Common Equity	Positive
	$RET_{i\,t-1}$	Stock Return at time t-1 of company i	Positive
	$PB_{i\,t-1}$	Price-to-Book Value per Share at time t-1 of company i	Positive
	IND	Dummies for each industry group	

3.2. Regressions

The panel data is employed to study the ESG–CFP relationship using the fixed-effect estimation technique (Hausman Test). In each equation, CFP is represented either by using accounting or market-based measures (ROA and ROE), (RET) or both (PB). We apply a two-model approach. In the first one, we control for SIZE, LEV, and IND with one year lagged dependent variable and in Model 2, we add one year lagged squared independent variable to test for non-linearity. Also, our modelling process involves two phases. The first one corresponds to when the overall ESG score is considered (Models 1 & 2), and the second one when each of the three pillars of ESG are considered (Models 3 & 4).

Model 1:

$$CFP_{i,t} = \beta_0 + \beta_1 ESG_{i,t-1} + \beta_2 SIZE_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 CFP_{i,t-1} + \beta_5 IND_{i,t} + \varepsilon_{i,t} \quad (1)$$

Model 2:

$$CFP_{i,t} = \beta_0 + \beta_1 ESG_{i,t-1} + \beta_2 ESG^2_{i,t-1} + \beta_3 SIZE_{i,t-1} + \beta_4 LEV_{i,t-1} + \beta_5 CFP_{i,t-1} + \beta_6 IND_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where $CFP_{i,t}$ represents the dependent variable measured for company i, in period t, through the use of: (1) ROA, (2) ROE, (3) RET and (4) PB respectively. $\varepsilon_{i,t}$ is the error term or residual which represents part of the observed CFP that is not explained by the model.

Model 3:

$$CFP_{i,t} = \beta_0 + \beta_1 ENV_{i,t-1} + \beta_2 SOC_{i,t-1} + \beta_3 GOV_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 LEV_{i,t-1} + \beta_6 CFP_{i,t-1} + \beta_7 IND_{i,t} + \varepsilon_{i,t} \quad (3)$$

Model 4:

$$CFP_{i,t} = \beta_0 + \beta_1 ENV_{i,t-1} + \beta_2 SOC_{i,t-1} + \beta_3 GOV_{i,t-1} + \beta_4 ENV^2_{i,t-1} + \beta_5 SOC^2_{i,t-1} + \beta_6 GOV^2_{i,t-1} + \beta_7 SIZE_{i,t-1} + \beta_8 LEV_{i,t-1} + \beta_9 CFP_{i,t-1} + \beta_{10} IND_{i,t} + \varepsilon_{i,t} \quad (4)$$

In addition to the above, we extended the model to test for each industry separately: on the one hand, the overall impact of ESG score on CFP (Models 1&2), and the impact of each of the ESG pillars on CFP (Models 3&4) on the other hand. We used Stata software to perform our models.

3.3. Data

A summary of the descriptive statistics related to the independent variables and the dependent and control variables is portrayed in Appendix B and Appendix C respectively. No sign of multicollinearity was detected between the variables as reflected in Appendix D (Pearson Correlation Matrix) however, the highest correlation coefficients (above 0.7) are revealed between ESG and its two pillars (ENV and SOC), which indicates that they will not be included together in one regression. Also, all variables are stationary since based on the Augmented Dicky Fuller (ADF) test, the p-values are below 0.05, thus rejecting the null hypothesis. Serial correlation was detected as confirmed by Wooldridge test implemented to each of the regression equations (Appendix E), however, serial correlation is considered a problem only for large time dimensions' panel data spanning for periods between 20 to 30 years (Brooks, 2008), which is not the case of this study, although it will be dealt with in the regression models. All the regression equations are estimated using the fixed effect estimator (FE) approach (p-value is zero) as confirmed by Hausman Test (Appendix F). Heteroscedasticity was also detected by Wald test (all p-values =0). To correct for the presence of heteroscedasticity, we checked the variables' cross-sectional dependency using Pesaran test since the time-series datasets are in the form of small T and large N (Appendix G). It was confirmed that cross-sectional dependency exists within all models, except in Models 3 and 4 when RET is used as the dependent variable. Accordingly, Driscoll-Kray standard errors is applied to correct for heteroscedasticity (Hoechle, 2007), while the fixed effect with robust and clustered standard errors - known as Huber/White estimators - is used for Models 3 and 4.

4. Findings

FE model is estimated for four independent variables, namely ROA, ROE, RET, and PB (Appendix H -Tables 1, 2, 3, and 4). A summary of the relationship structure by dependent variables is done in Table 2.

Table 2. Summary of relationships by dependent variable by pillar

Relationship Tested	Mean of Pillar	ROA	ROE	RET	PB
ESG → CFP	41.54	No	No	Concave (50.25)	Convex (59.63)
ENV→ CFP	45.42	Convex (45.71)	Convex (46.89)	No	No
SOC→ CFP	41.31	Concave (39.37)	Concave (41.18)	Positive	No
GOV→ CFP	47.78	Negative	No	Positive	Convex (55.35)

Note: Numbers in parentheses represent the turning points for a non-linear relationship and are equal to (-) coefficient of the linear term)/2*coefficient of the squared term.

4.1. The impact of overall ESG on CFP

Results revealed no relationship between ESG and CFP when proxied by accounting measures ROA (Appendix H- Table 1) and ROE (Appendix H- Table 2), a concave relationship between ESG and RET (Appendix H- Table 3) and a convex relationship between ESG and PB (Appendix H- Table 4). The inversely U-shape (concave) of RET with ESG contradicts our expectation. Thus, investment in ESG is perceived as a value creating by the financial markets at a lower level of investment, but it becomes a destroying activity as the level of ESG investment increases at the second stage, implying that the costs of being socially responsible are greater than the benefits the company can get. The results in the short run are consistent with the value enhancing and stakeholder theories, while the negative results obtained in the long run are confirming the trade-off theory. The stopping point is 50.25, which is above the average of 41.54, suggesting that improving ESG in this sector is still helpful in improving RET. The convex U-shape relationship between ESG and PB suggests that ESG investment must increase beyond a certain level to have a positive impact on this ratio, thus the potential benefits of implementing ESG activities may not be cultivated immediately. The threshold level of ESG score is 59.63, which is far greater than the current average of 41.54 in this sector, which means that firms are not currently benefiting from ESG investment. An alternative supporting argument is that ESG investment is likely to be associated with capital investment (sunk costs) resulting in economy of scale. Given this argument, higher investment in ESG is needed to generate higher financial returns for the firm as mentioned by McWilliams & Siegel (2001). The control variable SIZE is found to have a negative impact on CFP in all regressions, while LEV is not significant in all regressions and models.

4.2. The impact of ENV on CFP

ENV only affects accounting performance with a convex relationship, illustrating the presence of a U-shape relationship. More specifically, while a negative relation between ENV and accounting performance may occur at an early stage of ENV, there is a turning point after which the relationship becomes positive. Our results complement those of Fisher-Vanden & Thorburn (2011) who found a negative relationship and those of Nollet et al.(2016) who found a U-Shape relationship. The threshold level is between 45.71 and 46.89, which is slightly higher than the current ENV score of 45.42. This recommends that improving environmental responsibility is a procedure that takes a long time to reap its benefits. Thus, companies operating in Industrials sector need to continue improving their ENV efforts. In fact, while the market understands the need to spend resources on complying with environmental regulations, it does not reward for expenses that go beyond this objective. Firms should be rational enough to know how much resources they need to devote to ENV to improve their performances and enhance stakeholders' expectations. In the short run, our results partially revealed a negative influence from environmental proactivity on CFP which corroborates the findings of

González-Benito & González-Benito (2005). Our results support both the shareholder expense theory and the trade-off theory. In the long run, the relationships are supportive of the stakeholder theory and the value enhancing theory which is consistent with the findings of Dobre et al. (2015) and Miroshnychenko et al. (2017).

4.3. The impact of SOC on CFP

The SOC pillar displayed a concave relationship for accounting measures and a positive relationship for market measure. This suggests that a better SOC is associated with a better short run CFP, while an augmented SOC is associated with a lower CFP in the long run. Our results support the law of diminishing marginal returns known in economics. As the input has a positive effect on the output, its effect starts to decrease as the input increases. Similarly, when SOC increases, its marginal contribution to the accounting performance starts to decrease between the scores of 39.37 for ROA and 41.18 for ROE, thus when the level of SOC investment exceeds the threshold (its average is currently 41.31), it is perceived as a negative news and we may conclude that improving SOC investments is not helpful to improve accounting performance for emerging firms operating in the Industrials sector. In other words, when companies are using their resources for non-profit social activities, they will have less resources in the long run that could have been used to invest in positive net present value projects, which will put the firm at a disadvantage (Balabanis et al., 1998) supporting the tradeoff theory. Consequently, in the long run, the costs will outweigh the benefits, explaining the inverse relationship with CFP. Also, our results showed the insignificant impact of SOC on PB. This could be attributed to the fact that, in emerging countries, social activities are not as attractive to consumers as goods' prices, a conclusion consistent with the findings of Nyeadi et al. (2018).

4.4. The impact of GOV on CFP

Our results show that GOV has no impact on accounting measures, while it has a positive effect on RET and a U-shaped relationship with PB, which means that only an augmented corporate governance compliance is associated with positive long- term financial results. Since the threshold level for PB is 55.35, while the average GOV is 47.78, this suggests that improving GOV will ultimately pay off RET but might need time to enhance PB. The U-shaped supports the work of Xie et al. (2019) who found that the GOV score has a negative impact on corporate efficiency of 6,631 companies from 74 countries at a lower governance level while it has a stronger positive relationship at the upper level. The quadratic relationship with CFP is also consistent with Nollet et al. (2016) findings.

4.5. The impact of innovation

Because many firms in our sample did not report R&D expenditures, and to avoid running the regression on a different sample, we followed previous literature (Barnett & Salomon, 2012) in assuming that unreported expenditures were immaterial. Therefore, we assign zero values to those firms whose R&D observations were missing, and we controlled the presence of R&D by a dummy variable. This dummy variable takes the value of 1 if R&D expenses are missing, zero otherwise. Table 3 compares ESG-CFP link before and after controlling for R&D and the last two columns report the impact of R&D dummy and R&D ratio (defined as the R&D expenses to total sales) on CFP. The objective is to assess whether adding R&D into the model will affect the ESG-CFP relationship.

Table 3 shows that while the impact of R&D ratio on CFP depends on CFP measures, controlling for R&D did not change most of the relationships previously identified. The impact of SOC on accounting performance lost its significance when R&D was controlled for, while ENV-CFP link changes from being insignificant to a non-linear convex relationship when CFP is measured by PB. Our results partially support those of Hull & Rothenberg (2008) who found that the CSR–CFP relationship is significant even if the organizational innovation rate and the extent of product differentiation are considered, and those of Andrade Rocha et al. (2019) who suggested that the more efficient firms achieve more profits from R&D investment, and contradict those of McWilliams and Siegel (2001) who concluded that when

R&D intensity appears, CSR lost its impact on profitability. On the other hand, the negative relationship between R&D and accounting performance indicates that when a firm spends resources on R&D activities, its short-term performance is negatively affected.

Table 3. ESG-CFP link before and after controlling R&D by dependent variable

Sector	CFP	Model and Relationship (before R&D)	Impact of ESG after introducing RD	Impact of RD (Dummy)	Impact of amount of RD (RD ratio=RD Expenses/Total Sales)
ESG	ROA	Models 1 and 2 Not significant	SAME	Not significant	Negative*
	ROE	Models 1 and 2 Not significant	SAME	Not significant	Negative***
	RET	Model 2- Concave	SAME	Not significant	Not significant
	PB	Model 2- Convex	Linear, Negative	Not significant	Not significant
ENV	ROA	Model 2-Convex	SAME	Not Significant	Negative**
	ROE	Model 2-Convex	SAME	Not Significant	Negative***
	RET	Model 1 and 2-Not significant	SAME	Not significant	Not significant
	PB	Model 1 and 2-Not significant	Convex	Not significant	Not significant
SOC	ROA	Model 2-Concave	Not significant	Not Significant	Negative**
	ROE	Model 2-Concave	Not significant	Not Significant	Negative***
	RET	Model 1-Positive	SAME	Not significant	Not significant
	PB	Model 1 and 2-Not significant	SAME	Not significant	Not significant
GOV	ROA	Model 1-Negative	SAME	Not Significant	Negative*
	ROE	Model 1- Not significant	Negative*	Not Significant	Negative***
	RET	Model 2-Positive	SAME	Not significant	Not significant
	PB	Model 2-Convex	SAME	Not significant	Not significant

*, **, *** significant at 10%, 5%, and 1% respectively

4.6. The impact of industry

Given that Commercial and Professional Services industry has a small number of observation (N=12, with only 3 companies), we dropped this industry out from the sample. Table 4 summarizes the findings by industry and Appendix I (Tables 1 through 8) reports all the regression results for Capital Goods and Transportation industries. Our results show that the ESG-CFP link is not the same for both industries which is consistent with Baird et al. (2012) findings. While ESG has no impact on ROA and RET in the Capital Goods industry, it has a concave relationship with ROA and a negative relationship with RET in the Transportation industry.

Although both industries belong to the same sector, the impact of each pillar within each industry on CFP is not the same. While there is a convex relationship between ENV and ROA in both industries, the threshold level varies intensely. The low threshold level for Capital Goods industry indicates that improving environmental responsibility pays off faster compared to Transportation industry. On the other hand, SOC-CFP link is the same for both industries, except for PB where the threshold obtained varies significantly. While a small increase in SOC beyond 23.41 may lead to a detrimental effect on accounting performance in the Capital Goods industry, SOC should increase beyond 69.67 in the Transportation Industry. Given that the current SOC averages are 39.06 and 47.17 for Capital Goods and Transportation industries respectively (Table 4), firms operating in the former are negatively

affected by SOC and positively affected in the latter. Therefore, while reducing SOC efforts is needed in Capital Goods industry, refining efforts may be helpful to improve ROA and ROE in the Transportation industry. Finally, we found that GOV has a concave relationship in the Transportation industry, indicating that a high governance compliance does not translate into a better CFP and that a small, yet effectively independent board, is a step toward long term positive financial results. Finally, our results show that GOV does not have any significant impact on accounting performance in the Capital Goods industry.

Table 4. Comparison of results by sector

Pillar	CFP	Industrials Sector		Capital Goods Industry		Transportation Industry	
		Relation	Mean	Relation	Mean	Relation	Mean
ESG	ROA	No Relation	41.54	No Relation	40.31	Concave*** (41.31)	44.64
	ROE	No Relation		No Relation		No Relation	
	RET	Concave (50.25)		No Relation		Negative*	
	PB	Convex (59.63)		Convex*** (52.82)		Negative***	
ENV	ROA	Convex (45.71)	45.42	Convex*** (42.39)	44.74	Convex** (67.81)	46.42
	ROE	Convex (46.89)		Convex*** (72.50)		Negative* for low level	
	RET	No Relation		Positive* at low level		Convex** (53.46)	
	PB	No Relation		No Relation		No Relation	
SOC	ROA	Concave (39.37)	41.31	Concave** (23.41)	39.06	Concave*** (69.67)	47.17
	ROE	Concave (41.18)		Concave**(28.19)		Concave*** (76.69)	
	RET	Positive		Positive***		Positive**	
	PB	No Relation		Positive*		No Relation	
GOV	ROA	Negative	47.78	No Relation	48.13	Concave***(35.87)	48.40
	ROE	No Relation		No Relation		Concave*** (48.51)	
	RET	Positive		Convex*** (55.68)		Negative* at low level	
	PB	Convex (55.35)		Convex*** (51.66)		No Relation	

*, **, *** significant at 10%, 5%, and 1% respectively

5. Discussions and Conclusion

The impact of ESG on CFP is still changeable. Undoubtedly, this paper succeeded to contribute to the existing literature in determining the ESG-CFP relationship for East Asian companies operating in the Industrials sector. It was shown that ENV, SOC, and GOV have different effect on CFP measures for the overall Industrials sector. Similarly, we found that ESG has a convex relationship in one industry and a concave one in the other. Also, its impact on CFP varied with CFP measures with, always, a nonlinear relationship (either concave or convex).

Therefore, ESG implementation in East Asian firms must be carefully planned out and implemented. In other words, investment allocation decisions in ESG pillars must be well calibrated to the financial status of each firm and vigorously controlled to avoid undesirable fallouts. On the other hand, a shift in the mindset of managers toward a better ESG development is necessary not only to attain immediate or short-term gains but also for a long-term sustainable fiscal advantage. The costs of social activities, in the long run, are greater than the benefits the company can obtain in terms of accounting numbers. The inverse U-shape relationship (concave) suggests that the level of investment in SOC must be well thought of. Although being socially responsible pays off, firms must always rationalize the level of SOC they are investing in, in order to be able to detect when such resources are no longer enhancing shareholders' wealth. Also, and based on the U-shape relationships that we found, the level of GOV

implementation seems imperative. Although strategizing and implementing a corporate governance plan might not enhance returns immediately, East Asian firms should continue to morally adopt corporate governance for a sustainable development and long- term financial position enhancement.

Our mixed results regarding ESG-CFP relationship may be attributed to the behaviour of the emerging markets' consumers who are price oriented rather than sustainability oriented, to the managers' know-how who tend to resist changes related to new managing ESG investment techniques and who are invoked by the trade-off and negative synergy theories, and to the nature of ESG disclosures that are voluntary rather than mandatory in emerging countries, which may consequently lead to ambiguous non-financial data reporting.

Although our results are statistically sound, future investigations are recommended where not only ESG scores would be considered but also actual CSR actions that firms have engaged in with a larger sample, a diversified portfolio of industries split into sub-industries while including more control variables such as systematic risk or degree of competition. Another suggested research path may encompass the implementation of non-parametric panel data models to account for non-linearity.

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Appendices

Appendix A. List of companies with the country of Exchange

Company Name	Country of Exchange
Aboitiz Equity Ventures Inc	Philippines
Adani Enterprises Ltd	India
Air China Ltd	Hong Kong
Airasia Group Bhd	Malaysia
Airports of Thailand PCL	Thailand
Airtac International Group	Taiwan
Alliance Global Group Inc	Philippines
AviChina Industry & Technology Co Ltd	Hong Kong
Beijing Capital International Airport Co Ltd	Hong Kong
Berjaya Corporation Bhd	Malaysia
Bharat Heavy Electricals Ltd	India
BTS Group Holdings PCL	Thailand
China Airlines Ltd	Taiwan
China Communications Construction Co Ltd	Hong Kong
China Conch Venture Holdings Ltd	Hong Kong
China High Speed Transmission Equipment Group Co Ltd	Hong Kong
China International Marine Containers Group Co Ltd	Hong Kong
China Merchants Port Holdings Co Ltd	Hong Kong
China Railway Construction Corp Ltd	Hong Kong
China Railway Group Ltd	Hong Kong
China Southern Airlines Co Ltd	Hong Kong
China State Construction International Holdings Ltd	Hong Kong
CJ Corp	Korea; Republic (S. Korea)
COSCO SHIPPING Development Co Ltd	Hong Kong
COSCO Shipping Energy Transportation Co Ltd	Hong Kong
COSCO SHIPPING Holdings Co Ltd	Hong Kong
COSCO SHIPPING Ports Ltd	Hong Kong
CRRC Corp Ltd	Hong Kong
CTCI Corp	Taiwan
Daelim Industrial Co Ltd	Korea; Republic (S. Korea)
Daewoo Engineering & Construction Co Ltd	Korea; Republic (S. Korea)
Daewoo Shipbuilding & Marine Engineering Co Ltd	Korea; Republic (S. Korea)
DMCI Holdings Inc	Philippines
Dongfang Electric Corp Ltd	Hong Kong
Doosan Co Ltd	Korea; Republic (S. Korea)
Doosan Heavy Industries & Construction Co Ltd	Korea; Republic (S. Korea)
Doosan Infracore Co Ltd	Korea; Republic (S. Korea)
Eva Airways Corp	Taiwan

Evergreen Marine Corp Taiwan Ltd	Taiwan
Far Eastern New Century Corp	Taiwan
Fosun International Ltd	Hong Kong
Gamuda Bhd	Malaysia
GMR Infrastructure Ltd	India
GS Engineering & Construction Corp	Korea; Republic (S. Korea)
Haitian International Holdings Ltd	Hong Kong
Hanjin Heavy Industries & Construction Co Ltd	Korea; Republic (S. Korea)
Hanwha AeroSpace Co Ltd	Korea; Republic (S. Korea)
Hanwha Corp	Korea; Republic (S. Korea)
HDC Holdings Co Ltd	Korea; Republic (S. Korea)
Hiwin Technologies Corp	Taiwan
Hyosung Corp	Korea; Republic (S. Korea)
Hyundai Engineering & Construction Co Ltd	Korea; Republic (S. Korea)
Hyundai Glovis Co Ltd	Korea; Republic (S. Korea)
Hyundai Heavy Industries Co Ltd	Korea; Republic (S. Korea)
Hyundai Merchant Marine Co Ltd	Korea; Republic (S. Korea)
Hyundai Mipo Dockyard Co Ltd	Korea; Republic (S. Korea)
IJM Corporation Bhd	Malaysia
International Container Terminal Services Inc	Philippines
Jaiprakash Associates Ltd	India
Jasa Marga (Persero) Tbk PT	Indonesia
JG Summit Holdings Inc	Philippines
Jiangsu Expressway Co Ltd	Hong Kong
JVM Co Ltd	Korea; Republic (S. Korea)
KCC Corp	Korea; Republic (S. Korea)
KEPCO Plant Service & Engineering Co Ltd	Korea; Republic (S. Korea)
Korea Aerospace Industries Ltd	Korea; Republic (S. Korea)
Korean Air Lines Co Ltd	Korea; Republic (S. Korea)
Larsen & Toubro Ltd	India
LG Corp	Korea; Republic (S. Korea)
Lonking Holdings Ltd	Hong Kong
LS Corp	Korea; Republic (S. Korea)
LS Industrial Systems Co Ltd	Korea; Republic (S. Korea)
Malaysia Airports Holdings Bhd	Malaysia
Metallurgical Corporation of China Ltd	Hong Kong
Misc Bhd	Malaysia
MMC Corporation Bhd	Malaysia
Pan Ocean Co Ltd	Korea; Republic (S. Korea)
Posco Daewoo Corp	Korea; Republic (S. Korea)
S1 Corp	Korea; Republic (S. Korea)

Samsung C&T Corp	Korea; Republic (S. Korea)
Samsung Engineering Co Ltd	Korea; Republic (S. Korea)
Samsung Heavy Industries Co Ltd	Korea; Republic (S. Korea)
San Miguel Corp	Philippines
Sany Heavy Equipment International Holdings Company Ltd	Hong Kong
Shanghai Electric Group Co Ltd	Hong Kong
Shanghai Industrial Holdings Ltd	Hong Kong
Siemens Ltd	India
Sime Darby Bhd	Malaysia
Sinopec Engineering Group Co Ltd	Hong Kong
Sinotrans Ltd	Hong Kong
Sinotruk Hong Kong Ltd	Hong Kong
SK Holdings Co Ltd	Korea; Republic (S. Korea)
SK Networks Co Ltd	Korea; Republic (S. Korea)
SM Investments Corp	Philippines
Taiwan Glass Ind Corp	Taiwan
TECO Electric & Machinery Co Ltd	Taiwan
Thai Airways International PCL	Thailand
U-Ming Marine Transport Corp	Taiwan
Walsin Lihwa Corp	Taiwan
Wan Hai Lines Ltd	Taiwan
Weichai Power Co Ltd	Hong Kong
Westports Holdings Bhd	Malaysia
Yang Ming Marine Transport Corp	Taiwan
Zhejiang Expressway Co Ltd	Hong Kong
Zhuzhou CRRC Times Electric Co Ltd	Hong Kong
Zoomlion Heavy Industry Science and Technology Co Ltd	Hong Kong

Appendix B. Descriptive statistics for independent variables

		ESG		ENV		SOC		GOV	
Year	**N**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
2011	73	37.754521	15.91	37.146027	20.29	32.830959	20.02	45.407945	21.32
2012	98	39.436837	16.73	40.158061	22.51	37.393061	22.41	47.799082	21.47
2013	103	39.071262	16.26	41.241359	22.34	37.624369	22.46	48.16301	22.54
2014	108	38.983333	15.24	42.410926	22.31	40.393056	22.78	47.617407	21.56
2015	105	43.704762	17.76	47.453238	21.65	42.393143	23.67	49.923429	21.96
2016	107	43.859626	17.47	53.091682	20.59	47.606822	24.12	47.73514	20.22
2017	72	49.035	17.29	57.132083	19.64	50.927778	23.07	46.787917	21.37
Overall	**666**	**41.54343**	**16.97**	**45.423874**	**22.32**	**41.307733**	**23.32**	**47.779144**	**21.45**
Capital Goods	**459**	**40.31479**	**17.84**	**44.74338**	**23.07**	**39.06322**	**22.65**	**48.12852**	**21.96**
Transportation	**192**	**44.64151**	**13.98**	**46.41818**	**20.49**	**47.17005**	**23.96**	**48.40203**	**19.58**

Appendix C. Descriptive statistics for dependent and control variables

Variables	Mean	SD	Min	Max	N
Panel A: CFP					
ROA (%)	3.552285	4.718471	-12.2158	25.55664	666
ROE (%)	7.018712	14.27877	-97.78508	95.43684	666
RET (%)	25.39723	23.51469	.0017066	167.3557	592
PB	1.58254	1.343817	.0903457	9.424688	613
Panel B: Control Variables					
SIZE	22.74234	1.134914	18.7439	25.7354	666
LEV	.3177307	.1734772	0	.7801498	666
R&D (%)	1.448534	1.589565	.0017579	7.823741	278

Appendix D. Pearson correlation of explanatory variables

	ESG	ENV	SOC	GOV	SIZE	LEV
ESG	1.0000					
ENV	0.7055	1.0000				
SOC	0.8075	0.6979	1.0000			
GOV	0.5544	0.1625	0.2913	1.0000		
SIZE	0.1481	0.1819	0.1356	0.2853	1.0000	
LEV	0.1297	0.2032	0.1876	-0.0571	0.1827	1.0000

Appendix E. Wooldridge autocorrelation test for all regression equations

	ROA		ROE		RET		PB	
	F	**P-value**	**F**	**P-value**	**F**	**P-value**	**F**	**P-value**
Model 1	55.225	0.000	29..250	0.000	34.521	0.000	11.145	0.0012
Model 2	55.130	0.000	29.192	0.000	34.721	0.000	11.210	0.0012
Model 3	54.214	0.000	29.742	0.000	34.920	0.000	11.480	0.0010
Model 4	51.511	0.000	32.022	0.000	35.600	0.000	11.677	0.0009

*All regressions include industry dummies

Appendix F. Hausman test summary

	ROA		ROE		RET		PB	
	Chi2	**P-value**	**Chi2**	**P-value**	**Hausman**	**P-value**	**Hausman**	**P-value**
Model 1	330.76	0.000	494.02	0.000	99.82	0.000	310.41	0.000
Model 2	316.85	0.000	442.57	0.000	100.23	0.000	311.92	0.000
Model 3	330.97	0.000	507.67	0.000	113.94	0.000	307.45	0.000
Model 4	323.53	0.000	473.11	0.000	106.01	0.000	312.65	0.000

Appendix G. Pesaran test summary

	ROA		ROE		RET		PB	
	Pesaran	**P-value**	**Pesaran**	**P-value**	**Pesaran**	**P-value**	**Pesaran**	**P-value**
Model 1	9.780	0.000	9.736	0.000	9.340	0.000	14.903	0.000
Model 2	10.031	0.000	10.059	0.000	11.021	0.000	14.624	0.000
Model 3	9.311	0.000	10.024	0.000	0.704	0.482	17.093	0.000
Model 4	11.928	0.000	12.632	0.000	0.785	0.433	17.861	0.000

Appendix H Table 1. Results for ESG vs ROA regression

	Model 1		Model 2		Model 3		Model 4	
	Coeff	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**
$ESG_{i,t-1}$	-.015469	0.316	0.010386	0.699				
$ESG^2_{i,t-1}$			-.00029	0.489				
ESG Pillar								
$ENV_{i,t-1}$					.0039992	0.467	-.098943	0.000 ***
$SOC_{i,t-1}$					-.011311	0.233	.0623712	0.000***
$GOV_{i,t-1}$					-.008626	0.019**	-.001333	0.963
$ENV^2_{i,t-1}$							.0010823	0.000***
$SOC^2_{i,t-1}$							-.000792	0.000***
$GOV^2_{i,t-1}$							-.000065	0.834
Control Variables								
$ROA_{i,t-1}$	.0758624	0.180	.0762158	0.173	.07528	0.175	.0756829	0.129
$SIZE_{i,t-1}$	-1.92194	0.000***	-1.91029	0.000***	-1.92471	0.000***	-1.85107	0.000***
$LEV_{i,t-1}$	-4.27117	0.179	-4.31654	0.160	-4.44022	0.147	-4.39404	0.144
Industry Dummies								
Industry Dummies	Included		Included		Included		Included	
Cons	48.66647	0.000***	47.92351	0.000***	48.8454	0.000***	47.62757	0.000***
F-Statistic	90.57		76.90		109.15		80.63	
Nb. Obs	554		554		554		554	

Source: Author's Own calculation

Notes: This table provides the results of Driscoll-Kray standard errors estimation using ROA as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix H Table 2. Results for ESG vs ROE regression

	Model 1		Model 2		Model 3		Model 4	
	Coeff	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**
$ESG_{i,t-1}$	-.030501	0.364	.046065	0.680				
$ESG^2_{i,t-1}$			-.000859	0.534				
ESG Pillar								
$ENV_{i,t-1}$					.0041358	0.813	-.271227	0.000***
$SOC_{i,t-1}$					-.022858	0.334	.1732855	0.000***
$GOV_{i,t-1}$					-.002474	0.773	.0624973	0.587
$ENV^2_{i,t-1}$							.0028919	0.002***
$SOC^2_{i,t-1}$							-.002104	0.000***
$GOV^2_{i,t-1}$							-.000648	0.579
Control Variables								
$ROE_{i,t-1}$	.0198987	0.809	.0207021	0.801	.0192221	0.813	.0220263	0.774
$SIZE_{i,t-1}$	-5.49448	0.000***	-5.46387	0.000***	-5.49206	0.000***	-5.28613	0.000***
$LEV_{i,t-1}$	-3.20966	0.704	-3.32374	0.683	-3.8008	0.651	-3.62329	0.659

Industry Dummies								
Industry Dummies	Included		Included		Included		Included	
Cons	133.1217	0.000***	131.0011	0.000***	132.8706	0.000***	128.5209	0.000***
F-Statistic	38.12		67.60		12.08		39.03	
Nb. Obs	554		554		554		554	

Source: Author's Own calculation

Notes: This table provides the results of Driscoll-Kray standard errors estimation using ROE as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix H Table 3. Results for ESG vs RET regression

	Model 1		**Model 2**		**Model 3**		**Model 4**	
	Coeff	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**
$ESG_{i,t-1}$	.0304604	0.627	.295884	0.010**				
$ESG^2_{i,t-1}$			-.002944	0.006***				
ESG Pillar								
$ENV_{i,t-1}$					.0175558	0.880	-.016091	0.971
$SOC_{i,t-1}$					.3058515	0.023**	.3587382	0.323
$GOV_{i,t-1}$					.1965907	0.050*	-.649701	0.110
$ENV^2_{i,t-1}$							.0004379	0.923
$SOC^2_{i,t-1}$							-.000626	0.854
$GOV^2_{i,t-1}$							.0046316	0.227
Control Variables								
$RET_{i,t-1}$	-.168552	0.003***	-.169318	0.003***	-.167905	0.000****	-.171432	0.000***
$SIZE_{i,t-1}$	-14.8365	0.000***	-14.6856	0.000***	-17.4280	0.000***	-17.6974	0.000***
$LEV_{i,t-1}$	3.64913	0.877	2.821004	0.902	-15.4717	0.616	16.62615	0.599
Industry Dummies								
Industry Dummies	Included		Included		Included		Included	
Cons	363.902	0.000***	355.6444	0.000***	416.4959	0.000***	430.8864	0.000***
F-Statistic	26.69		78.78		7.87		6.07	
Nb. Obs	480		480		480		480	

Source: Author's Own calculation

Notes: This table provides the results of Driscoll-Kray standard errors estimation for Models 1 and 2 and the fixed effects with robust and clustered standard errors for Models 3 and 4, using RET as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix H Table 4. Results for ESG vs PB regression

	Model 1		Model 2		Model 3		Model 4	
	Coeff	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**
$ESG_{i,t-1}$	-.005672	0.000***	-.023257	0.010**				
$ESG^2_{i,t-1}$			.000195	0.062**				
ESG Pillar								
$ENV_{i,t-1}$					-.005922	0.102	-.012905	0.175
$SOC_{i,t-1}$					.001095	0.687	-.008069	0.281
$GOV_{i,t-1}$					-.002344	0.004***	-.016028	0.000***
$ENV^2_{i,t-1}$							.0000807	0.258
$SOC^2_{i,t-1}$							.0001047	0.181
$GOV^2_{i,t-1}$							.0001448	0.000***
Control Variables								
$PB_{i,t-1}$	-.044253	0.637***	-.047202	0.616	-.045156	0.630	-.04869	0.605
$SIZE_{i,t-1}$	-.664498	0.000***	-.672788	0.000***	-.640062	0.000***	-.656687	0.000***
$LEV_{i,t-1}$	-.874972	0.349	-.878265	0.358	-.857693	0.358	-.827572	0.396
Industry Dummies								
Industry Dummies	Included		Included		Included		Included	
Cons	17.24522	0.000***	17.77988	0.000***	16.77954	0.000***	17.66805	0.000***
F-Statistic	267.62		180.02		21.67		23.83	
Nb. Obs	496		496		496		496	

Source: Author's Own calculation

Notes: This table provides the results of Driscoll-Kray standard errors estimation using PB as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix I Table 1. Results for ESG vs ROA regression by industry

	Capital Goods				Transportation			
	Model 1		**Model 2**		**Model 1**		**Model 2**	
	Coeff	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**	**Coeff**	**P-value**
$ESG_{i,t-1}$	-.011698	0.419	-.03052	0.554	-.0089816	0.640	.18012	0.000***
$ESG^2_{i,t-1}$			.000207	0.752			-.00218	0.000***
$ROA_{i,t-1}$	.1218919	0.063*	.121935	0.064*	-.097251	0.040**	-.08004	0.104
$SIZE_{i,t-1}$	-1.701571	0.000***	-1.71175	0.000***	-4.217842	0.000***	-4.1308	0.000***
$LEV_{i,t-1}$	-5.883787	0.059*	-5.93782	0.070*	1.008397	0.781	-.83613	0.816
Cons	43.76908	0.000***	44.3744	0.000***	98.36358	0.000***	93.416	0.000***
F-Statistic	124.53		119.22		92.99		174.67	
Nb. Obs	383		383		159		159	

Notes: This table provides the results of Driscoll-Kray standard errors estimation using ROA as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix I Table 2. Results for ESG vs ROE regression by industry

	Capital Goods				Transportation			
	Model 1		Model 2		Model 1		Model 2	
	Coeff	P-value	Coeff	P-value	Coeff	P-value	Coeff	P-value
$ESG_{i,t-1}$	-.0137438	0.740	.0005081	0.998	-.0339022	0.186	.2952846	0.182
$ESG^2_{i,t-1}$			-.0001566	0.940			-.0037987	0.108
$ROE_{i,t-1}$	.0187949	0.841	.0189228	0.834	.0041753	0.968	.010978	0.915
$SIZE_{i,t-1}$	-4.951174	0.000***	-4.944116	0.000***	-10.84969	0.000***	-10.74426	0.000***
$LEV_{i,t-1}$	-9.247125	0.121	-9.196623	0.155	9.547163	0.159	6.264955	0.386
Cons	123.0029	0.000***	122.5554	0.000***	245.8697	0.000***	238.3794	0.000***
F-Statistic	14.42		86.07		53.72		79.72	
Nb. Obs	383		383		159		159	

Notes: This table provides the results of Driscoll-Kray standard errors estimation using ROE as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix I Table 3. Results for ESG vs RET regression by industry

	Capital Goods				Transportation			
	Model 1		Model 2		Model 1		Model 2	
	Coeff	P-value	Coeff	P-value	Coeff	P-value	Coeff	P-value
$ESG_{i,t-1}$	.0937493	0.114	.2117875	0.116	-.1283107	0.088*	.4475376	0.152
$ESG^2_{i,t-1}$			-.0012839	0.191			-.00656	0.124
$RET_{i,t-1}$	-.1966339	0.051*	-.1978968	0.051*	-.1657499	0.000***	-.1620525	0.000***
$SIZE_{i,t-1}$	-14.21125	0.000***	-14.14169	0.000***	-14.19576	0.105	-13.66692	0.137
$LEV_{i,t-1}$	-39.03343	0.096*	-38.91102	0.094*	51.72316	0.062*	45.98493	0.074*
Cons	362.9248	0.000***	359.0665	0.000***	332.4407	0.075*	311.2798	0.114
F-Statistic			298.02		118.61		87.48	
Nb. Obs	332		332		136		136	

Notes: This table provides the results of Driscoll-Kray standard errors estimation using RET as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix I Table 4. Results for ESG vs PB regression by industry

	Capital Goods				Transportation			
	Model 1		Model 2		Model 1		Model 2	
	Coeff	P-value	Coeff	P-value	Coeff	P-value	Coeff	P-value
$ESG_{i,t-1}$	-.0032351	0.006***	-.0233638	0.001***	-.0113235	0.000***	.0187353	0.331
$ESG^2_{i,t-1}$			.0002209	0.008***			-.0003363	0.158
$PB_{i,t-1}$	-.1120721	0.263	-.1143308	0.253	.2292137	0.039**	.2285751	0.043**
$SIZE_{i,t-1}$	-.7417243	0.000***	-.753402	0.000***	-.0853912	0.740	-.0927056	0.727
$LEV_{i,t-1}$	-.7205327	0.563	-.7889774	0.536	-1.770368	0.003***	-1.91525	0.001***
Cons	18.94428	0.000***	19.61791	0.000***	4.413879	0.441	4.026451	0.504
F-Statistic	27.22		25.71		73.92		220.66	
Nb. Obs	333		333		151		151	

Notes: This table provides the results of Driscoll-Kray standard errors estimation using PB as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix I Table 5. Results for ESG pillar vs ROA regression by industry

	Capital Goods				Transportation			
	Model 3		Model 4		Model 3		Model 4	
	Coeff	P-value	Coeff	P-value	Coeff	P-value	Coeff	P-value
$ENV_{i,t-1}$	.0087844	0.206	-.116744	0.001***	-.010191	0.333	-.0632324	0.012**
$SOC_{i,t-1}$	-.0251313	0.075*	.02749	0.074*	.0452302	0.000***	.1501058	0.000****
$GOV_{i,t-1}$	-.0017345	0.714	-.020756	0.682	-.0272531	0.007***	.0658032	0.023**
$ENV^2_{i,t-1}$			.001377	0.001***			.0004662	0.075*
$SOC^2_{i,t-1}$			-.000587	0.021**			-.0010773	0.000***
$GOV^2_{i,t-1}$			.000204	0.693			-.0009173	0.000***
$ROA_{i,t-1}$	.1180231	0.064*	.114953	0.057*	-.1015722	0.031**	-.0869621	0.055*
$SIZE_{i,t-1}$	-1.706522	0.000***	-1.72516	0.000***	-5.541707	0.000***	-5.314858	0.000***
$LEV_{i,t-1}$	-6.227386	0.034**	-6.27329	0.039**	5.197448	0.123	3.208515	0.371
Cons	44.19147	0.000***	46.2546	0.000***	125.8174	0.000***	118.7898	0.000***
F-Statistic	156.93		66.49		193.36		80.24	
Nb. Obs	383		383		159		159	

Notes: This table provides the results of Driscoll-Kray standard errors estimation using ROA as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively

Appendix I Table 6. Results for ESG pillar vs ROE regression by industry

	Capital Goods				Transportation			
	Model 3		Model 4		Model 3		Model 4	
	Coeff	P-value	Coeff	P-value	Coeff	P-value	Coeff	P-value
$ENV_{i,t-1}$	.0132038	0.613	-.311015	0.001***	-.0394364	0.404	-.2702075	0.078*
$SOC_{i,t-1}$	-.0702509	0.134	.120919	0.012**	.1333394	0.000***	.4026058	0.000***
$GOV_{i,t-1}$	.0062757	0.754	-.051949	0.738	-.0246914	0.494	.4484696	0.002***
$ENV^2_{i,t-1}$			.003519	0.002***			.0021127	0.250
$SOC^2_{i,t-1}$			-.002145	0.012**			-.0026248	0.000***
$GOV^2_{i,t-1}$			.000618	0.685			-.004622	0.001***
$ROE_{i,t-1}$	.012852	0.891	.006456	0.942	-.0025604	0.981	.0131327	0.903
$SIZE_{i,t-1}$	-4.819969	0.000***	-4.77997	0.001***	-15.17984	0.000***	-14.27473	0.000***
$LEV_{i,t-1}$	-10.46368	0.060*	-10.5183	0.078*	19.72033	0.003***	12.93007	0.065*
Cons	121.6491	0.000***	124.363	0.000***	334.7208	0.000***	306.6685	0.000***
F-Statistic	14.21		16.31		128.83		911.18	
Nb. Obs	383		383		159		159	

Notes: This table provides the results of Driscoll-Kray standard errors estimation using ROE as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix I Table 7. Results for ESG pillar vs RET regression by industry

	Capital Goods				Transportation			
	Model 3		Model 4		Model 3		Model 4	
	Coeff	P-value	Coeff	P-value	Coeff	P-value	Coeff	P-value
$ENV_{i,t-1}$	.0607243	0.678	.217685	0.098*	-.071121	0.049**	-.7907963	0.023**
$SOC_{i,t-1}$	.3496736	0.008***	.328602	0.001***	.3417601	0.020**	.4488736	0.258
$GOV_{i,t-1}$	-.1651165	0.000***	-1.13297	0.000***	-.3069003	0.052*	.1689899	0.782
$ENV^2_{i,t-1}$			-.001865	0.112			.007396	0.029**
$SOC^2_{i,t-1}$			.000448	0.747			-.0004712	0.930
$GOV^2_{i,t-1}$			.010174	0.000***			-.004163	0.376
$RET_{i,t-1}$	-.2047289	0.027**	-.208026	0.017**	-.1732583	0.000***	-.1904739	0.000***
$SIZE_{i,t-1}$	-16.02214	0.000***	-15.9356	0.000***	-24.06874	0.004***	-21.01985	0.003****
$LEV_{i,t-1}$	-31.06712	0.164	-36.2368	0.130	80.46814	0.000***	76.82197	0.000***
Cons	397.7781	0.000****	412.9988	0.000***	540.0082	0.003***	472.1794	0.001***
F-Statistic	59.89		33.86		14.55		6.47	
Nb. Obs	332		332		136		136	

Notes: This table provides the results of fixed effects with robust and clustered standard errors using RET as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.

Appendix I Table 8. Results for ESG pillar vs PB regression by industry

	Capital Goods				Transportation			
	Model 3		Model 4		Model 3		Model 4	
	Coeff	P-value	Coeff	P-value	Coeff	P-value	Coeff	P-value
$ENV_{i,t-1}$	-.0049364	0.117	-.0163815	0.201	-.0048143	0.431	-.007394	0.654
$SOC_{i,t-1}$	.0033859	0.093*	-.0010855	0.859	-.0057423	0.180	-.013769	0.252
$GOV_{i,t-1}$	-.002448	0.000***	-.0235244	0.000***	-.002005	0.340	.0059468	0.411
$ENV^2_{i,t-1}$			.0001257	0.270			.000033	0.759
$SOC^2_{i,t-1}$			.000058	0.343			.0000903	0.395
$GOV^2_{i,t-1}$			.0002277	0.001***			-.000075	0.376
$PB_{i,t-1}$	-.1132853	0.256	-.1194684	0.218	.2425834	0.045**	.2321531	0.061*
$SIZE_{i,t-1}$	-.7187498	0.001***	-.7407037	0.001***	.0149763	0.943	.0160484	0.947
$LEV_{i,t-1}$	-.6661668	0.590	-.8024381	0.525	-2.098095	0.001***	-1.97476	0.001***
Cons	18.48052	0.000***	19.66285	0.000***	2.335208	0.610	2.261938	0.659
F-Statistic	80.07		15.08		4.73		8.16	
Nb. Obs	333		333		151		151	

Notes: This table provides the results of Driscoll-Kray standard errors estimation using PB as the dependent variable. All data are reported in annual frequency for the period 2011 through 2017. ***, **, and * specify significance at 1%, 5%, and 10% levels, respectively.