



Help or Hurt? The Impact of ESG on Firm Performance in S&P 500 Non-Financial Firms

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Abstract

The paper aims to investigate the impact of ESG practice on firms' financial performance in the context of U.S. market from 2018 to 2020. The paper examines a sample of 57 U.S. non-financial firms belonging to the S&P 500. The Two-Stage Least Squares (2SLS) estimation is employed with an instrumental variable - the political views of the states where the studied firms are located. The paper shows that having a better practice of ESG could enhance firms' financial performance measured by ROA, ROE, and TobinQ. These findings are consistent with the stakeholder-focused theory instead of shareholder-focus perspective. In addition, the magnitude of the influence of the ESG practice on TobinQ is significantly higher than that of the ESG-ROA and ESG-ROE relations. It reveals that the ESG benefits could make the firms appear more attractive to investors, creating higher market values of the firms' assets and then higher TobinQ ratio. Not as the TobinQ enhancement, the significant improvement in ROA and ROE would be realized in the long run rather than short term. The low managerial ownership in the U.S. market may increase the chance of ESG overinvestment by the firms' managers, hence reducing firm value. However, under the pressure of the investors' strong demand for socially responsible investing, the U.S. firms tend to become involved in ESG activities, obtaining a strong stakeholder commitment and thus creating additional firm value in the long run.

JEL classification: G30, G34, Q01

Keywords: ESG, firm performance, stakeholder value maximization theory, U.S. market

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1. Introduction

Although the corporate strategic initiatives relating to Environment, Social, and Governance (ESG) were officially employed in the early 1990s, their actual benefits have been studied gradually since the 2000s. Regarding Ioannou and Serafeim (2015), due to the prevalence of an agency logic in the former period, the ESG investment is considered as agency costs. Barnea and Rubin (2010) show that the insiders' ownership negatively impacts firms' CSR ratings, because those insiders attempt to overinvest in CSR at the cost of the shareholders for their personal benefits. However, with the recent emergence of a stakeholder focus, ESG performance serves as insurance-like protection for firms' intangible assets derived from relationships between firms and non-investing stakeholders (Godfrey, 2005). From the resource-based perspective, improved ESG performance could bring firms valuable resources, such as reputation (Boone & Uysal, 2020), financing access and lower cost of capital (Cheng et al., 2014), employees' knowledge (Branco & Rodrigues, 2006), cost efficiency (Matos, 2020), and less stock price synchronicity (Amel-Zadeh & Serafeim, 2018). More importantly, it also helps those firms to achieve sustainability goals in addition to maximizing shareholders' wealth (Amel-Zadeh & Serafeim, 2018).

Previous studies have not reached conclusive findings on the impact of ESG practice on firms' financial performance. While a majority of the studies to date reveal the positive relationship between ESG and firms' financial performance (Verheyden et al., 2016; Giese et al., 2019), some studies show the negative nexus (Brammer et al., 2006; Crisóstomo et al., 2011) or even no correlation (Nelling & Webb, 2009). These studies employ different contexts, such as countries with different legal regimes and periods with distinctive economic conditions. In addition, firms' ESG could be endogenous to their previous ESG performance (Bae et al., 2019), legal systems which the firms' countries follow (Porta et al., 1998), and the economic conditions (Buchanana et al., 2018). Those factors may make the estimation of how the ESG practice impacts firms' financial performance be biased if the potential endogeneity is not addressed entirely. Therefore, it is essential to examine such an impact empirically in a specific context with a thorough treatment of ESG's potential endogeneity. This study employs a sample of 57 U.S. non-financial firms belonging to the S&P 500 from 2018 to 2020 and a political view of states where those firms are located in order to mitigate the potential issue of endogeneity.

The study has several contributions. First, it provides additional evidence on the impact of ESG practice on firms' financial performance in a specific context and time period. It could create a comprehensive picture of that relationship across various contexts. Second, it empirically examines two main contrasting theories explaining the impact of ESG on financial performance. They are the shareholder and stakeholder value maximization theories. While shareholder-focused theory believes that ESG engagement is detrimental to firm value, the stakeholder-focused theory advocates the benefits of ESG practice which could enhance firm value. This research confirms the second one in the context of the U.S. market. Although ESG overinvestment is likely in U.S. firms due to their low ownership concentration and managerial ownership, the ESG practice still enhances firms' financial performance measured by various proxies. This could be explained by the strong demand for socially responsible investing from investors in the U.S. market. Third, this paper suggests a robust instrumental variable, the political view, to treat the endogeneity of the ESG variable. Therefore, the results are more valid and reliable.

The study is organized as follows: section 2 reviews relevant literature about the relationship between ESG and firm performance. Section 3 describes how the research is conducted. Section 4 analyzes and discusses regression results and section 5 concludes.

2. Literature Review

There are two primary views of the ESG–financial performance relationship: the shareholder and the stakeholder value maximization theories. On the one hand, the shareholder-focused idea underpinning the overinvestment hypothesis supports the negative relationship between ESG practice and firms' financial performance. Barnea and Rubin (2010) state that, due to the agency problem (i.e., an interest conflict between shareholders and managers), the managers tend to overinvest in ESG at the shareholders' expenses in order to gain their own benefits. Such investment exceeds an optimal point at which associated costs appear to be higher than the added benefits (Krüger, 2015). Liu et al. (2020) provide additional evidence on the costs of ESG overinvestment. The firms with extremely high ESG ratings, which is a signal of overinvesting in ESG, experience lower shareholder value when those firms deal with a negative event, such as a product recall. High ESG scores could be interpreted as a strong commitment of the businesses to deliver good value to customers. When a product recall occurs, the market tends to question the quality of products and thus their actual ESG performance. This results in a more negative response from the market to such an event. ESG overinvestment also limits the free cash flows of the businesses, so that they might have fewer resources to invest efficiently (Benlemlih & Bitar, 2018). Overall, the shareholder-focused theory claims that practising ESG destroys firm value (Brammer et al., 2006; Crisóstomo et al., 2011).

On the other hand, the stakeholder-focused theory advocates the benefits of the ESG practice, which could enhance firms' financial performance. Developed under that theory, the conflict-resolution hypothesis states that practising ESG could solve the interest conflict between managers and non-investing stakeholders (Freeman, 1984). Yarram and Fisher (2021) study that firms with stakeholder-friendly policies tend to use less short term debts, which may resolve the potential conflict between firms and primary stakeholders. The study by Cui et al. (2018) indicates that better ESG performance could reduce firms' information asymmetries, leading to lower costs of equity (Dhaliwal et al., 2011) and costs of debts (Bhuiyan & Nguyen, 2020). Gupta and Jham (2021) show that firms with better ESG practice would outperform the market in the post-crisis period. ESG involvement also enhances a firm's reputation (Branco & Rodrigues, 2006), helping to obtain a more substantial stakeholder commitment (Arouri et al., 2019), such as customer loyalty (Turker, 2009). This could make firms' earnings less volatile (Amel-Zadeh & Serafeim, 2018). In general, the stakeholder-focused theory states that the better the ESG performance, the higher the firm value will be (Lv et al., 2020).

The firms' ESG ratings are potentially endogenous as they seem to be driven by other factors. The study by Porta et al. (1998) indicates that the common law system drives the U.S. market, and that the U.S. firms have a less concentrated ownership structure than firms located in the civil-law-system countries. Those U.S. firms also experience low managerial ownership, which may result in ESG overinvestment by the firms' managers (Barnea & Rubin, 2010). However, socially responsible investing in the U.S. has been prevalent since 2012. The total value of assets under management reached \$17.1 trillion (The forum for sustainable and responsible investment, 2020). Such a trend is due to the strong demand for sustainability-driven investment from the clients (Siddique & Sciulli, 2020). Under pressure from the market, U.S. firms may become more involved in ESG activities to meet such a demand. It is expected to create a stronger stakeholder commitment and, consequently, additional firm value. Employing a single context of the U.S. market, Rubin (2008) states that the political view of the state where the firm is located influences the firm's ESG performance. Firms located in Republican-dominated states tend to invest more in ESG than firms in Democratic states, so the Republican-state firms have higher ESG scores than those in the Democratic states. In other

words, the political views of the states where the firms are located have an impact on the variant of the firms' ESG scores. Therefore, this paper with the U.S. based context from 2018 to 2020 would employ the political view of the state where a particular firm is located as an instrumental variable to address the potential endogeneity of the ESG variable.

3. Methodology

3.1. Sample description

This paper employs a sample of 57 S&P 500 non-financial firms from 2018 to 2020. These firms must satisfy the following criteria: (1) the financial data must be available in Compustat during the three-year period, (2) their ESG performance must be rated by Morgan Stanley Capital International (MSCI), and (3) their ESG scores must be available in the MSCI ESG database from 2018 to 2020. Finally, this research obtains 171 observations during the studied period.

Table 1 describes the sample. It shows that most of the ESG-rated firms belong to the information technology and health care industries. They account for 42% and 37%, respectively, of the whole sample.

Table 1. Sample description

Industry	No. of Firms (2018 - 2020)	Weight
Industrials	4	7%
Information Technology	24	42%
Health Care	21	37%
Materials	3	5%
Consumer Discretionary	1	2%
Consumer Staples	4	7%
Total	57	100%

3.2. Variable measures

To measure firm performance, the study employs both accounting-based proxies (i.e., return-on-assets and return-on-equity) and a market-based measure (i.e., TobinQ). Following Waddock and Graves (1997), return-on-assets (ROA) is calculated as the ratio between net income and total assets. Return-on-equity (ROE) takes net income divided by the total shareholders' equity (Wang et al., 2015). The study follows Wang et al. (2015) to compute TobinQ by taking the sum of the market value of a firm's outstanding shares and liabilities divided by its total assets.

The paper uses ESG scores provided by the MSCI ESG database to measure a firm's ESG performance. MSCI ESG database covers 14,000 companies representing more than 680,000 securities with 90% equity and fixed income market value as of June 2020. MSCI determines several key issues under three main pillars: Environment, Social, and Governance. Those issues are classified as risks or opportunities and it is then assessed how a firm exposes and manages them to score how the firm performs on such issues. The scoring scale is from 0 (very bad) to 10 (very good). The ESG score is calculated by the aggregated score of each pillar and its importance in each industry.

The study also includes the following set of control variables: firm size, the extent of financial leverage, and research and development expenditure. Firm size (FIRMSIZE) is the log of the total sales. The extent of financial leverage (LEV) is the ratio between total debts and total assets. The research and development expenditure (R&D) is the log of the total expenses on R&D. Those independent and control variables are lagged by one year to realize their effects on firms' financial performance.

3.3. Estimation strategy

The baseline regressions of firm performance on ESG are as follows:

$$ROA_{i,t} = \alpha_1 + \alpha_2 ESG_{i,t-1} + \alpha_3 FIRMSIZE_{i,t-1} + \alpha_4 LEV_{i,t-1} + \alpha_5 R\&D_{i,t-1} + Firm\ fixed\ effect + Year\ fixed\ effect + \varepsilon_{i,t} \tag{1}$$

$$ROE_{i,t} = \beta_1 + \beta_2 ESG_{i,t-1} + \beta_3 FIRMSIZE_{i,t-1} + \beta_4 LEV_{i,t-1} + \beta_5 R\&D_{i,t-1} + Firm\ fixed\ effect + Year\ fixed\ effect + \varepsilon_{i,t} \tag{2}$$

$$TobinQ_{i,t} = \gamma_1 + \gamma_2 ESG_{i,t-1} + \gamma_3 FIRMSIZE_{i,t-1} + \gamma_4 LEV_{i,t-1} + \gamma_5 R\&D_{i,t-1} + Firm\ fixed\ effect + Year\ fixed\ effect + \varepsilon_{i,t} \tag{3}$$

Where i is firm; t is the year; ε is the error term.

This study performs several diagnostic tests to employ an appropriate estimation strategy. First, the study checks the potential multicollinearity issue of the data by examining the correlation among the independent and control variables and their variance inflation factors (VIF). Regarding Table 2, the independent and control variables are not highly correlated (i.e., less than 0.8), and their VIFs are less than 10. Therefore, the employed data is multicollinearity free (Mansfield & Helms, 1982). The correlations between ESG and ROA, ROE, and TobinQ are positive and statistically significant at a 90% confidence level. They provide initial evidence on the impact of ESG on firm performance.

Table 2. Correlation matrix and Variance Inflation Factors (VIF)

	ROA	ROE	TobinQ	ESG	FIRMSIZE	LEV	R&D	VIF
ROA	1							
ROE	0.6328*	1						
TobinQ	0.4903*	0.376*	1					
ESG	0.5704*	0.4544*	0.235*	1				1.04
FIRMSIZE	-0.0322	0.0534	-0.2271*	-0.0751	1			1.78
LEV	0.0881*	0.3065*	0.0017	0.1601*	0.2424*	1		1.13
R&D	0.0786	0.1243*	0.1203*	-0.0332	0.5946*	0.0247	1	1.64

Note: * denotes statistical significance at the 5% level.

Second, the study examines whether the heteroskedasticity issue exists in the data set by performing the Breusch-Pagan Test (Breusch & Pagan, 1979). Table 3 shows that the p-values of the test are statistically significant (i.e., less than 0.05) in the regressions of ROA and ROE on ESG, respectively, yet they are insignificant in the regression of TobinQ on ESG. It indicates that the first two regressions have heteroskedasticity, while the last regression is free from that issue. The paper follows White (1980) to treat such an issue by estimating the robust standard errors in those heteroskedasticity-driven regressions.

Table 3. Heteroskedasticity and Endogeneity Tests

		(1)	(2)	(3)
		ROA	ROE	TobinQ
Breusch-Pagan Test	Chi2(4)	18.37	28.32	1.04
	Prob > Chi2	0.001	0.000	0.904
Wu-Hausman Test	F(1,165)	34.79	6.74	7.49
	Prob > F	0.000	0.010	0.007

Third, a firm's ESG performance tends to be influenced by its peers in the same industry. Hence, this paper would cluster the standard errors at the industry level to account for the possible serial correlation. This study also includes firm and year fixed effects to remove time-invariant unobserved heterogeneity related firms and years from the error terms.

Fourth, the study investigates the ESG's measurement error, which is a primary source of the endogeneity issue. The paper conducts the Wu-Hausman Test to exploit such an issue (Hausman, 1978). This study follows Rubin (2008) to use the political view of the states where firms are located as an instrumental variable. As mentioned above, firms located in Republican states tend to have higher ESG ratings than those in the Democratic states. That is to say, the political views of the states where the firms are located have an impact on the variant of the firms' ESG scores. This theoretically satisfies the relevance condition of a good instrumental variable. In addition, there is no reason to believe that the political view has a direct influence on firm performance rather than an indirect effect through the firm's ESG performance. The exclusion restriction of a valid instrumental variable is met.

Therefore, this study employs the political view (POLVIEW) as the instrumental variable of ESG in the Wu-Hausman test. The null hypothesis is that the independent variable of interest is exogenous and that the Ordinary Least Squares estimates are efficient and consistent; the Two-Stage Least Squares (2SLS) estimates otherwise. This paper uses the 2016 U.S. presidential election results to determine the political view of the states where the studied firms are located. If the states support the Republicans, they are recorded as 1; 0 otherwise. Table III shows that the p-values of the test across all regressions are statistically significant, rejecting the null hypothesis. Therefore, the paper would employ the 2SLS estimation to estimate the studied regressions. The first stage would be the regression of ESG on POLVIEW and all control variables. The second stage regresses the firm performance measurements on the expected value of ESG from the first stage and all control variables.

4. Data analysis

4.1. Statistical description

Table 4 describes the sample statistics. ROA has a mean of 7.9%, with the standard deviation of 4.87%. The minimum value of ROA is 0.01%, while the maximum value is 16.04%. The average value of ROE is 27.81%. ROE experiences its lowest value of -7.56%, while the highest value is 63.37%. The mean of TobinQ is 3.82 times with a minimum of 1.22 times and a maximum of 5.72 times. The average ESG score of the sample is 5.6 over 10. The lowest ESG score of the sample is 1.2 while some firms have a maximum score of 10.

Table 4. Statistical description

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROA	171	0.0790	0.0487	0.0001	0.1604
ROE	171	0.2781	0.1807	-0.0756	0.6337
TobinQ	171	3.8265	1.4785	1.2172	5.7209
ESG	171	5.5965	2.0459	1.2000	10.0000
FIRMSIZE	171	9.1447	1.0271	7.9920	11.0769
LEV	171	0.5616	0.1551	0.3736	0.8715
R&D	171	6.3860	1.2965	4.0943	8.5208

4.2. Empirical analysis

Table 5 presents the regression results estimated by the 2SLS estimation. Column (1) reports the first stage regression of ESG on POLVIEW. The coefficient associated with POLVIEW is positive (1.152) and statistically significant (less than 0.01). This indicates that the firms located in the states supporting the Republicans have higher ESG scores than those in the Democratic states, which appears to be consistent with the finding of (Rubin, 2008). The F value of the first stage regression is 28.41, higher than 10. This empirically confirms the relevance condition of the instrumental variable, POLVIEW.

Table 5. Regression results estimated by 2SLS

	(1) ESG	(2) ROA	(3) ROE	(4) TobinQ
ESG		0.054*** (4.26)	0.101*** (2.76)	0.720** (2.23)
POLVIEW	1.152*** (5.18)			
FIRMSIZE	-0.386 (-0.65)	0.026 (0.80)	0.221 (1.18)	1.565** (2.13)
LEV	0.437 (0.38)	0.049 (0.72)	0.378** (2.18)	0.805 (0.62)
R&D	1.210* (1.68)	-0.045 (-0.94)	-0.189 (-1.03)	-2.538** (-2.31)
Constant	3.008 (0.54)	-0.346 (-0.89)	-1.619 (-1.43)	-1.665 (-0.31)
Firm fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
N	171	171	171	171
F(62, 108)	28.41			
Prob > F	0			
Adjusted R ²	0.909	0.496	0.642	0.756

Note: Column (1) reports the first stage regression of ESG on POLVIEW. Columns (2), (3), and (4) show the second stage regressions of ROA, ROE, and TobinQ on ESG, respectively. *t*-statistics reported in parentheses are calculated using standard errors adjusted for heteroskedasticity and industry clustering. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Columns (2), (3), and (4) in Table 5 show the second stage regressions of ROA, ROE, and TobinQ on ESG, respectively. ESG positively and significantly influences ROA, ROE, and TobinQ. The coefficients associated with ESG in the regressions of ROA and ROE are 0.054 and 0.101, respectively, each with p-values of less than 0.01. Meanwhile, the coefficient of ESG in the ESG–TobinQ relation is 0.720 with a p-value of less than 0.05. ESG and other control variables could explain the 49.6%, 64.2% and 75.6% variances of ROA, ROE, and TobinQ, respectively.

Regarding the impact of ESG practice on firm performance visualized in Figure 1, ESG has the most extensive influence on TobinQ among the three studied proxies of firms' financial performance with the highest coefficient. This is consistent with the stakeholder-focused theory, which states that the ESG practice could serve the interest of non-shareholder stakeholders. With a good ESG practice, firms could establish a strong stakeholder commitment (Arouri et al., 2019), such as better access to financing sources (Cheng et al., 2014), lower financing costs (Dhaliwal et al., 2011), and stronger customer loyalty (Turker, 2009). These benefits could make the firms appear more attractive to investors, increasing their stock prices, and then creating higher market values of the firms' assets. This probably results in a higher TobinQ ratio.

On the other hand, practising ESG is expected to create long-term firm value and sustain the businesses (Matos, 2020). The initial costs of ESG investment appear high and such costs would be offsetted by the later benefits. That is to say, although ROA and ROE are still improved after a year of practising ESG, the significant improvement in ROA and ROE should be realized in the long run. This would explain the less significant influence of ESG on firms' financial performance measured by accounting-based proxies, i.e, ROA and ROE, in comparison to the impact of ESG on TobinQ ratio. Figure 1 visualizes the magnitude of the impact of ESG practice on ROA, ROE, and TobinQ, respectively.

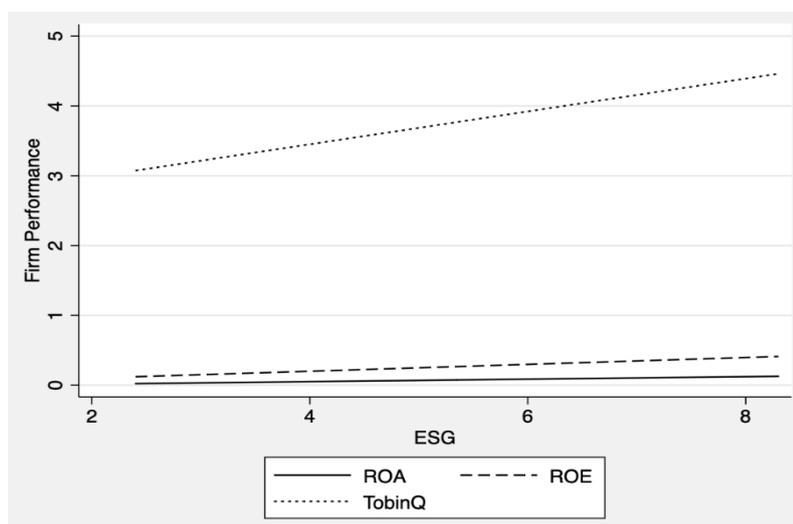


Figure 1. The impact of ESG on firm performance

5. Conclusion

The impact of ESG practice on firms' financial performance varies across contexts and the employed treatment of the potential endogeneity of ESG. This study employs a sample of 57 ESG-rated firms that belonged to the S&P 500 from 2018 to 2020 and the political view of the states where firms are located as an instrumental variable. The study finds that firms with better ESG practices could enhance their firms' financial performance measured by ROA, ROE, and TobinQ. The influence of ESG on TobinQ is significantly stronger than that of ESG on ROA and ROE. Following the stakeholder theory, this result advocates the view that practising ESG could serve the interest of non-shareholder stakeholders. They would have a good response to firms, creating higher market values for the firms. Meanwhile, the accounting-based performance may take time to be realized.

This study suggests a solution for businesses to improve their competitiveness. Although the initial costs of being involved in ESG appear higher than the added benefits, ESG-driven benefits could be realized in the long run and then offset such high initial costs of ESG investment. More interestingly, this study confirms that the market investors could evaluate firms more highly with better ESG practices due to their strong demand for socially responsible investing as soon as the ESG information is disclosed to the market. It is evident that the ESG performance has a significant influence on TobinQ, reflecting the firm's high market value. Therefore, firms should invest in ESG and transparently and publicly disclose such information to strengthen stakeholder commitment and thus improve firms' financial performance.

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