

THE IMPACTS OF CORPORATE SOCIAL RESPONSIBILITY PRACTICES ON FIRM FINANCIAL PERFORMANCE: EMPIRICAL EVIDENCE FROM ASIAN OIL AND GAS INDUSTRY

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Abstract - The paper aims to investigate the impact of Corporate Social Responsibility (CSR) practices on the financial performance of oil and gas firms in Asian countries by using a panel data set that includes 23 firms from 7 Asian countries from 2004 to 2017. The empirical results support the research hypothesis that CSR practices have a negative impact on the financial performance of oil and gas companies. This means CSR practices may impose a substantial burden on firms in the oil and gas industry. In addition, we find that different CSR practices have different sizes of impact on firm financial performance. In particular, environment practice has the biggest impact, social practice ranks second, and governance practice has the weakest impact. The main results are also confirmed by several robustness tests.

Key words - Corporate social responsibility (CSR); financial performance; return to asset (ROA); oil and gas industry; Environment, Social and Governance score (ESG).

1. Introduction

The role of CSR has been a controversial topic in the world of economics all over the world. In the past, oil and gas companies have been sued for the damage they caused to the environment and the safety of their employees. For example, in 2008, Exxon Mobil Corp was ordered to pay \$2.5 billion in damages for the 10.8 million gallons oil spill in Alaska in 1989 [1]. In this literature review, firstly, the paper discusses about CSR in general.

From an economic perspective, prospect theory considers social responsibility as a non-core investment strategy of the company and the cost of doing business. As a result, spending on socially responsible activities depends on actual performance, funding costs, and the company's financial constraints. In a favorable business environment, companies will reduce concerns about social responsibility and vice versa [1-3]. Furthermore, recent studies find a significant relationship between economic policy risk and the level of investment in CSR. Consistent with the moral capital hypothesis, recent studies show that US and Chinese companies invest heavily in socially responsible activities to avoid the impact of economic risks [4-6]. By building their social capital, they believe that investors and stakeholders will help them, should they underperform during volatile economic times. In fact, [7] find that the negative effect of economic fluctuations on a firm's financial performance is mitigated by the higher degree of investment in CSR, especially in developed countries.

For these reasons, this paper aims to shed light on the relationship between CSR practices and the financial performance of firms in the oil and gas industry. In particular, we try to answer the research question "What are the impacts of CSR practices on the financial performance of firms in the oil and gas industry?". The answer to this question is important as it will help both firms and policymakers have better strategies and policies to implement and promote CSR practices in order to improve social well-being.

Existing literature has been inconclusive and shaped two diverting expectations in the impact of CSR on firm performance. Some advocate for the "reputation-building hypothesis" in which CSR activities benefit firm performance [8-10]. They believe that CSR involvement will soothe the tension between firms and stakeholders about environmental and social concerns, hence strengthens the firm's reputation and paves the way for better performance. Other researchers keep a gloomy outlook and support the "overinvestment hypothesis" [11-14]. They argue that CSR activities will undoubtedly increase expenditures and damage a firm's financial performance. This hypothesis aligns with the agency problem in which managers are more likely to invest in CSR to portray themselves a good picture at the great expense of shareholders.

In our research context, we pay attention to CSR practices in oil and gas companies which production imposes a substantial cost for the environment and society in terms of pollution and labor safety. Companies in this industry are usually under intense pressure to reduce their carbon emissions and invest in the local community. The commitment to these activities will be unquestionably costly for them. In a survey implemented by KPMG in 2015, only 18% of oil and gas companies report the data on carbon emissions; around 29% of large companies set targets to reduce carbon emissions, but only 20% of them provide an apparent reason for those targets. This information hint that the oil and gas companies may experience a financial burden when implementing CSR practices. Based on the above discussion, we hypothesize as follows:

H1: CSR negatively affects the financial performance of oil and gas companies

Following previous literature such as [15-18], we use the well-known Environment, Social and Governance (ESG) score developed by Thomson Reuters as well as its

three pillars, Environment (*EN*), Social (*SO*), and Governance (*GO*), as the proxies of firms' CSR practices. Since the ESG score is based on a company's performance in three pillars, namely Environment (*EN*), Social (*SO*), and Governance (*GO*), in approximately equal proportion [19], a company can implement individual pillars at different levels [20]. As a consequence, the impact of each pillar on firm financial performance has been attracted many literatures. For example, [21], [22] and [23] note that each of the sub-categories of the ESG score may have a different impact on firm financial performance. In addition, [20] suggest that individual score should be used due to various factors such as conditions of the country of origin, pressures from different stakeholders and institutional conditions, among others. Because of these reasons, it is also important to examine the impact of the individual pillar of ESG score on the financial performance of firms in oil and gas industry. Therefore, we further propose the following hypotheses:

H2: An increasing in Environmental score negatively affects the financial performance of oil and gas companies

H3: An increasing in Social score negatively affects the financial performance of oil and gas companies

H4: An increasing in Corporate score negatively affects the financial performance of oil and gas companies

Our analysis employs panel data regression models on a data set including 23 firms from 7 Asian countries, including China, India, Japan, Malaysia, Parkistan, South Korea and Thailand, during the period of 2004 to 2017. Overall, the main results show that CSR activities negatively affect the financial performance of oil and gas companies. In addition, our main results survive two robustness tests, namely controlling for the skewness of independent variables and controlling for the economic uncertainty.

2. Methodology

2.1. Data

The ESG index is developed by Thomson Reuters and made available through the Datastream database. This score includes general score and three pillar scores namely in Environment, Society and Governance. These scores are measured by 178 performance indicators in each area. In particular, environmental pillar includes resource use, emissions and innovation categories. Social pillar has four categories which are workforce, human rights, community and product responsibility. Lastly, governance pillar includes management, shareholders and CSR strategy categories.

The variables using in this research are listed in Table 1. The data of the dependent variable - *ROA*, and the regressors - *CSR* which is proxied by *ESG* (consisting of the three pillars: Environment (*EN*), Social (*SO*) and Governance (*GO*)), and firm characteristic variables (firm size (*SIZE*), leverage ratio (*LEV*), book to market ratio (*BM*), cash ratio (*CA*) and dividend ratio (*DIV*)) are collected from Datastream database. Our final data set ranges from 2004 to 2017 and consists of 220 observations from 23 oil and gas companies in 7 Asian countries, including China, India, Korea, Japan, Malaysia, Pakistan, and Thailand.

Table 1. List of variables

Variables	Description
<i>ROA</i>	Ratio of operating income divided to total assets
<i>ESG</i>	Aggregated ESG score ranging from 0 to 1
<i>EN</i>	Environmental pillar score ranging from 0 to 1
<i>SO</i>	Social pillar score ranging from 0 to 1
<i>GO</i>	Corporate governance pillar score ranging from 0 to 1
<i>SIZE</i>	Natural log of total asset
<i>LEV</i>	Ratio of total debts to total assets
<i>BM</i>	Book to market ratio
<i>CA</i>	Ratio of cash to total assets
<i>DIV</i>	Ratio of dividend to total assets

2.2. Model

In this research, we use panel data regression to examine the effect of *CSR* activities, measured by the *ESG* index and its pillars, on the performance of firms in the oil and gas industry. The regression model is presented as bellowed:

$$ROA_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_j CONTROL_{i,t} + \alpha_i + \delta_t + \varepsilon_{i,t} \quad (1)$$

With, *i* and *t* are firm and year indices, respectively. The dependent variable, *ROA*, is the firm's return to asset ratio. Our main interested variable is *ESG* is the *CSR* score at an aggregate level. In addition, we also use the *ESG* pillar scores, *GO*, *EN* and *SO*, as the independent variable in our regression. Following the previous literature, see [24-25], our regression is controlled for firm characteristic variables such as firm size (*SIZE*), leverage ratio (*LEV*), book to market ratio (*BM*), cash ratio (*CA*) and dividend ratio (*DIV*). Moreover, the empirical results are controlled for firm fixed effect α_i as well as year fixed effect δ_t . The robust standard errors are also used to correct for the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$.

3. Empirical results and discussions

3.1. Summary statistics

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
<i>ROA</i>	220	.089	.741	-0.061	.318
<i>ESG</i>	220	0.447	0.183	0.063	0.771
<i>EN</i>	220	0.464	0.223	0	0.918
<i>SO</i>	220	0.445	0.242	0.023	0.891
<i>GO</i>	220	0.455	0.195	0.063	0.867
<i>SIZE</i>	220	16.968	1.262	14.445	19.663
<i>LEV</i>	220	.186	.115	0	.441
<i>BM</i>	220	.707	.617	.07	4.657
<i>CA</i>	220	.067	.056	0	.336
<i>DIV</i>	220	.02	.018	0	.075

Table 2 presents some key descriptive statistics, including the number of observations, the mean, standard deviation, minimum and maximum values of all variables in our data set. The average *ROA* is 8.9% while its minimum and maximum values are -6.1% and 31.8% respectively. The average *ESG* score of oil and gas companies in Asian is 0.447. There is a great separation

between the firm with the lowest ESG score with the highest one. The minimum value of ESG is 0.063, while the maximum value is 0.771. The mean values of environmental, social and governance pillars are slightly different at 0.464, 0.445 and 0.455, respectively.

3.2. Main regression results

The main results are reported in Table 3. The first column shows the result of (1) and the later three columns show the results of models where we regress ROA against the EN, SO and GO pillar scores, respectively.

Table 3. Regression results

Variables	ROA	ROA	ROA	ROA
ESG	-0.105*** [-3.290]			
EN		-0.072*** [-3.076]		
SO			-0.042* [-1.833]	
GO				-0.020 [-1.072]
SIZE	-0.031** [-2.210]	-0.037** [-2.549]	-0.035** [-2.349]	-0.041*** [-2.880]
LEV	-0.142** [-2.463]	-0.150*** [-2.617]	-0.154** [-2.505]	-0.159** [-2.491]
BM	0.008 [1.029]	0.009 [1.101]	0.010 [1.134]	0.008 [0.964]
CA	0.089 [1.248]	0.049 [0.701]	0.066 [0.864]	0.007 [0.108]
DIV	1.488*** [3.137]	1.338*** [2.887]	1.324*** [2.742]	1.360*** [2.784]
Constant	0.651*** [2.826]	0.744*** [3.116]	0.703*** [2.885]	0.797*** [3.398]
Adj. R^2	0.787	0.784	0.776	0.773

We see some standing-out features from the main results. First, all regression models show a consistent negative sign of ESG scores, in both aggregate and pillar scores. This result supports our research hypothesis that CSR activities negatively affect the financial performance of oil and gas companies in Asian. As mentioned above, this negative effect may be due to the substantial burden of CSR practices on oil and gas firms, especially those costs related to emission mitigation. Second, out of four models, the CSR variables are statistically significant in three ones. In particular, the ESG and EN scores are significant at 1% level and the SO score is significant at 10% level. Third, although the sign of ESG and its pillars are all negative, their value are different. This means different CSR practices may impose different cost levels on firms. In particular, an increase of 1 percentage point (0.01) in ESG score leads to a drop of 0.105 percentage points in firm's return to asset ratio. In terms of the pillar scores, the environmental practice has the biggest impact on firm performance with the value of EN coefficient is -0.072, SO ranks second with -0.042, and the weakest impact belongs to GO with a coefficient of -0.020.

Finally, the coefficients of our control variables are also

reported. The results show that firm size (SIZE), leverage ratio (LEV) and dividend ratio (DIV) are statistically significant at least 5% level in all regression models. In addition, the value of adjusted R-squared is ranging from 77.6% to 78.7%. These results imply the appropriateness of our regression models.

3.3. Robustness tests

For reinforcement of our main results, we perform two robustness tests. In particular, we try to examine whether the main regression results still hold when: (1) Using the log of the scores to control for their potential skewness; (2) Controlling for a macroeconomic uncertainty such as oil price volatility.

3.3.1. Using logs of ESG scores

The concerns about the impact of the skewness of the dependent variable, especially the score-typed ones, on the validation of regression results have been raised by the previous literature, see [26-29]. Following these studies, in the first robustness test we control the regression results by using logs of ESG and its pillar scores.

Table 4. Robustness test using logs of ESG scores

Variables	ROA	ROA	ROA	ROA
ESG	-0.017** [-1.981]			
EN		-0.018* [-1.973]		
SO			-0.008 [-1.430]	
GO				-0.005 [-0.721]
SIZE	-0.041*** [-2.888]	-0.036** [-2.146]	-0.041*** [-2.833]	-0.042*** [-2.910]
LEV	-0.130** [-2.093]	-0.161** [-2.481]	-0.138** [-2.153]	-0.157** [-2.461]
BM	0.009 [1.104]	0.012 [1.137]	0.009 [1.096]	0.009 [1.059]
CA	0.051 [0.712]	0.049 [0.617]	0.043 [0.603]	0.010 [0.142]
DIV	1.394*** [2.875]	1.264*** [2.619]	1.355*** [2.798]	1.302*** [2.656]
Constant	0.830*** [3.572]	0.768*** [2.843]	0.792*** [3.335]	0.824*** [3.483]
Adj. R^2	0.776	0.760	0.774	0.773

The results are reported in Table 4. We notice that the robustness test results are broadly consistent with our baseline results. In detail, CSR practices are shown to have negative impacts on a firm's financial performance. The signs of ESG, EN, SO and GO are consistently negative in all four models. In terms of statistical significance, the ESG aggregate score is statistically significant at 5% level and EN score is statistically significant at 10% level. In addition, similar heterogeneity is found across the values of pillar score coefficients. Particularly, environmental practice is reported to have the strongest impact on firm performance and governance practice is one which has the slightest effect.

Similar to the main results, SIZE, LEV and DIV are statistically significant in all regression models. In addition, the values of adjusted R-squared are ranging from 76.0% to 77.6%. These results imply the appropriateness of our regression models.

3.3.2. Controlling for economic uncertainty

We are also concerned that firms' financial performance may be affected by the overall economic uncertainty rather than CSR practices and the listed control factors. Therefore, in this robustness test, we control the regression mode by adding the World Uncertainty Index (WUI) at country level developed by [30].

Table 5. Robustness test controlling for economic uncertainty

Variables	ROA	ROA	ROA	ROA
ESG	-0.106*** [-3.284]			
EN		-0.072*** [-3.067]		
SO			-0.044* [-1.805]	
GO				-0.020 [-1.069]
SIZE	-0.031** [-2.153]	-0.038*** [-2.628]	-0.034** [-2.200]	-0.041*** [-2.848]
LEV	-0.143** [-2.491]	-0.149** [-2.595]	-0.155** [-2.542]	-0.159** [-2.492]
BM	0.008 [1.025]	0.009 [1.109]	0.010 [1.125]	0.008 [0.965]
CA	0.089 [1.242]	0.050 [0.712]	0.067 [0.874]	0.008 [0.110]
DIV	1.488*** [3.126]	1.340*** [2.879]	1.324*** [2.735]	1.361*** [2.774]
WUI	-0.005 [-0.192]	0.007 [0.269]	-0.009 [-0.323]	0.001 [0.045]
Constant	0.643*** [2.775]	0.753*** [3.186]	0.686*** [2.748]	0.799*** [3.366]
Adj. R ²	0.786	0.782	0.775	0.772

The results of this robustness test are presented in Table 5. In summary, controlling for the economic uncertainty does not change our conclusion about the effect of CSR practices on firm performance. Implementing the CSR practices imposes a negative effect on firms' return to asset ratio. This effect is statistically significant at 1% level for ESG aggregate score and EN score and at 10% level for SO score. Finally, the impact magnitudes are also different across different CSR practices. EN still has the strongest, and GO has the weakest impacts on firms' financial performance.

4. Conclusion

This research aims to investigate the impact of CSR practices on the financial performance of oil and gas firms in Asian countries. Our analysis employs a panel data set including 23 firms from 7 Asian countries during the period of 2004 to 2017. In this research, we use the ESG score as well as its three pillars to measure the level of

firms' CSR practices. Some key findings can be drawn from our analysis.

Overall, all regression results, including both baseline models and robustness tests, support our research hypothesis that CSR activities negatively affect the financial performance of oil and gas companies. This means CSR practices may impose a substantial burden on firms in the oil and gas industry. In addition, we find that different CSR practices have different sizes of impact on firms' ROA. In particular, the environmental practice has the biggest impact on firm performance, social practice ranks second with -0.042 and the weakest impact belongs to governance. This echoes our research hypothesis that companies in the oil and gas industry are usually under intense pressure for carbon emission mitigation and investment in the local community which are unquestionably costly for them.

Since, CSR practices are costly for firms but are good for society in general, the policymakers should forgo this cost to improve overall social well-being. Therefore, to induce CSR practices, especially the environmental-related one from firms in the oil and gas industry, there should be some explicit regulations that firms have to achieve a certain level of CSR.

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