Corporate Social Responsibility and Stock Performance: Intersectoral and Interregional Inference

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Introduction

Libertarian economists have long argued that, to promote the most efficient allocation of resources, the government intervention should be kept to its minimum. As they say, this allows the free market enterprise, an impersonal system, to work in its fullest potential to achieve both substantial freedom and economic prosperity that any government institution could have ever achieved otherwise. With this school of thought, they have gone astray from their traditional sphere to comment on things that are outside of their expertise. For instance, one of the prominent figures in libertarian school of thoughts and an economist, Milton Friedman, has argued against the idea of corporate social responsibility. In other words, he supported the idea that corporation should always stick to its role of conducting profit seeking business without taking any responsibility outside of their social realm to impact the public cause. He argued that this would not only promote higher efficiency of capital usage but most of all prevent minority groups to obtain undemocratic and unelected political power in the society.

However, the effect of being socially responsible cannot be neglected. What if the effect of holding social responsibility on stock price was overall positive? This would pose new economic argument to counter the libertarian perspective. In this paper, we are interested in finding the effect of corporate social engagement and responsibility on the stock performance. In the literature review section of this paper, we will explore some of the questions that have been asked and answered by numerous previous researchers on corporate social responsibility (CSG). For instance, Urs and Ziegler (2014) and Wang, Y. G. (2011) have found that there are positive association between CSG stock and its performance while controlling for the sector differences. However, we will maintain that our paper is different from other research in the sense that we will incorporate the sector and industrial differences in our approach. Secondly, in the data description and methodology section, we will develop our own CSG index using the corporate data available on Bloomberg Terminal. Moreover, we will also discuss the selection of data and index calculation method along with a short discussion on stock data. Finally, we will run a multilinear regression controlling for the sector and regions. Our result finds that while controlling for the region and sector, CSG score we have developed is not a significant factor in determining the stock price contrary to the previous findings. We potentially attribute this result to the lack of sample data and difficulty associated with quantifying some of the aspect of corporate social governance. Finally, we highlight the importance of addressing those issues for further research.

Literature Review

        In 1970, a Nobel Prize-winning libertarian economist, Milton Friedman, argued that the purpose of the corporate executive is to maximize the corporate profit for the stockholders in his famous New York Times post, “A Friedman doctrine‐- The Social Responsibility of Business Is to Increase Its Profits.” Since then, libertarian economists have argued that from the social and economic perspective, it is best to leave social responsibility to the government. The key argument made by Professor Friedman is that if a corporate executive engages in the social interest by using the investors’ money, it is against the democratic rules of the corporation. Furthermore, if unelected authority such as those corporate executives have engaged in the social interest to take the role of the government, it also results in high bargaining power in the hands of a few powerful people without reflecting the voice of the general public.

His argument is that it is not democratic for corporations to engage in social responsibility and thus a corporation must engage in activities that maximize the stockholders' share – which is what it is designed to do in the first place. However, an interesting argument can be made against his thesis. Consider, for instance, a situation where corporations can increase their stock performance by engaging in social responsibility. Since the purpose of the corporation is to maximize the stockholder’s equity, doing so indeed achieves that purpose. Therefore, the natural question is, do social engagement and responsibility improve the stockholders’ equity which is determined by the market price?

In this paper, we will answer this question by aggregating the sector-by-sector data of corporations that engaged in corporate social responsibility (which we call CSR) and comparing them with non-CSR companies to see its effect, controlling for the size. Similar questions have been posed by previous researchers. For instance, Friede and Bassen (2015) have gathered a considerable number of previous empirical studies to find the effect of corporate social governance on its financial performance. They have found that 90% of those studies revealed a non-negative relation between corporate financial performance and its social governance attitude. Based on this result, the authors have concluded that it is highly likely that there indeed exists some relation between corporate governance and its financial performance.

However, the paper, after aggregating the empirical study result, does not tell anything about interregional and sector-by-sector differences. For instance, the sector which focuses on electronic vehicles might emphasize more on the sustainable energy to influence its stock prices, while the companies in the food industry might not focus so much on the social aspect since it might not affect the stock price as much as those that are in the energy sector. The paper fails to incorporate the sector differences which makes the study very important.

Urs and Ziegler (2014) have looked at the relationship between corporate social responsibility and its stock performance by accounting for a possible regional difference. Particularly, it used the USA and Europe data to control for the interregional correlation and differences. The authors have adopted some of the financial models such as CAPM, Fama-French three-factor, and Carhart four-factor models to explain the average monthly stock performance of a given portfolio. Furthermore, the authors have looked into the sector-specific relationship by including the country dummy variables in the regressions.

To go into the methodology, however, the expected return of the stock is measured by running a simple OLS, using the CAMP model in which a market index (stock market average return) is the independent variable, and the actual stock return of the individual company is the dependent variable. To help the reader understand the concepts of CAMP, the coefficient on the independent variable is called beta, and it is supposed to tell us about the unsystematic risk associated with the individual firm in question. Furthermore, the intercept of the regression is called Alpha, and it captures the excess return on the portfolio that is above (or below if the intercept is negative) what is predicted by the specific risk of the stock. Now with this estimated beta on the stock, the authors have used them to run the second regression estimating the average monthly stock performance to control for the difference in risk. Specifically, for the most simplified model CAMP, they have included the beta (the corporate risk measure) and the CSR (corporate social responsibility index) as their independent variables. Using this result, the authors have concluded that based on the stock performance predicted by the Fama-French three-factor model and Carhart four-factor models, the effect of corporate social responsibility on the stock market is insignificant, while with the use of CAMP, the data has indicated that there is a significant positive relationship.

The issue with this research is that the estimation is heavily based on financial models and linear regressions, which makes it hard to determine the true causal effect of corporate social responsibilities. In other words, the regression allows us to see the correlation between these two different values, but correlation does not clearly imply the causality effect; thus, a different method such as the difference in difference method must be employed to see the true causal effect of the corporate social governance. Furthermore, the issues associated with not controlling for industry and sector is still present even after controlling for regions. Thus, the research still does not tell the important details regarding the industry.

Wang (2011) examined the effect of corporate social responsibility on stock performance by analyzing the Taiwan stock market and finds that corporate social responsibility indeed has a significant positive impact on stock performance. The authors have constructed portfolios consisting of firms with higher corporate social responsibility indexes and compared the excess return of the portfolio as opposed to its benchmarks such as the market index, value portfolio, and growth portfolio. If the difference between the controlled portfolio and its benchmark is statistically significant, one can conclude that there is indeed a relationship between corporate social responsibility and its stock performance.

The result shows that there is a significant positive relationship between those two variables and that corporate responsibility is very much valued by investors in Taiwan. However, this paper still does not tell the effect of social responsibility by incorporating the sector and regional differences, which makes it hard to see the micro picture. Indeed, the failure to incorporate such a regional difference might result in misleading conclusions. For instance, consider a situation where a country is comprised mostly of energy companies. It is apparent that energy companies must consider the long-term sustainability of the environment due to our increasing public attention to climate change. However, if you gather companies without controlling for sectors, the portfolio will be mostly comprised of companies from energy sectors that tend to focus more on sustainable energy, thus it creates an imbalance in the portfolio, causing a selection bias when it is supposed to be randomized. Thus, in order to draw an unbiased conclusion, the research must integrate the sector and regional differences.

Our review of the previous literature allows us to conclude that there is still a need for a different approach. Particularly, our approach must incorporate the regional and sector differences that might exist between CSR and non-CSR firms. The reward for this approach is significant since it allows us to overcome the potential bias associated with certain market. For instance, it makes a reasonable sense to assume that oil and gas companies would care more about the environment implications and their social practices than, say, consulting business. Thus, if a pooled sample is dominated by oil companies, it will inevitably lead to a biased estimation. To address this, once again, we will control for sectors and regions.

Data Description and Methodology

In this section, we would like to discuss the dataset we have collected, and the methodology employed to analyze the relationship between CSG (Corporate Social Governance) stock and its performance. First of all, to develop the CSG score of each company, we have retrieved community spending per revenue and percentage of women on board data from Bloomberg terminal. The initial raw data contained the list of companies filtered by different sector and nationality from the year 2018 – 2022, which allows us to control for sector and nationality of each firm in the data. We have then filtered them by dropping from the observation the company that contains a missing value for any of the year between 2018 to 2022 – which reduced the total data by roughly half. Then, using the average value of community spending per revenue (denoted by S) and percentage of women on board (denoted by W) over the year 2018 - 2022, we have developed the CSG index for each company by the following equation:

While some other previous analysis has relied on arithmetic average (Wang 2011), which assigns non-negative scalar from 0 to 1, we would like to use the equation above in the way of geometric calculation. The reason is that the former method relies heavily on the assumption that there is no complementary effect between two values. For instance, if one of the variables in the geometric index has the value of zero, the functional output results in the value zero; thus, reflecting the fact that factors of the index is complementary. However, having an arithmetic combination ignores the fact that the factor of the index is perfect substitute in the sense that elimination of one factor does not affect the other variable of the index. This geometric calculation allows us to express the CSG score by incorporating the complementary effect of S and W, where if S is low despite higher W, it still results in relatively lower CSG score depending on the weight lambda.

Furthermore, the weight lambda reflects the CSG index elasticity of the factor since:

We believe that information in companies that is more noticeable and accessible to public is more likely to be reflected in stock prices; thus, we would like to set the elasticity lambda on W to be higher than its counterpart. In our analysis, we have arbitrarily assigned the higher weight of on W. With this method of calculation, we have derived the CSG score of 318 companies. However, due to the difficulties associated with finding the stock price data, we have further filtered the data by selecting the four of the top CSG scored companies and the four of the bottoms from each sector, which guaranteed polarized CSG scores in the dataset. By doing so, we have reduced the data to 40 companies which also contains the information regarding the company sector. Particularly, the company sector in our analysis consists of technology, oil and gas, consumer product, automotive, and chemical. Moreover, since regional data of companies cannot be neglected because of the preference of investors that differ internationally, we have broadly assigned the regional category by specifying if the company is from Asia, America, or Europe. However, the broad categorization of company by continents still cannot incorporate the economic difference, we have included whether the company is from developed country or not.

Now, for the stock price data, we have gathered the stock price of all the 40 companies from Yahoo Finance. We gathered the closing price (P) of each company stock at the end of fourth quarter of each year from 2018 to 2021 and took the arithmetic average of the growth rate (G) calculated by

Also, to control for the size, we have included the market capital of companies expressed in billions in USD. In fact, the size of the company is very relevant to determining the value of a given stock (Fama and French 1993).

Following the steps above described, we have obtained the cross-sectional data of the 40 companies, and we have performed a multi-linear regression by having the average growth rate of stock as dependent variable and CSG index, company sector, continent, developed (or developing), and market capital as independent variables.

We have multiplied the continent and developed variable together so that it can tell variety of different conditions depending on the company specific region. Furthermore, we have included the interaction term between CSG index and sector.

Results

We have constructed four models in total. For the first two models (model 1 and 2), we have run the regression with regional control and without respectively. Moreover, for the model 3, we have run the regression only with CSG index, and for the model 4, we used the same variables as model 1 but with the added the interaction terms. The result of the regression is summarized (Appendix A: Table 1). For all models, we have treated Automobile as an excluded category of the industry data and thus the coefficients on sector values are expressed relative to the automobile industry. Similarly, for the continent American is treated as an excluded category.

The result tells us that for model 1, which controlled for the regional differences, the CSG score is positively associated with the stock growth. Increase in one score results in the increase of average stock growth by 0.17% on average. Furthermore, all the industry sector is negatively associated with the stock performance relative to automobile industry. Continent variable on the other hand tells us that being in Asia does increase the stock price while being in the other continent does not relative to a company being in America. Furthermore, market capital does show a positive relationship with the stock price. In summary, for the model 1, controlling for the sector, region, and regional economic condition, we have failed to show that having a higher CSG score results in a better stock performance at the statistically significant level.

For the model 2, however, without controlling for regions, the result shows that having a higher CSG score results in a negative performance of a stock. Moreover, the result for the industry variables is almost analogous to the model 1 except for the fact that technology has a positive coefficient for model 2. Similarly, for the model 2, we have failed to find the significant relationship between CSG score and the stock performance. Finally, we have run the regression by changing the lambda in the CSG index calculations to , but we have obtained the similar result for all values of lambda (Appendix A: Table 2).

For the model 3, on the other hand, we have obtained the negative result on the CSG score without any regional or industrial control. This means that CSG score is associated with lower stock performance overall. However, for model 4, it is clear that the interaction term did not add much to the result. The CSG score is positive, but the adjusted R-squared has decreased compared to model 1. Marginal effect of CSG now depends on the specific sector of the company relative to automobile sector. Brief look at the result tells us that, relative to automobile sector, being in Chemical and technology sector creates an overall positive relation between CSG and stock performance. However, being in other sector creates a negative relation between CSG and stock performance relative to automobile sector.

Generally, our result neither verifies nor invalidates Milton Friedman’s claim that corporations should engage in profit maximizing company policy to improve its performance rather than engaging in social activity. In other words, the CSG score seems irrelevant (or perhaps not a significant) factor in determining the corporate stock performance as our result suggests. This conclusion is contrary to previous literatures as discussed in literature review in the sense that CSG score became negatively associated with the stock performance once regional difference is not incorporated. However, the possible shortcoming we face in this research is the fact that we have reduced the sample data drastically and this might have resulted in an inaccurate inference of the population data. Moreover, the CSG score in our research could also have incorporated some other elements such as specific company policies and company culture. However, that information is difficult to quantify and hard to obtain; thus, some methods to overcome this issue of information cost and quantifiability must be developed. In summary, our paper showed that CSG score is not a significant factor in determining the stock price once controlled for the region and the industry sector.

Conclusion

The paper has attempted to supply another argument for corporate social governance by finding a connection between social responsibility and the corporate stock performance. Previous literature has answered the question in some certain sense and found that there indeed are some positive associations. However, the question regarding what degree CSG impact the stock price once controlled for sector and regions are still under explored. We have run a multilinear regression on 40 corporations across different sectors and regions with a CSG index we have developed and found that there is no significant relationship between CSG index and stock performance. However, our result does show that the relation is positive rather than negative, which is consistent with previous literatures. To address some of the potential issues in our method, the sample size must be sufficiently large enough to make a more accurate inference. Furthermore, it would also be beneficial to develop more inclusive measure of CSG index by taking into account some of the qualitative information of the companies.

Finally, to address the endogenous issue associated with CSG score and stock price – in other words, a difficulty in finding the causal effect of CSG on stock price – more advanced research adopting quasi-experimental method would be extremely rewarding. It would enable us to find an effect of company policy regarding social responsibility on its stock performance. This would allow us to isolate the causal effect of social governance on the stock performance and resolve the inverse causality issues.

Appendix A

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 1: Result: Dependent Variable | | | | |
|  | Model 1 | Model 2 | Model 3 | Model 4 |
| CSG | 0.17 | -0.46 | -1.233 | 8.7508 |
|  | (0.58) | (0.56) | (1.351) | (20.6901) |
| Chemical  Consumer Product  Gas and Oil  Technology  Developing | -12.77  (13.51)  -15.91  (15.11)  -4.66  (13.62)  -5.23  (14.65)  -5.70 | -5.87  (14.12)  -13.94  (14.27)  -6.09  (14.39)  5.42  (14.68) |  | -17.8365  (18.5280)  -11.0584  (20.2368)  2.0961  (18.1683)  -6.3062  (17.9782)  -5.1034 |
|  | (23.55) |  |  | (24.7514) |
| Asia  Europe  Developing\*Asia  Developing\*Europe  MarketCap | 16.74  (12.57)  -20.85  (16.40)  -20.85  (-26.655)  NA  (NA)  0.032 | 0.20 |  | 19.4874  (13.1294)  -19.8858  (19.2204)  -32.6188  (32.1356)  NA  (NA)  0.0326 |
| CSG\*Chemical  CSG\*ConsumerProduct  CSG\*GasOil  CSG\*Tech | (0.07) | (0.07) |  | (0.0689)  21.7848  (44.5795)  -9.2280  (22.4292)  -9.3020  (20.6834)  -6.7686  (20.8804) |
| Regional Control | Yes | No | No | Yes |
| Model p-value | 0.303 | 0.8044 | 0.3672 | 0.5843 |
| Adjusted R2 | 0 .0574 | -0.0835 | -0.0043 | -0.0434 |

*Notes*: \*: Significant at the 10% level; \*\*: Significant at the 5% level; \*\*\*: Significant at the 1% level. All coefficients come from the multilinear regression. Standard errors listed in parentheses below the coefficients. NA denotes no observation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 2: Regression Result with Different Index | | | | |
|  | Model A | Model B | Model C | Model D |
| CSG | 0.01 | 0.03 | 0.96 | -0.002 |
|  | (1.59) | (0.91) | (1.56) | (0.35) |
| Chemical  Consumer Product  Gas and Oil  Technology  Developing | -12.55  (13.53)  -15.49  (15.29)  -4.22  (14.89)  -4.59  (15.18)  -6.59 | -12.29  (15.20)  -15.33  (15.65)  -4.18  (13.57)  -4.48  (14.80)  -6.63 | -7.47  (15.77)  -11.79  (16.13)  -1.98  (13.94)  -1.57  (15.18)  -6.12 | -12.56  (13.71)  -15.49  (15.13)  -4.19  (13.73)  -4.59  (14.50)  -6.57 |
|  | (23.38) | (23.39) | (23.23) | (23.61) |
| Asia  Europe  Developing Asia  Developing Europe  MarketCap | 15.44  (11.74)  -20.96  (17.08)  -24.64  (-28.14)  0.033 | 15.45  (11.73)  -20.91  (16.49)  -24.61  (27.99)  0.03 | 15.50  (11.65)  -20.26  (16.35)  -26.25  (27.92)  0.02 | 15.43  (11.76)  -20.97  (16.52)  -24.67  (28.51)  0.03 |
|  | (0.06) | (0.07) | (0.07) | (0.07) |
| Value of Lambda | 0 | 0.25 | 0.5 | 1 |
| Model p-value | 0.3097 | 0.3096 | 0.281 | 0.3097 |
| Adjusted R2 | 0.057 | 0.058 | 0.069 | 0.05741 |

*Notes*: \*: Significant at the 10% level; \*\*: Significant at the 5% level; \*\*\*: Significant at the 1% level. All coefficients come from the multilinear regression. Standard errors listed in parentheses below the coefficients.

Citations

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