Investigating the effects of corporate social responsibility on financial performance

Zhenfei Zhang¹

¹Department of Economics and Management, Wuhan University, Wuhan, Hubei, 430000, China
*e-mail: albert691@163.com

Abstract. This paper assesses the relationship between corporate social responsibility activities (CSR) and financial performance as well as how CSR affects the financial operations of companies of all types. Over the last decade, the world has made remarkable achievements in its economy, which provide more fertile soil for a variety of companies to thrive even in fierce market competitions. However, the planet’s finite resources and a heightened citizen awareness also called for corporate social engagement rather than the pursuit of profit maximization. Therefore, this paper leverages recent CSR scores and the latest financial data of the top 300 companies on the CSR index list, and provides statistical evidence on the positive role of CSR activities in corporate performance. This paper is also expected to generate fresh insights into future academic research and CSR strategies.

1. Introduction

Corporate social responsibility, often referred to as CSR, has been brought into the limelight in recent years, and a rapid rise in the number of companies that have shifted their focus from solely on making profits to integrating social and environmental gains. Reasons underlying this phenomenon have been widely reviewed and discussed in the world of academic research. A major factor might be associated with the restraints of ever-dwindling natural resources, such as water, soils, air, forests, and fuel [1]. Energy-intensive and highly polluting industries and enterprises have been under strictly controlled and building a sustainable development framework is a matter of great urgency. On the other side, there is an increasing awareness among citizens who are seeking to make more socially responsible choices and to minimize their negative social and environmental impact.

In this context, companies of all sizes have taken action on embracing more sustainable businesses and socially responsible strategies into everyday practices. Corporate social responsibility has also been regarded as a benchmark or criteria for the public to evaluate whether a company brings more far-reaching social value and economic benefits. At the institutional level, CSR efforts can be arranged in different scopes, ranging from a piecemeal way such as direct donations to local nonprofit organizations, to comprehensive programs such as efficient supply chain, reduced energy consumption, and social engagement with diversity, equality, and inclusion [2].

Though these CSR initiatives and activities may initially start as an outcome of sustained external pressure it is still undeniable that once implemented, they will also create positive effects on board public support, company reputation, and market performance. Some evidence also indicated that solid CSR efforts would exert a strong financial impact as well, including higher market value and decreased cost of debt [3].
Based on the arguments above, this prospective study was designed to investigate the effects of corporate social responsibility practices on the financial performance of Chinese companies using multiple regression analysis, and find out specific ways how exactly CSR impacts firm performance. This paper also introduced the latest published CSR index from State Council as a new indicator for our linear regression model. Another main purpose is to provide enlightenment for both researchers and industry practitioners and inspire more companies to establish suitable frameworks or adopt policies that build distinct advantages and maintain coordinated, sustainable development.

2. The effects of CSR activities on financial performance

Generally speaking, current academic research that focused on the relationship between corporate social responsibility activities and financial performance can be categorized into three types. Firstly, there is a growing body of opinion that CSR activities can bring positive waves to enterprise capability and financial operations. Giannarakis et al. (2016) probed into 104 listed U.S. firms from 9 different industries between 2009 and 2013, and identified that factors including total compensation to directors, CEO duality, and female presence on board can be major causes of improved financial performance in companies surveyed [4]. In a recent study by Okafor (2021), the empirical evidence proved that expenditure on socially responsible causes can positively affect the long-run growth of U.S. technology companies [5].

The second type of researchers takes the opposite view that CSR activities might bring more negative effects instead of expected returns. For example, Han (2019) focused on the Korean firms listed in the stock market between 2008 and 2014, finding out that with an increasing number of companies engaged with social causes, their financial performance would correspondently decrease [6]. The third perspective is that CSR and financial performance are unconnected, let alone a causal relationship between them. Nelling and Webb are the two most influential scholars in this area [7]. In 2009, they established a robust research model and argued that when excluding time-series effects, the former positive effects are greatly undermined and there is no statistically significant relationship was found out between them.

Although several attempts have been made to examine the relationship between CSR activities and financial performance, previously published studies are limited to U.S. or European surveys. Few studies have analyzed this effect in Chinese firms in a systematic way. Therefore, this paper aims to rediscover the impact of CSR activities and financial performance by analyzing firms listed in the Chinese stock market, seeking to explore their relationship in a quantitative way. A holistic approach is utilized in the research methodology, integrating variable selection, empirical research, and linear regression.

3. Data and research methodology

Given the fact that the relationship between corporate social engagement and its financial performance is still controversial in academia, this paper aims to conduct a quantitative analysis on this topic and offer some important insights into the field of research. Data samples were filtered and carefully selected from multiple sources in China. In order to strengthen the data quality and simplify the process of data collection, this paper directly adopted the CSR index published by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC). Financial variables were retrieved per company from the Wind database and other financial websites within the same time.

3.1. CSR Index Source

Evaluating CSR can be a difficult process considering its composite and multidimensional nature. It would also be unrealistic to qualify through a bunch of CSR activities and calculate all of their scores. Therefore, consistent with previous studies, this paper decided to use the index score to measure the corporate social performance of companies. CSR index refers to a quantitative metric that assesses the extent of each registered entity’s CSR activities, assign different weight to them, and combines the
level of each activity into one single, comparable figure [8]. It is designed to assist company executives and venture capitalists to enhance their understanding of corporates’ overall CSR performance. Despite its fundamental role in finance, this index also establishes benchmarks for CSR involvement and offers comparable features among companies in a variety of industries, both horizontally and vertically. Typically, the CSR index is analyzed from the perspective of the environment, social, and governance, and other details in the index system may vary based on regions or industries.

To ensure the reliability of our findings, this paper used the latest official CSR index released by the State Council in 2020. It was first published in the Research Report on Corporate Social Responsibility of China (2020), which optimized the evaluation process and analyzed the social responsibility management level of 300 companies, including top 100 state-owned enterprises, top 100 private enterprises, and top 100 foreign-funded enterprises [9]. According to the Chinese Academy of Social Sciences, the CSR evaluation dimensions consist of market responsibility, environmental responsibility, social responsibility, responsibility management, and other aspects that promote social and economic sustainable development. The full credit is 100, and the top ten companies that rank in the list of CSR index are shown in Table 1.

| Ranking | Company                                | CSR Index |
|---------|----------------------------------------|-----------|
| 1       | China Resources Holdings               | 92.9      |
| 2       | Samsung China                         | 91.6      |
| 3       | China Huadian Corporation             | 88.4      |
| 4       | Hyundai Motor Group (China)           | 87.2      |
| 5       | China Petroleum & Chemical Corporation| 87.1      |
| 6       | China Huaneng Group                   | 86.9      |
| 7       | China National Building Material Group| 86.9      |
| 8       | State Development and Investment Corporation (SDIC) | 85.3 |
| 9       | China FAW Group                       | 85.3      |
| 10      | Dongfeng Motor Corporation            | 85.2      |

3.2. Financial Metrics

In order to gauge the financial performance of the 300 companies mentioned in the former section, the current paper adopts the operating profit ratio (OPR), return on equity (ROE), and return on assets (ROA). Specially, the operating profit ratio is a common tool that measures the profitability of the business, which is calculated as shown below [10]:

$$ OPR = \frac{Operating\ Profit}{Net\ Sales} \times 100 $$  \hspace{1cm} (1)

Both ROE and ROA look at the effectiveness of making profits. While ROE measures how much a company earns compared to the money invested in its common stocks, ROA calculates how efficient a company is when making use of its owned assets to generate profits [11]. ROE and ROA can be computed as follows in (2) and (3). All these metrics are expressed as percentages.

$$ ROE = \frac{Net\ Income}{Stockholder’s\ Equity} \times 100 $$  \hspace{1cm} (2)
\[ ROA = \frac{\text{Operating Income}}{\text{Total Assets}} \times 100 \] (3)

The financial data were obtained from publicly available databases and official websites, including Bloomberg, Wind Economic Database, and GoSense Database. Since the CSR index measures the social performance in the year 2020, we also gathered these financial ratios over the same time span. Three companies were excluded due to a lack of available data or valid data sources. Thus, a total of 297 company samples were obtained with complete CSR index scores and financial data.

3.3. Models and Research Methods
As for the quantitative model, this paper used the common econometrics model as noted in Equation (4) and conducted a linear regression analysis to investigate the impact of corporate social responsibility activities and financial performance. Linear regression is a basic yet powerful tool in modeling the correlation between the target and one or two variables from observed data [12].

\[ Y = \beta_0 + \beta_1 x + \alpha \] (4)

The main purpose of this paper is to carry out the quantitative analysis on the influence of CSR activities and social engagement on companies’ financial performance, and identify the exerted effects are positive or negative. In this case, in (4), X is the independent variable and represents the corporate social responsibility indicator, which is the standardized index retrieved from the Research Report on Corporate Social Responsibility of China (2020). Y is the dependent variable that denotes the selected financial ratios, namely Y1 as operating profit ratio (OPR), Y2 as return on equity (ROE), and Y3 as return on assets (ROA). \( \alpha \) refers to the random interference that denotes the possible effects from other variables other than X. Therefore, the equation can be written as three expressions respectively:

\[ OPR = \beta_0 + \beta_1 CSR + \alpha \] (5)

\[ ROE = \beta_0 + \beta_2 CSR + \alpha \] (6)

\[ ROA = \beta_0 + \beta_3 CSR + \alpha \] (7)

4. Result Analysis
Before trying to fit data into (5), (6), and (7), this paper first determined whether there is a relationship between these variables and how strong the relationship is through a scatterplot as shown in Fig. 1

As can be seen from Figure 1, there obviously exists a linear relationship between the CSR index and three financial ratios. Even though this scattered diagram does not necessarily prove any cause-and-effect conclusions, which mean that one variable would cause others, it can be certain that these variables have some significant connection with each other. Therefore, this paper made further efforts to evaluate and quantify their correlations leveraging regression analysis.
Firstly, the descriptive statistics are presented in Table 2, which provides the overall picture of the original data and some other statistical features, which are gathered from diverse data sources.

Table 2. Descriptive Statistics

| CSR Index | OPR | ROE | ROA |
|-----------|-----|-----|-----|
| Mean      | 64.858 | 6.290 | 9.796 | 0.083 |
| Standard Error | 0.550 | 0.390 | 0.416 | 0.002 |
| Median    | 64.400 | 4.742 | 9.190 | 0.078 |
| Mode      | 86.900 | 1.679 | 0.000 | 0.059 |
| Standard Deviation | 9.486 | 6.728 | 7.173 | 0.034 |
| Sample Variance | 89.976 | 45.262 | 51.446 | 0.001 |
| Kurtosis  | -0.419 | 0.604 | 5.872 | 4.029 |
| Skewness  | 0.393 | 0.405 | 0.730 | 1.409 |
| Range     | 43.300 | 69.350 | -19.285 | 0.011 |
| Minimum   | 49.600 | -14.687 | 0.011 |
| Maximum   | 92.900 | 50.065 | 2909.356 | 24.577 |
| Sum       | 19262.700 | 297.000 | 297.000 | 297.000 |
| Count     | 297.000 | 297.000 | 297.000 | 297.000 |

After removing three companies that lack missing financial values from the dataset, the remaining 297 samples all had complete and qualified data. Therefore, this paper used EViews and STATA software to construct the linear regression model and derive ordinary least squares (OLS) results as shown in Table 3 and Table 4.

Table 3. Regression Analytics

| Measures                  | Regression Statistics | Regression Statistics |
|---------------------------|-----------------------|-----------------------|
|                           | Y1=OPR, X=CSR     | Y1=ROE, X=CSR     | Y1=ROA, X=CSR     |
| Multiple R                | 0.831618514 | 0.715173236 | 0.879298495 |
| R Square                  | 0.835265649 | 0.665403463 | 0.861446445 |
| Adjusted R Square         | 0.833690279 | 0.762913305 | 0.85962084 |
| Standard Error            | 4.594121401 | 6.157907665 | 0.025098893 |
| Observations              | 297 | 297 | 297 |

Table 4. Model Summary

| Model (5) | Coefficients | Standard Error |
|-----------|--------------|----------------|
| Intercept | -27.36438563 | 1.84516334 |
| X variable| 0.518903966  | 0.02815099 |
| t Stat    |              | P-value        |
| Intercept | -14.8303324  | 1.4596E-37 |
| X variable| 18.4328847   | 5.1739E-51 |
| Model (6) | Coefficients | Standard Error |
| Intercept | -15.46951677 | 2.47323579 |
From the tables above, we can see that the coefficient of determination for the model (5), (6), and (7) is 0.831618514, 0.715173236, and 0.879298495, respectively. They indicate that there is a relatively good fitting degree because nearly 83%, 71%, and 88% of the gathered data can be explained using three models. Moving ahead, it is confident to quantify the parameters and write these models as:

\[ OPR = -27.36 + 0.52 \times CSR \]  
\[ (14.8303) \quad (18.4329) \]  
\[ ROE = -15.47 + 0.39 \times CSR \]  
\[ (-6.2548) \quad (10.3238) \]  
\[ ROA = -0.075 + 0.002 \times CSR \]  
\[ (-7.5227) \quad (15.8985) \]  

The results obtained from the scatterplots and linear regression revealed that corporate social responsibility activities are statistically significant to the company’s financial performance. The casual role of CSR in operating profit ratio, return on equity, and return on asset has been demonstrated by the positive coefficients presented in the models (8), (9), and (10), which imply a positive correlation between these variables. In particular, for each unit increase of CSR index score, the operating profit ratio is predicted to grow by 0.52 units, return on equity by 0.39 units, and return on asset has the smallest increase compared with others, only by 0.002 units. It is confident to say the corporate social responsibility activities will generate positive financial effects for driving financial growth and market performance. OPR will be most heavily boosted, followed by ROE and ROA. This conclusion also aligns with previous academic works and it is of much reference value for future analysis.

5. Conclusion

To summarize, it is statistically evident that the CSR index score has exhibited positive effects on each of the three financial metrics. The main findings also manifest that CSR efforts can contribute to the long-term financial benefits. It is noted that by contrast, CSR has the largest impact on operating profit ratio and minimum effect on return on asset, which indicates that CSR influenced the overall financial performance mainly by boosting operating profits, possibly due to enhanced brand reputation and broad public support. This paper also makes several contributions to the current literature by introducing a fresh way of gauging the CSR efforts and by filling the gap of analysis on Chinese firms. The empirical research can further assist our understanding of the role of CSR in corporate governance and provide a decision-making basis for executives, managers, and policymakers.
References
[1] "What Are the Top Trends in Corporate Social Responsibility?", Investopedia, 2021. [Online]. Available: https://www.investopedia.com/ask/answers/011215/what-are-top-trends-corporate-social-responsibility.asp. [Accessed: 10- Mar-2021].
[2] B. Edmondson, "What Is Corporate Social Responsibility?", The Balance, 2021. [Online]. Available: https://www.thebalance.com/corporate-social-responsibility-csr-4772443. [Accessed: 10-Mar-2021].
[3] E. Akben-Selcuk, "Corporate Social Responsibility and Financial Performance: The Moderating Role of Ownership Concentration in Turkey", Sustainability, vol. 11, no. 13, p. 3643, 2019. Available: 10.3390/su11133643.
[4] G. Giannarakis, G. Konteos, E. Zafeiriou and X. Partalidou, "The impact of corporate social responsibility on financial performance", Investment Management and Financial Innovations, vol. 13, no. 3, pp. 171-182, 2016. Available: 10.21511/imfi.13(3-1).2016.03.
[5] A. Okafor, B. Adeleye and M. Adusei, "Corporate social responsibility and financial performance: Evidence from U.S tech firms", Journal of Cleaner Production, vol. 292, p. 126078, 2021. Available: 10.1016/j.jclepro.2021.126078.
[6] J. Han, H. Kim and J. Yu, "Empirical study on relationship between corporate social responsibility and financial performance in Korea", Asian Journal of Sustainability and Social Responsibility, vol. 1, no. 1, pp. 61-76, 2016. Available: 10.1186/s41180-016-0002-3.
[7] E. Nelling and E. Webb, "Corporate social responsibility and financial performance: the "virtuous circle" revisited", Review of Quantitative Finance and Accounting, vol. 32, no. 2, pp. 197-209, 2008. Available: 10.1007/s11156-008-0090-y.
[8] "CSR Index", Ec.europa.eu, 2021. [Online]. Available: https://ec.europa.eu/eipp/desktop/fr/projects/project-8064.html. [Accessed: 10- Mar-2021].
[9] J. Chen, Q. Huang, H. Peng and H. Zhong, Research Report on Corporate Social Responsibility of China.
[10] "What is Operating Profit Ratio? - AccountingCapital", AccountingCapital, 2021. [Online]. Available: https://www.accountingcapital.com/ratios/operating-profit-ratio/. [Accessed: 10- Mar-2021].
[11] "return on equity", TheFreeDictionary.com, 2021. [Online]. Available: https://financial-dictionary.thefreedictionary.com/return+on+equity. [Accessed: 10- Mar-2021].
[12] C. Flammer, "Does Corporate Social Responsibility Lead to Superior Financial Performance? A Regression Discontinuity Approach", SSRN Electronic Journal, 2012. Available: 10.2139/ssrn.2146282.