

# **The Impact of Corporate Social Responsibilities on Financial Performance in China**

**Author**

Xiaolin Xie

**Advisor**

Professor Patrick Ward

International Master of Environmental Policy

Nicholas School of Environment & Sanford School of Policy

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## **1. Introduction**

The notion of Corporate Social Responsibility (CSR) has become an increasingly common thread of discourse in corporate boardrooms around the world as corporations attempt to shed the pernicious perception that their activities contribute to the increased toxicity in the world, both real environmental toxicity as well as social toxicity manifesting itself as greed, misogyny, and racism. By 2004, over 50% of Fortune 1,000 companies had disclosed their own CSR reports or Environmental, Social, and Governance (ESG) reports documenting their investments and activities aimed at increasing their socially-responsible impacts, and have further promised to publicly release such reports every year (Tsaotsoura, 2004). A report by KPMG in 2011 found that approximately 95% of the top 250 companies report their CSR reports separately (KPMG, 2011). Those CSR reports show non-financial information to stakeholders as well as the public, like investments in improving unessential environmental techniques, companies' charitable donations, the proportion of females in leadership, and so on. As a result of the growth of CSR disclosures, consumers now have a better understanding of company CSR activities conveyed by the reports. The proportion of consumers who were confused by CSR information fell from 71 percent to 65 percent between 2011 and 2015. Moreover, consumers now take an active role in pushing corporates to undertake more socially-responsible activities and investments. In a 2015 report, 80 percent of consumers would try an unknown brand as long as it has good CSR performance or commitment and 82 percent will recommend to others if the company supported social or environmental issues (Cone, 2015).

The popularity of CSR not only appears in the developed countries, but also increasingly in developing countries, like China (Lin, 2011). Since 2009, China Securities Regulatory Commission (CSRC) required 260 companies listed in Shanghai Stock Exchange (SSE) and 100 companies listed in Shenzhen Stock Exchange (SZSE) to disclose their CSR report when publishing their annual financial reports. CSRS also recommended other listed companies to disclose CSR information of their own accord. In 2016, Hongkong Exchange Stock Exchange (HKEX) announced that CSR reporting would become mandatory for every listed company in HKEX. At the beginning of 2017, 792 A-share companies<sup>1</sup> listed in SSE and SZSE disclosed their annual CSR report for performance in 2016.

The academic community and business world, especially consulting firms in this field, also notice that the popularity of CSR is rising among companies as well as social non-profit organizations, which raises questions about the reasons behind it (Lioui, 2012). In the past, there were several debates on the incentives behind CSR. One of the most famous is the debate between Professors Berle and Dodd on whether corporate managers should only be the trustees of shareholders. Professor Berle believed that managers should only be responsible to their shareholders, but Professor Dodd argued that company, as an economic institution, should be the trustees of not only shareholders but also the society. Academics have long debated about the nature of a corporations and how the power of the corporation should be limited (Weiner, 1964). The debate successfully introduced and developed the research of CSR (Chen and Wang, 2011). Though some investors or stakeholders also advocated for companies to report their CSR

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<sup>1</sup> A-shares companies means Chinese companies who are publicly listed on Chinese stock exchanges.

information, more companies would publish CSR reports after CSR reports become mandatory. However, it seems that the habit of corporate disclosure is changing. More and more corporations become willing to post their CSR information for the public. Academics conjecture that it is driven by the power of purchase and consumers' increasing environmental awareness. Therefore, these years lots of studies research on the topic to see if there is a relationship between CSR and corporate financial performance. However, three different relationships are found, positive, negative and insignificant. Moreover, most of the studies were conducted outside China. Therefore, in this article, we are going to research the listed companies in China.

In this project, I analyzed the CSR reports of 62 listed companies across three industries (the banking, real estate, and pharmaceutical industries) to assess whether socially-responsible corporate behavior is rewarded with strong financial performance. The HKEX Environment Society Governance (ESG) Reporting Guide Content Index served as the reference disclosure form in this article. With the HKEX ESG Reporting Guide Content Index, I scored the quality of the CSR or ESG reports. The values of corporate ESG data is collected. With the financial data disclosed in the corporate annual report, I calculated several financial performance metrics. The remainder of this report is organized as follows. Section 2 is the literature review; section 3 is the data source and explanation; section 4 is the analysis method; section 5 is the result, and section 6 is the conclusion.

## 2. Literature Review

Though the concept of CSR was first introduced in the 1950s, some former scientists have tried to address the social role of large organizations. Barnard (1938) claimed that formal organizations should take their role and obey unwritten rules in society. According to his book, the function of the executive, the formal organizations should do an analysis of legal, moral, social, economic and physical aspects of the environment before they make business decisions. Simon (1945) also stated that the organization ought to be responsible to the community values. Both of them put forward the idea of responsible organizations. After a few years, the concept of CSR concluded how an organization should behave toward society (Bowen & Johnson, 1953). CSR depends only on voluntarism and self-discipline (Sheehy, 2015). It is different from a legal requirement, and most of the time the performances are beyond the law. Some researchers defined it as a “soft law” (Klarsfeld & Delpuech, 2008). In modern society, the world values sustainability. Most countries write “sustainable development” into their law and strategy, such as the U.S., Japan, German, UK, and China. CSR requires companies to be responsible for their staff, the environment, and the society, as well as maintaining profitability and shareholder value. Therefore, corporate social development has become a popular concept, and companies write annual reports on what they have done based on the standard of CSR. That is why we can conclude companies’ corporate social responsibilities in this year from their annual reports. There are few references for writing reports, for example, International Standard ISO 26000, Social Accountability 8000, Global Reporting Initiative, etc. Some stock exchanges even demand their listed companies to disclose the reports every year based on their rules, like the Stock Exchange

of Hong Kong Ltd. It requires the listed companies to disclose ESG Reports and post it on the website every year. Based on its ESG Reporting Guide, corporations are required to disclose CSR performance on three dimensions, including environment (e.g., emissions), society (e.g., charity), and governance (e.g., salary). If the company is unable to or refuses to disclose any of indexes, the company is required to submit an explanation, which is one of their rules: “Explain if you do not comply.” Mainland China’s stock exchanges also have similar rules, but are much looser. In the Shenzhen Stock Exchange, it does not set up any reporting guideline but only encourages its listed companies to disclose their reports (Notice of Shenzhen Stock Exchange on Issuing Shenzhen Stock Exchange Social Responsibility Instructions to Listed Companies, 2006). The situation in Shanghai stock exchange is better, but its guide is unclear. Though the report is mandatory, the quality of reports depends on the corporation itself (Guidelines of the Shanghai Stock Exchange for the Information Disclosure Management Bylaws of Listed Companies, 2005). Therefore, most of the companies only copy the words from the rules as their “reports.”

Even though companies have met the national standard or donate money for different projects varies, some still want to reduce emissions because of the pressure from the society or the benefit the firm can earn from the enhanced reputation (McWilliams and Siegel, 2001; Lee et al.,2013). The most popular theory is that firms can benefit from good behavior in fulfilling their corporate social responsibilities, regardless of whether the benefits are from the government, the consumers, or the supply chain. In the CSR or ESG report, there is one chapter called “The Opinion from Stakeholders,” which includes the topics different stakeholders care about. The design of this chapter comes from a

theory called “Stakeholder Theory” (Freeman, 1984). Researchers defined CSR as a strategy of the firm to satisfy stakeholders from different backgrounds, including the government, consumers, suppliers, stockholders, staff, etc. It was first put forward by Freeman (1984) under the assumption that better or worse of CSR represents better or worse corporate performance. It supports the idea that corporate responsibility has positive effects on corporate financial performance (Manokaran et al., 2018). This theory has become popular because it explains why a firm would like to take part in the social event even though it needs to donate money for the event.

Previous studies on the relationship between CSR and financial performance fail to reach a consistent conclusion. Several studies believed that CSR could bring positive effects to financial performance (Bragon and Martin, 1972; Hart and Ahuja, 1969; Judge and Douglas, 1998; Orlitzky, 2003; Nicolau, 2008; Bird et al., 2017; Manokaran et al., 2018). Moreover, some scientists research on this as well and found the good performance on corporate social responsibilities can improve the reputation as well as firm’s equity, which can also save money from violating the regulations (Bird et al., 2007; Lee and Park, 2009; Kang et al., 2010). However, other researchers have found that firms may lose money while undertaking some activity or investment that is beneficial for society (Vance, 1975; Frankle and Anderson, 1978; Cordeiro and Starkis, 1997). Notably, however, much of the literature that points to a negative relationship are rather dated. Other research has indicated that CSR and financial performance are independent (Abbott and Mosen, 1979; Alexander and Buchholz, 1978; Aupperle et al., 1985; Margolis, 2007; Madorran and Garcia, 2014).

Scholars use different methods to work out the impact of CSR on financial performance. Wen (2017) analyzed panel data with top firms from 2007 to 2013 in China and found that the positive effect of CSR performance on financial performance are both operational and signaling. Operational effect means when the firm has better employee relationship and better internal governance, it can generate more profit. Signaling effect means the CSR report can be seen as a self-reported signal, which helps to build the moral reputation for the firm in the job market. Using pooled ordinary least squares (OLS) and fixed effect regression methods, this study evaluated the impact of CSR score (current year and the previous year) on financial performance, including net profit, total revenue, return on assets, and total operating cost. Jagannathan et al. (2017) found that investors are paying more attention to ESG criteria by conducting case studies on the coal and palm oil industries. Al-Malkawi and Javaid (2018) evaluated 107 non-financial firms listed on the Saudi Arabia stock market from 2004 to 2013 with the generalized method of moments (GMM) framework, both fixed effects and random effects models, and pooled OLS. They measured CSR performance with Zakat<sup>2</sup> and found there is a strong positive impact of CSR on financial performance, including return on equity (0.0242) and the price-to-book ratio (0.3863). Besides econometric modeling, researchers have also conducted meta-analyses based on existing studies. Wu (2006) used meta-analysis got a result of average effect size as 0.166, which means each improvement on CSR performance can bring 0.166 increase on financial performance on average. However, after conducting a meta-analysis on 167 previous studies, Margolis (2007) found about

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<sup>2</sup>“Zakat involves the payment of a small proportion of one’s wealth to be distributed to poor and needy people. In Islam, all Muslims who have (sufficient) wealth are obligated to pay Zakat as one of the five pillars of Islam” (Khurshid et al., 2014).



58% of samples showed insignificant results, which means it is almost impossible for any relationship between CSR and financial performance.

### **3. Data**

#### **3.1. Environment, Society, Governance**

The sample includes 62 listed companies in three industries, including 20 real estate companies, 21 pharmaceutical companies, and 21 banking companies, which ranked at the top of their respective industries in HKEX in terms of market value. These are not necessarily the top 20 companies in their respective industries, since some of the top 20 companies were just listed in 2017 or 2018, which means they missed one to two CSR annual reports that were required for the subsequent analysis. I downloaded their CSR reports for these 62 companies for the 2016 and 2017 financial years from HKEXnews website (<http://www.hkexnews.hk>), a website that covers issuer-generated information and HKEX-generated regulatory issuer information. This study focuses on these two years because HKEX required its listed companies to disclose CSR reports and also posted its Reporting Guide Content Index in 2016. Therefore, it can ensure that every report has the same standard to follow while writing its report.

In these CSR reports, I collected all values they included in the report, for instance, greenhouse gas emissions, wastewater, employment, charitable contributions data, etc. However, even with the same guidance, companies still disclosed their information differently, including using different units, different accounting methods, and there were many missing data. Therefore, it is difficult to directly compare the values they disclosed to evaluate their CSR performance. Given this, I assumed that those with more comprehensive CSR disclosures would have better CSR performance. Under this assumption, I scored every report according to the HKEX ESG Reporting Guide Content

Index. In this guidance, some disclosures require qualitative description, some need quantitative indicators, and others demand both ways. While scoring, if a report meets the requirement, it will get one point for that variable; if not, it will get zero. For those who required both qualitative and quantitative description, the report can only get one point when it has written words as well as accurate numbers for this indicator. For the final score, I used the score added up from every variable to divide the total number of variables.

$$CSR_{Score} = \frac{\sum_{j=1}^{40} Information_j}{40} * 100$$

$$Information_j = \begin{cases} 1, & \text{if fully disclosed} \\ 0.5, & \text{if partly disclosed} \\ 0, & \text{if not disclosed} \end{cases}$$

Aside from the score, I was also curious about how environmental performance will affect financial performance. Therefore, I standardized the data of greenhouse gas emission, electricity use, energy use and water use by dividing the raw reported figures by the number of employees. Among the total 124 observations (62 companies for two years), only 27 have these four data disclosed at the same time. None of the companies has all four values disclosed for both years. One concern is that these four values are collinear with the score of the CSR report. I tested this possibility of collinearity by examining correlations (Tables 1.a and 1.b). From the tables we can see, though the correlation rates among electricity use, greenhouse gas emission and water use are over 0.5, which may affect the efficiency of the estimate, none of them are perfectly collinear with others.

*Table 1.a Correlation of five variables for whole data*

	Report Score	GHG	Energy	Ele	Water
Report Score	1				
GHG	0.2645	1			
Energy	0.2151	0.2554	1		
Ele	0.3150	0.5579	0.1864	1	
Water	0.3237	0.5677	0.2094	0.5704	1

*Table 1.b Correlation of five variables for 26 companies*

	Report Score	GHG	Energy	Ele	Water
Report Score	1				
GHG	0.1967	1			
Energy	0.2251	0.4281	1		
Ele	0.1743	0.8795	0.1560	1	
Water	0.0864	0.6536	0.2304	0.7001	1

### 3.2. Financial Performance

Form the HKEXnews website (<http://www.hkexnews.hk>), I also downloaded the 2016 and 2017 annual reports of the 62 sample companies. From these, I collected financial data from the financial statements contained in the annual reports, including total comprehensive income for the year, non-current assets, current assets, total equity, profit for the year, operation revenue, profit before taxation, finance costs, depreciation, amortization, and Earnings Per Share (EPS). With these data, I calculated the Return on Asset (ROA) and the Rate of Return on Common Stockholders' Equity (ROE). These data can be used to represent the last-year financial performance.

To represent current financial performance, I choose the rate of change in stock price on a year-over-year basis. Considering the lagged effect of the CSR report on the stock market, I used the stock price change in the year following the publication of the CSR report rather than the current year. I collected stock price at the beginning (January 3) and end (December 31) from <http://stock.finance.sina.com.cn/hkstock/history/Stock>

[Code.html](#). (Time period: 2017-2018). In summary, the financial performance measures used in the subsequent analysis were calculated as (EPS is collected from the report directly):

$$ROA = \frac{NET\ PROFIT}{TOTAL\ ASSET} = \frac{total\ comprehensive\ income\ for\ the\ year}{noncurrent\ assets + current\ assets}$$

$$ROE = \frac{NET\ PROFIT}{NET\ ASSET\ BEFORE\ THE\ REPORT\ RELEASED} \\ = \frac{total\ comprehensive\ income\ for\ the\ year}{total\ equity}$$

$$Stock\ Price\ Change\ Ratio\ (SPCR) = \frac{Stock\ Price_1 - Stock\ Price_0}{Stock\ Price_0}$$

### 3.3. Summary statistics

The distribution of CSR report scores and report pages are shown in Figures 1 and 2 respectively. Among 122 reports, 60 percent of them could not reach the traditional pass line (60 points) and only 7 percent performed good according to the HKEX Index standard. Though the report page cannot represent the quality of the report, it still can reflect the situation of the report score as a detailed report need space for qualified and quantified index. However, 35 percent of the reports is below 30 pages, which is not enough for 11 general disclosure and 32 key performance indexes.

Figures 3 and 4 display the comparison between 2016 and 2017 while Figures 5 and 6 shows the comparison among three industries. From these figures, we can see that companies attained obvious improvements in report score as well as an increase in pages in the second year of the policy published. Among three industries, though financing

industry tends to have more pages, it gets lower points in report score than pharmacy and real estate. Summary statistics with variables used in the empirical model are provided in Table 2.

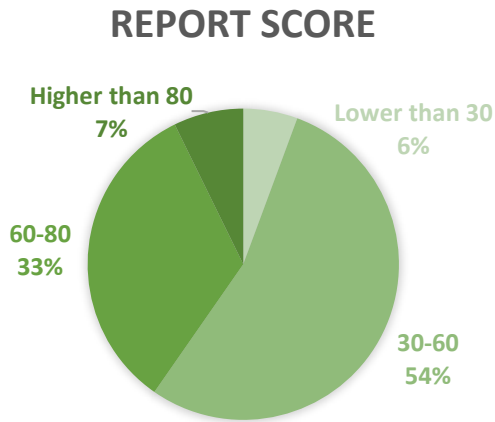


Figure 1 Report Score Summary

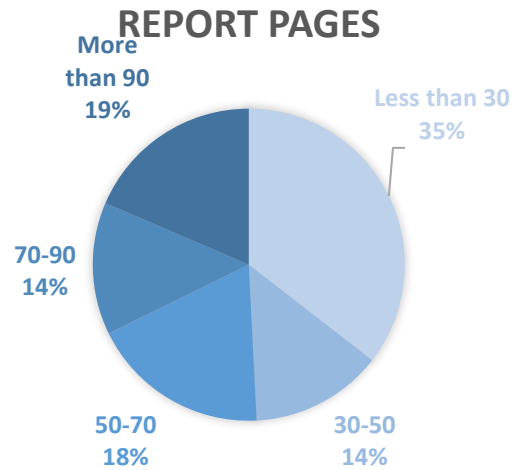


Figure 2 Pages Summary

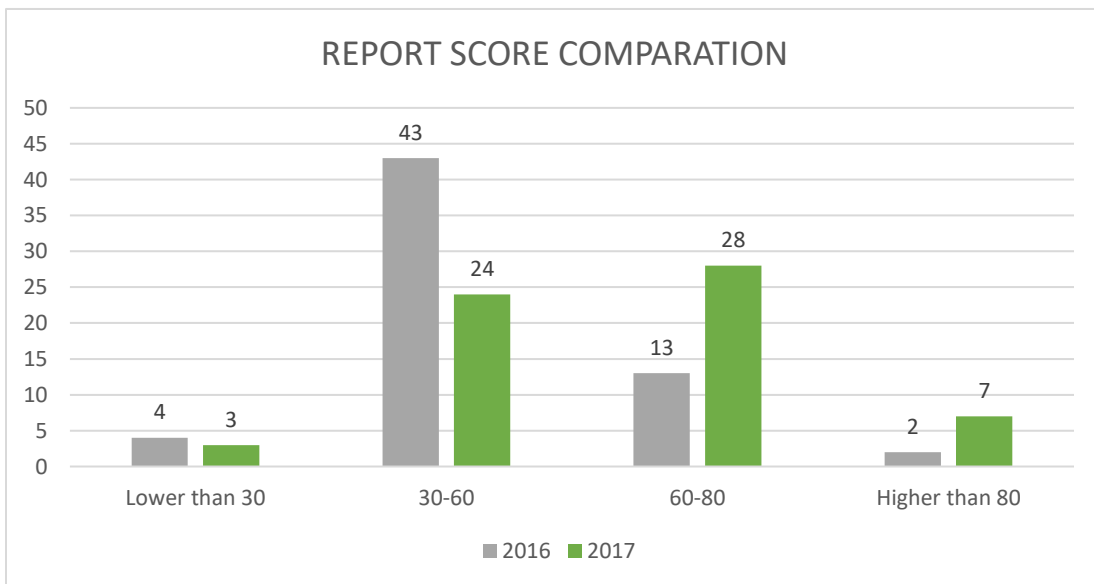


Figure 3 Report Score Comparison Between Years

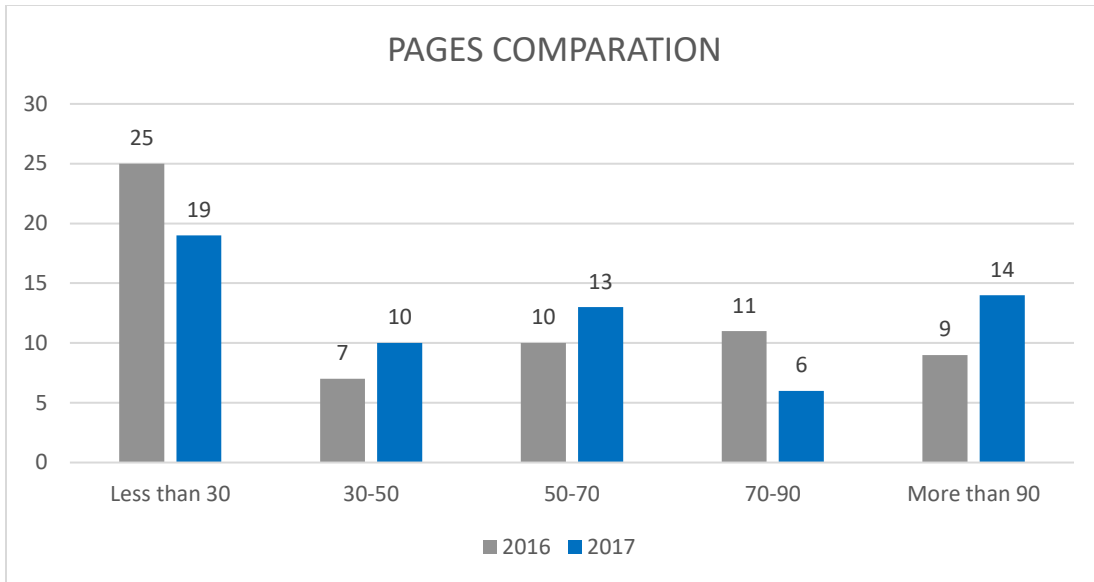


Figure 4 Pages Comparison Between Years

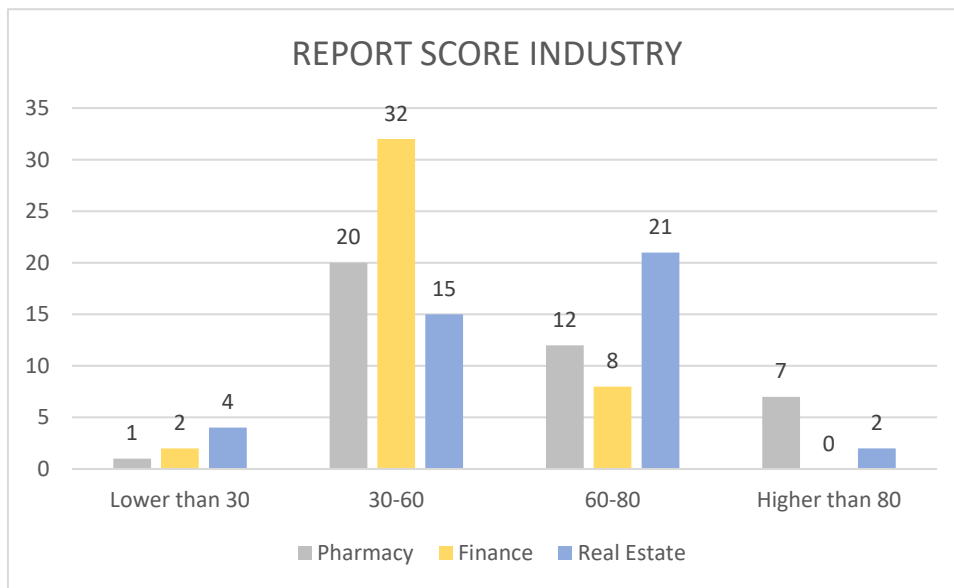


Figure 5 Report Score Comparison Among Industries

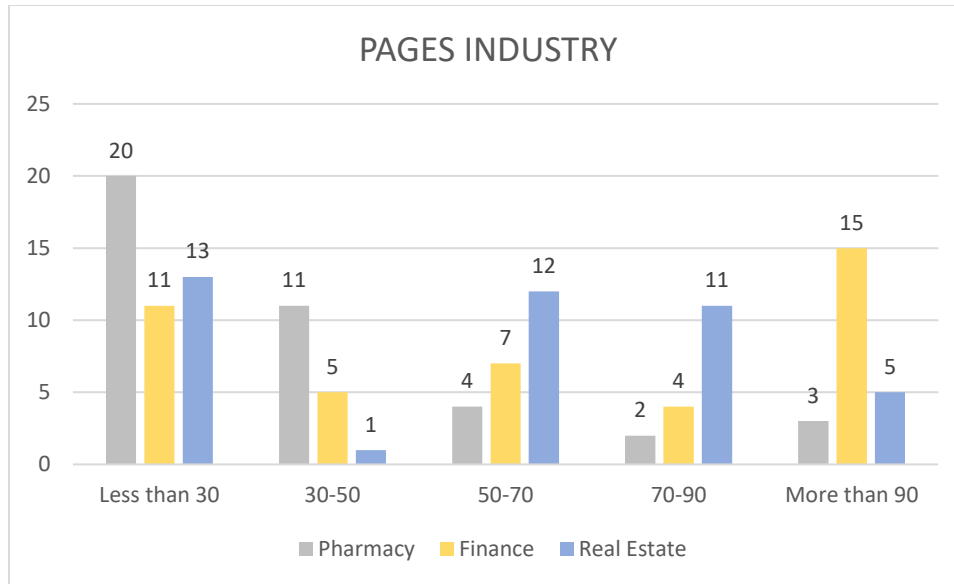


Figure 6 Pages Comparison Among Industries

Table 2 Summary Statistics

Variables	Definition	N	mean	sd	min	max
ROA	Rate on assets	124	0.0476	0.0508	-0.0187	0.267
ROE	Rate on equity	124	0.119	0.0700	-0.0520	0.366
EPS	Earnings per share	124	1.762	2.067	-0.963	8.736
SPCR	Stock price change rate for the next year	124	0.229	0.811	-0.861	4.489
CSR_S	Csr report score	124	54.64	17.16	12.50	96.25
GHG	Greenhouse gas emission density	82	26.88	130.2	0.0351	1,180
Energy	Energy use density	45	187.0	380.4	0.276	1,828
Ele	Electricity use density	78	151,176	1.209e+06	0.332	1.069e+07
Water	Water use density	87	194.7	344.3	0.339	2,385
Pharmacy	1 if pharmacy company, 0 if not	124	0.322	0.469	0	1
Finance	1 if bank, 0 if not	124	0.339	0.475	0	1
ID	Companies' identification	124	-	-	1	62
Year	The year of the report	124	-	-	2016	2017



## 4. Empirical Analysis

Using the data described in the previous section, I used ordinary least squares (OLS) to empirically test the relationship between CSR performance and financial performance. However, considering the unobserved firm-level heterogeneity, I also utilized panel data methods, specifically the fixed effects estimator. Before choosing whether to use a fixed effect model or random effect model, I conducted the Hausman test. According to the test result, the fixed effect model is more suitable for the data. The four models I evaluated are listed as follows.

(1) Pooled OLS

$$y_{it} = \alpha + \beta CSR\_S_{it} + \varepsilon_{it}$$

(2) Fixed Effect

$$y_{it} = \alpha + \beta CSR\_S_{it} + a_i + \varepsilon_{it}$$

(3) Fixed Effect with Industrial Factors

$$y_{it} = \alpha + \beta CSR\_S_{it} + \gamma CSR\_S_{it} \times Pharmacy_i + \theta CSR\_S_{it} \times Finance_i + a_i + \varepsilon_{it}$$

(4) Pooled OLS with All-Disclosed Companies<sup>3</sup>

$$y_{it} = \alpha + \beta_1 CSR\_S_{it} + \beta_2 GHG_{it} + \beta_3 Energy_{it} + \beta_4 Ele_{it} + \beta_5 Water_{it} + \varepsilon_{it}$$

where  $y_{it}$  is firm  $i$ 's financial performance in period  $t$ , such as  $ROA_{it}$ ,  $ROE_{it}$ ,  $EPS_{it}$ , and  $SPCR_{it}$ ,  $CSR\_S_{it}$  is firm  $i$ 's CSR report's score in period  $t$ ,  $\alpha$  is an intercept term,  $\beta_j, \dots, \beta_j$  are parameters capturing the effect of  $CSR\_S_{it}$ ,  $GHG_{it}$ ,  $Energy_{it}$ ,  $Ele_{it}$  and

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<sup>3</sup> Because of the correlation rates are over 0.5 for some of those variables, it may also have impact on the efficiency of estimate, which means the estimate will be larger than the reality.

$Water_{it}$  on  $y$ .  $\varepsilon_{it}$  indicates the firm-specific and period-specific error term, and  $a_i$  shows a firm-specific term that captures all unobserved, time-invariant factors that affect  $y$ .

$Pharmacy_i$  and  $Finance_i$  are dummy variables equal to 1 if firm  $i$  belongs to the pharmaceutical or financial services industries, respectively, and 0 otherwise.

## 5. Results

In this section, the results of the baseline regression are presented in Table 3, 4, 5 and 6, in which column 1 shows the result of OLS, column 2 is for fixed effect, 3 is for fixed effect with industrial variables, and 4 is OLS on the 26 companies which had fully disclosed the four previously discussed environmental metrics.

### (1) ROA and CSR

*Table 3 Relation between ROA and CSR performance*

VARIABLES	(1) OLS	(2) Fixed Effects	(3) Fixed Effects	(4) Full Data
Report Score	0.000702*** (0.000260)	0.000608* (0.000346)	0.000629 (0.000720)	0.00115*** (0.000376)
Pharmacy*Report Score			0.000210 (0.000844)	
Finance*Report Score			-0.00102 (0.00116)	
Greenhouse Gas Emission Density				0.00211* (0.00112)
Energy Use Density				2.56e-05 (1.54e-05)
Electricity Use Density				-1.69e-06* (8.66e-07)
Water Use Density				2.92e-05 (2.69e-05)
Constant	0.00928 (0.0149)	0.0144 (0.0191)	0.0256 (0.0221)	-0.0432* (0.0222)
Observations	124	124	124	26
R-squared	0.056	0.048	0.072	0.636
Number of ID		62	62	
Company FE		YES	YES	
Year FE		YES	YES	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

ROA is an indicator how much profit the company can generate from its assets. The result from Table 3 shows that when the company performs better in CSR reporting, they can be more profitable from its assets. Every point increase in CSR score can bring 0.000608 increase in ROA after controlling for unobservable firm-level heterogeneity. Among three industries, companies in the pharmaceutical industry can generate more profit from its assets along with the increase of CSR score, while companies in the financial industry on average see a reduction in ROA from higher CSR scores, though

neither of these effects are statistically significant at conventional levels. For those 26 fully disclosed companies, the impact of CSR score on ROA, which is 0.00115, is positive and is higher than the whole group. Except for electricity use, however, other environmental performance may have a negative effect on ROA.

## (2) ROE and CSR

*Table 2 Relation between ROE and CSR performance*

VARIABLES	(1) OLS	(2) Fixed Effects	(3) Fixed Effects	(4) Full Data
Report Score	0.000378 (0.000368)	0.00172** (0.000680)	0.00164 (0.00138)	0.000588 (0.000666)
Pharmacy*Report Score			0.000929 (0.00161)	
Finance*Report Score			-0.00336 (0.00221)	
Greenhouse Gas Emission Density				-0.000198 (0.00198)
Energy Use Density				1.11e-05 (2.73e-05)
Electricity Use Density				-1.93e-06 (1.53e-06)
Water Use Density				0.000125** (4.76e-05)
Constant	0.0981*** (0.0211)	0.0248 (0.0375)	0.0651 (0.0422)	0.0709* (0.0394)
Observations	124	124	124	26
R-squared	0.009	0.095	0.165	0.311
Number of ID		62	62	
Company FE		YES	YES	
Year FE		YES	YES	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

ROE measures how efficiently a company is making profits from the money that shareholders have contributed to it, especially how the management team is performing with its shareholders' equity. Table 4 indicates that the better the CSR score is, the higher the return on shareholder's equity, which is about 0.00172 increase after controlling for unobservable heterogeneity at the firm-level. Here, similar to ROA, companies in the pharmaceutical industry see the highest impact of CSR reporting on ROE (an increase of 1 point on the CSR score results in an increase of 0.002569 in ROE), while companies in the financial industry see a reduction in ROE with an increase in CSR reporting scores. For the 26 companies with full disclosure, the impact of CSR on ROE is lower than the

whole group, and furthermore, not statistically significant at conventional levels. The higher the density of energy use or water use is, the better the ROE. However, energy use and greenhouse gas emission have the opposite influence on it.

### (3) EPS and CSR

*Table 3 Relation between EPS and CSR performance*

VARIABLES	(1) OLS	(2) Fixed Effects	(3) Fixed Effects	(4) Full Data
Report Score	0.0350*** (0.0104)	0.00978 (0.00822)	0.0437** (0.0165)	0.0815** (0.0357)
Pharmacy*Report Score			-0.0405** (0.0193)	
Finance*Report Score			-0.0599** (0.0265)	
Greenhouse Gas Emission Density				0.0388 (0.106)
Energy Use Density				-0.00140 (0.00147)
Electricity Use Density				1.51e-05 (8.24e-05)
Water Use Density				-0.000610 (0.00256)
Constant	-0.147 (0.598)	1.228*** (0.453)	1.093** (0.505)	-2.277 (2.115)
Observations	124	124	124	26
R-squared	0.084	0.023	0.116	0.273
Number of ID		62	62	
Company FE		YES	YES	
Year FE		YES	YES	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

EPS is a measure of profitability per outstanding share, serving as an indicator of the financial health. Table 5 shows that each increase in CSR reporting can help the company increase 0.00978 after controlling the effects of companies and year. Different from ROA and ROE, real estate is the one gets the highest positive effect while the financial industry will reduce 0.0162 if they get an increase on their CSR score. When a company reduces its water use density and energy use density, ESP will response positively and earn an increase. However, the opposite situation applies to greenhouse gas emission and electricity use density.

### (4) SPCR and CSR

*Table 4 Relation between SPCR and CSR performance*

VARIABLES	(1) OLS	(2) Fixed Effects	(3) Fixed Effects	(4) Full Data
Report Score	-0.00339 (0.00427)	-0.0221** (0.0103)	-0.0364* (0.0216)	0.00312 (0.00313)
Pharmacy*Report Score			0.0154 (0.0254)	
Finance*Report Score			0.0324 (0.0348)	
Greenhouse Gas Emission Density				-0.00567 (0.00929)
Energy Use Density				-0.000215 (0.000128)
Electricity Use Density				1.65e-06 (7.21e-06)
Water Use Density				0.000225 (0.000224)
Constant	0.414* (0.245)	1.437** (0.571)	1.413** (0.664)	-0.159 (0.185)
Observations	124	124	124	26
R-squared	0.005	0.070	0.083	0.274
Number of ID		62	62	
Company FE		YES	YES	
Year FE		YES	YES	

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

SPCR indicates how the stock market and shareholders look at the company. The relation effect of CSR performance on SPCR is negative, which shows that each point increase on CSR performance will reduce the SPCR on 0.0221 after controlling the fixed effect. Moreover, none of the three industries can earn positive effect from CSR performance. Among those 26 companies, the effect of CSR performance is still positive, which is 0.00312 increase with each point gain in CSR score. Decreasing on the density of greenhouse gas emission and energy use can help increase SPCR. However, the increase in electricity and water use density can help SPCR go up as well.

## 6. Discussion

As ROA, ROE, EPS, and SPCR represent different aspects of financial performance for companies, CSR performance also has different influences on these metrics. ROA and ROE show the ability to earn profits, EPS and SPCR demonstrate returns to investors. From the result of the full dataset, as CSR score increase, it always brings a positive impact on the profitability. After controlling the fixed effect, every point increase on CSR score will significantly help ROA and ROE increase by 0.0608% and 0.172% respectively. Because the HKEX guideline for CSR includes not only environmental values but also corporate governance, such as employment, corruption, business ethics, and customer service, it is reasonable to predict that better CSR score also indicates better corporate governance. To a large extent, better operation in the company can help the company make profit efficiently. Therefore, the result is reasonable. However, the influence of the CSR performance on stock market returns is uncertain. For EPS, each increase in CSR scores increases it on 0.00928 insignificantly, which means the increase on CSR report can help to improve the financial health of the firm. It is surprising that the increase in CSR performance will significantly bring negative impact on stock price during the whole year, no matter which industries. One possible explanation for this is that there are too many other factors could affect stock price fluctuations, such as larger macroeconomic trends, consumer confidence, expectations about the future, etc. Hang Seng Index, which is the indicator of Hong Kong stock market performance, showed that the Hong Kong stock price for 2017 and 2018 both increased, but the changing ratio of the stock price in 2017 is higher than that in 2018. Investors are largely driven by profit motives, so when the shareholders predict the future of the company, other financial

performance metrics may be more important, especially since the idea of CSR reporting was just introduced in HKEX.

Different industries also have different responses to the relation. For ROA and ROE, when separating three industries, though no more significant effect, CSR performance still affects the profitability of pharmacy and real estate positively. CSR performance significantly increases EPS for these two industries as well. However, for the financial industry, CSR score has an opposite influence on its financial performance, which is negative. To explain this, one possible reason is that banking is a non-traditional pollution industry in people's mind and its social impact is always shown on how it affects other industries' production. For example, in most of the banking's CSR reports, they disclosed how green finance help decrease other industries' pollutions, which is not included in the HKEX guideline index. However, the social impact brought by green finance will be greater than that by banks' internal change. Another reason for the opposite result for banking is that Chinese banking is under the government's strict supervision, which means their operation has been well operated before the CSR reporting regulation released. Moreover, banks ranking high depend less on the public as they already have lots of fixed business. They may not report their CSR performance better than those banks who eager to catch customers' attention with good CSR reporting. However, the latter always ranks lower and has worse financial performance than the former, which cause a negative impact as we assume that the CSR report's score can represent the CSR performance. Those are possible reasons why the banking's profitability responds negatively to the increase in CSR performance.



Among 26 companies, who fully disclosed data for greenhouse gas emission, energy use, electricity use, and water use, the positive relation between CSR performance and financial performance are consistent for ROA, ROE, EPS, and SPCR. CSR reporting score may represent the CSR performance to these companies better as they have more comprehensive data collection for themselves. When they are not confident with their performance, they might choose to disclose partly or hide the data. With this result, though the sample is small, we can see a clear relation that CSR performance has a positive impact on corporate financial performance, no matter for profitability or market prediction. This paper also analyzed the relation between environmental data and financial performance. However, the results cannot conclude a clear trend for the relation. One possible reason for it is that environmental values represent not only social responsibility but also the production ability. Better equipment and producing methods may bring less pollution but cost more money, which only companies with current assets can afford. For those who still need to enlarge their production and business, it is hard for them to pay attention to reducing the consumption as well as emission. The other reason is that 2017 is the second year after the disclosing policy. Without systematically comparing with their competitors, though they might want to perform better and have already optimized their operation, firms may not realize the fact that they are doing worse than others on the environment.

## 7. Limitation and Conclusion

The biggest challenge for this paper is data accessibility, including data representing CSR performance and financial performance. Unlike Wen (2017) who has the data from the Research Report on CSR of China by CASS CSR Research Center, this paper analyzed firms from the HKEX, which is not included in the report. The only source for CSR data is the CSR report from the companies themselves. However, not every company complies to the CSR reporting guidance index by HKEX. HKEX is only concerned about whether the company discloses the report, but pays less attention to regulating them to follow the reporting guidance. Therefore, with too many missing data for grading the CSR performance, we can only assume that companies will disclose the data if they satisfy with their performance and use CSR reporting score to represent CSR performance. However, the assumption may not apply to every company. Moreover, the method to grade the CSR report may be problematic as not every index in the CSR report is equally important. Nevertheless, without other reliable weighting methods, it is reasonable to grade in a simple way.

For financial performance, as the research was done before March, the annual report for 2018 did not disclose at that time. However, it is possible that CSR performance will have a lagged effect on financial performance. Though I collect the next year stock price change, it is still problematic because the lagged effect should be counted after companies released the report. Moreover, how long the lagged effect would persist is unpredictable as well.

Another limitation for the paper is that the econometric modeling of this relationship cannot exclude the possibility that firms with better financial performance will do better in CSR performance. A factor which can represent CSR performance without being influenced by the financial performance was not found during the analysis. It caused the problem of potential endogeneity and limited the ability to ascribe causality.

However, the results and limitations also suggest some policy change should be done by the HKEX and the government. First, considering the different characters for different industries, an overall CSR reporting guidance is not enough, especially for industries like banking and media. Those industries may bring more positive impacts on the environment and society from its influence on other industries than from its own reduction. Therefore, it is necessary for HKEX to create different kinds of guidance for different kinds of industries. Second, during the analysis, I found that the ways companies disclose their data are various. With various units and scopes, it is hard for researchers and policymakers to compare when they want to dig out the ESG problems for the market. Therefore, to regulate specific and detailed disclosure methods, as well as requiring for unitization and standardization, is the first step to improve both CSR reporting and performance. Third, it is important to conduct an analysis of the CSR report for the government and stock market and then disclose to the market. Only in this way can companies know about their situation and the industries' performance. Moreover, it can also promote sustainability leaders to do better and push others to improve. The government and the stock market should remember that the ultimate goal of asking companies to disclose CSR performance is to promote sustainable development in the business field. Annual research report is recommended for the CSR reporting and

performance, including introduction on general situations, grading and ranking, existing problems, and suggestions for firms.

The paper shows the CSR performance does have a positive impact on corporate financial performance, especially for profitability. However, whether the CSR performance will affect the prediction for the company by the market is uncertain. More analysis should be conducted on this field and more data disclosure is needed to support future research.

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