

**The Effects of Corporate Social Responsibility on Financial Performance:
Evidence from Chinese Listed Companies**

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Global Commerce Scholar Thesis
University of Virginia

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Abstract

As China continues to increase its influence at the global stage, its firms have been acknowledging the greater importance of Corporate Social Responsibility (CSR) practices. The Chinese government plays a crucial role in integrating CSR domestically. This paper explores the relationship between Chinese firms' CSR activities on its financial performances. After analyzing a complete dataset of Chinese listed companies, the results suggest that there is indeed an impact of CSR activities on company sales performance. This result is more visible once the companies are classified into large and small firms. CSR actives have a significant, positive impact on large firm's future sales, but a significant negative impact on small firm's future sale.

Acknowledgment

I would like to first thank my advisor, Professor Zhaohui Chen, Associate Professor of Commerce, for consistently encouraging and challenging me to go above and beyond during this past year. His vast knowledge in the field of finance and Chinese culture has shaped the direction of my thesis paper and allowed me to avoid making the mistakes of someone with no research experience. I would also like to extend my thanks to Xin (Power) Xue, a PhD candidate in Economics at the University of Virginia. Xin has helped me tremendously in the econometrics and statistical programming aspects of this paper.

In addition, I would like to express my sincere gratitude towards Professor William J. Wilhelm Jr., the Director of Global Commerce Scholars program, and Dean Chris L.W. Elliot, the Assistant Dean of Global Affairs, for this opportunity.

Finally, I would like to thank my family, and my best friend, Kevin Shen, for their constant support. Without their encouragement during the hardest parts of the process, I would not be able to deliver the final thesis.

Being a part of this program was both an honor and humbling experience. I have learned so much about myself and about the world of research. I am proud to end my four years at the University of Virginia as a Global Commerce Scholar in the McIntire School of Commerce.



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05/05/2018

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Introduction

Corporate social responsibility (CSR) is the actions that a company takes to benefit society beyond the direct interests of their firm. Corporations integrate these practices into their business model using different methods for various purposes. The most direct way is through charitable donations or philanthropic activities (Tang, 2012). This method often involves money or resource aid to domestic or international communities in need. For example, following the category 5 Hurricane Irma in the fall of 2017, many organizations responded by providing assistance to the communities affected. Beyond direct donations, many companies also integrate CSR guidelines into their business models, which are often based on social, economic, and environmental positions they take (Tang, 2012). Examples of CSR measures include provide eco-friendly products, adoption of labor protection plans, and engagement in community development projects.

Corporate Social Responsibility originated in the West; Since the 1990s, CSR has become an important aspect in business practices responding to critical issues regarding human rights, labor rights, and environmental development (Hopkins, 2004; Tian, 2006). Developed countries such as the United States, the United Kingdom, and Japan are the leading contributors to CSR practice (KPMG, 2005). Today, CSR has become an important concept for corporations. More than 8,000 businesses around the world have signed the UN Global Compact, pledging to responsible operations. With the increase of globalization and trade exchange between countries, growing numbers of studies have been conducted in order to understand the role CSR plays in businesses in Eastern cultures, particularly in emerging markets like China. Chinese companies began to adopt the Western concept of CSR less than 20 years ago. Although CSR practices and

concepts in China are still relatively young, China is becoming a critical player in the field. As of 2009, Chinese firms issued over 15% of the world's CSR reports (China WTO Tribune 2009).

China is an interesting country to look at in regards to company's CSR initiatives. CSR activities in China come with greater government involvement than similar initiatives in western countries, where most CSR programs are led by the private sector or non-government organizations. This is because Chinese CSR initiatives are typically based on laws, regulations, governmental instructions, and guidelines (Lin, 2010). In 2005, with encouragement from the Prime Minister, the first CSR report was published in China by the State Grid Corporation of China (SGCC). An interview with Li Weiyang, the director of SGCC's Department of Public Relations, revealed that motivations behind the SGCC's CSR initiatives come from both global influences and government pressures (Tang 2012). Studies show that Chinese firms are increasingly implementing CSR practices and reporting. Between 2004 and 2008, the number of CSR reports released by Chinese companies increased from four to approximately 130 (Sutherland & Whelan, 2009). Today, many SOEs publish CSR reports for show in order to maintain a good standing with the government (Marquis & Qian, 2014).

CSR initiatives and reports in their core are intended to promote transparency and accountability to improve internal processes and influence firm values. However, a study has shown that CSR adaptation is stronger when stakeholders have more power and in the presence of increased regulation (Aguinis & Glavas, 2012). Therefore, given China's heavy governmental involvement in CSR reporting, it is difficult to tell which motivation is more prevalent and how it affects firms' financial outcome. An interesting question to explore is the following: Do companies invest in corporate social responsibility initiatives due to external reasons in exchange for rewards to become more profitable, or are companies including CSR practices in their

business model because they are doing well enough financially and want to do good in the community?

Literature Review

Researchers have studied firms' social concerns for decades (Davis, 1960; Dodd, 1932; Frederick, 1960). However, the interest in corporate social responsibility (CSR) has only become more prevalent in recent years (Serenko & Bontis, 2009). Two conflicting views on CSR have been proposed: the stakeholder value maximization theory and the shareholder expense theory. According to the stakeholder value maximization view, CSR activities that focus on the interests of stakeholders increase their willingness to support a firm's operations, which increases shareholder wealth (Deng, Kang & Low, 2013). The shareholder expense theory states that firms could be investing in CSR activities with negative marginal effect that decreases shareholders' wealth, as there is no limit to the amount that a firm can donate to society (Barnea & Rubin, 2005).

The process that a company takes to engage in CSR initiatives could happen in two ways. The first way is that the company wants external rewards from markets and its customers, so it chooses to be more socially friendly and publish CSR scores, expecting better financial returns for its efforts (the reward hypothesis). The second way is that the company is doing well financially and it has the resources to do good in the community. This preexisting condition allows the company to participate in initiatives with social impacts that align with its values (the doing-good hypothesis). A consistent finding from researchers is that the outcomes of CSR initiatives show an improvement in a firm's reputation (Brammer & Pavelin, 2006; Fombrun & Shanley, 1990; Turban & Greening, 1997; Verschoor, 1998) and financial performance (Orlitzky, Schmidt, & Rynes, 2003). This external positive effect can be reached regardless of the firm's motivation. Thus, it is very difficult to distinguish the two motivations and show cause and effect.

The Reward Hypothesis

There are abundant literatures supporting the reward hypothesis. Bansal & Roth (2000) found that a predictor of CSR engagement is a firm's perception that CSR is good for business and likely to lead to increased competitiveness and legitimacy. Another view is that the explicit costs of corporate social responsibility are relatively low and the firms may actually benefit from socially responsible actions in terms of employee morale and productivity (Moskowitz, 1972; Parket & Eibert, 1975; Soloman & Hansen, 1985).

Deng, Kang & Low (2013) conducted a study using mergers in the U.S. to examine whether CSR creates value for acquiring firms' shareholders. They have found strong evidence that acquirers' CSR performance ratings have a significant positive effect on their announcement stock returns, post-merger operating performance, and long-term stock returns. Furthermore, their findings suggest that high CSR acquirers take less time to complete and are less likely to fail than mergers by low CSR acquirers. These results demonstrate that firms do get positives rewards based on their CSR involvement, and they are consistent with the stakeholder value maximization view.

Additionally, Edmans, Alex (2011) examined the relationship between employee satisfaction and long-run stock returns. He did not use the instrumental variable approach and instead used the four-factor model to analyze value-weighted portfolio of "100 Best Companies to Work for in America" from 1984 to 2009, and found an alpha value of 2.1% above industry benchmarks. Furthermore, the Best Companies also displayed significantly more positive earnings surprises and announcement returns. These findings imply that employee satisfaction is

positively correlated with shareholder returns and that certain socially responsible investing may improve investment returns.

The Doing-good Hypothesis

There are also literacy sources that support the doing-good hypothesis and believe that firms are motivated by a sense of responsibility and duty (Bansal & Roth, 2000), higher order or morals (Aguilera et al., 2007), and a sense of stewardship (Davis, Schoorman, & Donaldson, 1997). McGuire, Sundgren, and Schneeweis (2017) conducted an experiment using Fortune magazine's ratings of corporate reputations. They analyzed the relationship between perceptions of firms' corporate social responsibility and measures of their financial performance. The results show that a firm's prior performance is more closely related to corporate social responsibility than its subsequent performance. This conclusion supports the claim that prior financial performance predicts social responsibility. Barnea & Rubin (2005) inspected CSR as a source of a conflict between different shareholders. They found that firm's CSR engagement may not be consistent with the firm value maximization as it changes with stakeholders' preferences.

Asides from genuine interest in promoting socially responsible operations, Aguinis and Glavas (2012) conducted a review of CSR literatures based on 588 journal articles and 102 books and found that the influence of stakeholders has a major effect on whether firms choose to engage in CSR and the types of CSR initiatives firms pursue. They also found that institutional forces such as regulation and standards affect CSR actions and policies that firms choose to implement. These institutional forces often lead to symbolic rather than genuine CSR actions. Firms could appear to engage in CSR practices, but these initiatives may only be intended satisfy stakeholder demands or meet the requirements.

Although there is support for both theories from researchers and scholarly literatures, no experiment has shown the cause and effect of the underlying mechanism. Firms could first engage in CSR primarily due to instrumental reasons such as expected financial outcomes, or they could engage in CSR due to normative reasons that lie in the firm's values.

China's CSR Environment

As CSR practice gains importance at the global stage, domestic drivers for CSR in China have also become more prominent in recent years. The Chinese government plays an important role in integrating CSR domestically. One substantial development is that China has incorporated the concept of CSR into its legal system. The New Company Law pass by National People's Congress (NPC) that took effect on January 1, 2006 is widely regarded as a legislative stimulus for CSR (NPC, 2005), and it facilitates corporate commitment to CSR in China. Article 5 of the New Company Law gave explicit recognition to CSR practices, which stated that “when engaging in business activities, a company shall abide by laws and administrative regulations, observe social morality and business ethics, act in good faith, accept supervision by the government and the public, and bear social responsibilities.”

China's 11th Five-Year Plan in 2006 introduced the idea to pursue a more harmonious society. Since then, the central government has issued many CSR reporting guidelines to help balance the country's extensive economic growth with the social and environmental effects (Marquis & Qian, 2014). In 2008, China introduced the Labor Contract Law, which was considered the most significant piece of Chinese labor law reform in more than a decade (Ngok,

2008). Important provisions regarding mandatory labor contracts with the benefits for employees were enacted. In the same year, China's first corporate responsibility index focused on the environment called the Taida Environmental Index was also formally released. This Environmental Index was compiled by 40 listed companies from 10 environment-related industries (Chinese CSR, 2008). It evaluates listed companies' social responsibilities and was aimed to increase market attention on environmental issues. These institutional frameworks encourage more socially responsible activities amongst Chinese companies.

Compared to private companies, the State-Owned Enterprises (SOE) are better and faster at compliance to government regulations and stimulus. SOEs were the building block of the nation in 1949 when the People's Republic of China was established. Until the 1980s, they dominated the Chinese economy accounting for 90% of industrial output in 1978 (Nunlist, 2017). Since the economic reform and the Open-Door Policy began in 1978, the central government has enacted over 400 national laws, 1,000 administrative acts, 10,000 local rules and regulations, and 30,000 administrative procedures over the course of the past 30 years (Lee, 2008). SOEs also went through a drastic transformation as the central government privatized a significant amount of SOEs and remained the majority shareholder in only 31% of Chinese publicly listed companies. (Gang & Hope, 2013).

The experimentation with privatization also saw the creation of the State-owned Assets Supervision and Administration Commission of the State Council, or SASAC. This commission was created under the State Council and is responsible for managing the remaining SOEs, including appointing top executives, approving mergers or sales of stock, as well as drafting laws related to SOEs. In 2008, SASAC issued the "Notification on Issuance of the Guidelines on Fulfilling Social Responsibility by Central Enterprises", which required all SOEs to comply with

SASAC 2008 laws (SASAC 2008). This is a strong indication that that companies should implement their own CSR measures as the central government publicly demonstrated its support for CSR in the 2008 SASAC law. As of 2014, the top 12 Chinese companies are all state-owned. They spread across different industries, including massive banks and oil companies that the central government controls through SASAC, which appoints CEOs and makes decisions on large investments (Cendrowski, 2015). As a result of SASAC's involvement, the most comprehensive and systematic CSR policies in China are found in SOEs (Tang, 2012). Another recent phenomenon seen is the rise of SOE executives in China's provincial leadership positions. There is a sizable force of executives who have become provincial leaders, constituting more than 16 percent of all current provincial-level chiefs (Li & Xu, 2017). This is another important factor in which SOEs are more willing to do what the government suggests, as executives prioritize maintaining a good relationship with the government officials for their future careers.

Hypothesis and Study Design

Hypotheses Development

The studies I proposed are aimed to test whether firms are rewarded by their CSR engagement. If there is a financial reward, then there could be many reasons why firms decided to implement their CSR initiatives, however if there are no financial rewards, then we can conclude that firms are not implanting their CSR initiatives for financial reasons.

If the reward hypothesis is true (i.e. the company is motivated by rewards from the market to be more socially friendly and publish CSR scores), then the CSR variable will have a positive coefficient. This means that companies are actively making investments that are correlated to better financial performance as they want to maximize profit for CSR engagement. However, a positive CSR coefficient could also mean that the firm was motivated by the doing good hypothesis. The reason is that a positive coefficient only shows that there is a positive financial return and does not suggest the magnitude of the return. A firm could have invested a large amount of money for a cause they believed in but only generated a small profit. Therefore, it is difficult to prove just one motivation with positive CSR coefficient; both motivations could be in effect.

If the doing good hypothesis is true (i.e. the company is motivated to do good in the community as it has the financial resources to do so or due to government pressures), then CSR coefficient will be negative or positive (positive but smaller return than amount invested), which means that companies do not use financial performance as a criterion when making CSR decisions. They could engage in initiatives that fit with the company's mission or the

government's regulations but are harmful to the company's financial performance because it requires large amount of investments.

The legal framework regarding CSR in China only encourages social responsibility practices and reporting, and therefore, we should be weary of selection bias. However, regardless of motivation and financial outcomes, CSR is an effective tool for a firm to communicate with its customers regarding its positive contribution to society. Therefore, all companies should be equally likely to publish CSR reports and activities upon engagement.

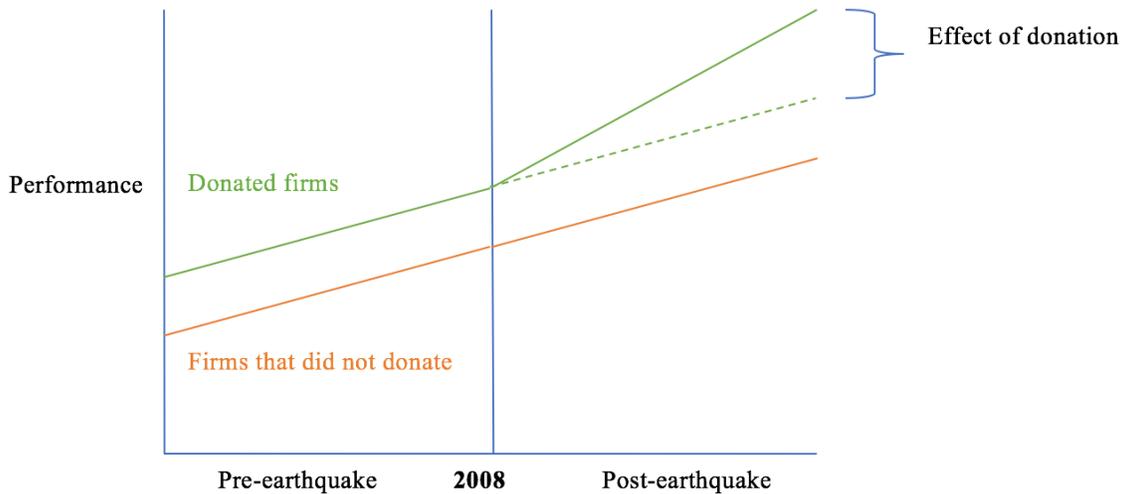
Study Design

I proposed to conduct two studies to examine the relationship between a firm's CSR engagement and its financial performance. The first study aimed to look at whether a firm's CEO was a past government official to assess that effect on firm's CSR engagement, as former government employees will likely want to enforce more government rules than pure businessmen. However, due to missing data and inconsistencies between data sources, I was unable to run the analysis. Therefore, I decided to focus on the second study I proposed.

The second study looked at how CSR engagement, measured by a firm's yearly donation, affects the financial performance of a publicly traded Chinese company. One statistical method that can be employed to study the effect is Difference-in-differences (DID). The basic setup is to observe two groups for two time periods. One of the groups is shocked in between the time periods, and the other group is not exposed to any shock for both time periods. The changes in the control group from period one to period two is subtracted from the changes in the treatment group from period one to period two. This method removes biases in post-earthquake period

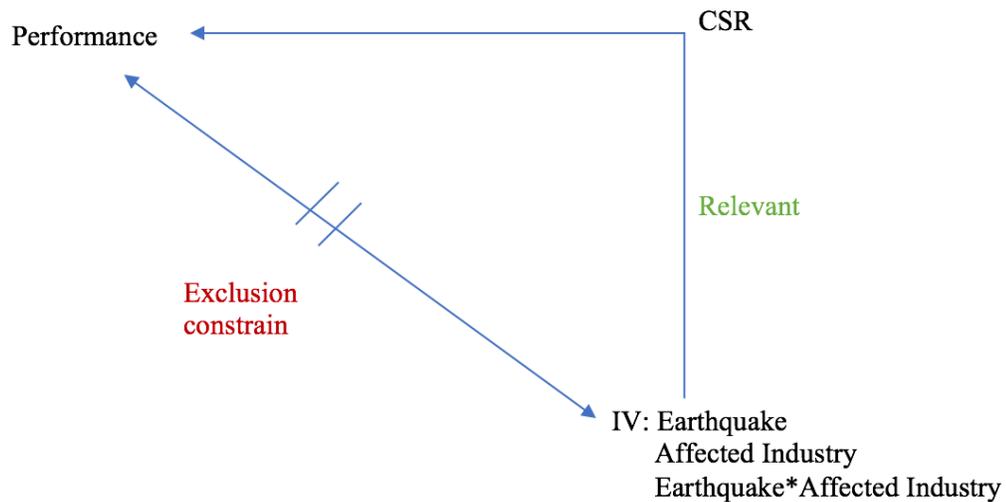
comparisons between the two groups that could be due to inherent differences between those groups, or trends due to changes over time. Figure 1 below shows the setup of a Difference-in-Differences model:

Figure 1 The Difference-in-Differences Model



However, there is an endogeneity problem: financial performance and CSR engagement could affect one another. Therefore, I will also use the Two Stage Least Square (2SLS) method to eliminate endogeneity effects. The instrumental variable in the study will be the 2008 Sichuan Earthquake. This variable can help indirectly tests the effect of CSR engagement on performance. A good instrumental variable model relies heavily on appropriate exclusion restrictions, which means that instrumental variable (i.e. the earthquake) affects financial performance only indirectly through CSR. If the coefficient of the instrumental variable is significant, then the relationship between CSR and earthquake is proven to be relevant. Figure 2 below showcases the relationship of instrumental variable model.

Figure 2 The Two Stage Least Square Model



I chose the 2008 Sichuan Earthquake to be my instrumental variable because this exogenous event may affect a firm's CSR engagement as the government calls for donation. Due to the magnitude of the quake (8.0 Ms/7.9 Mw), there was vast media exposure and attention both domestically and internationally. Many organizations immediately responded to the disaster by offering donations to support the needs of affected families. It also qualifies for the exclusion constraint as the event happened in a Wenchuan, which is a small town in the Sichuan province. This is a very closed off town and until recently been a 'passing through' place for tourists on their way to Chengdu, which is the capital city of Sichuan. The place itself is 143.7 km from Chengdu, where most economic and commercial activities are in Sichuan (McMah, 2017). Therefore, the earthquake had little impact on China's overall economy and should not have affected most firm's financial performance. There are a few industries that could be affected, such as construction and infrastructure sectors. Firms in these industries could behave differently than the industries that were unaffected. Therefore, affected industry will be another instrumental variable used in the model. The last instrumental variable will be the interaction term of earthquake and affected industry.

It could be the case that a firm's financial performance in 2008 affected its donation amount. However, this concern can be addressed by controlling for performance and firm-fixed effect. It is likely that no matter how well the company is performing that year, it will be likely to donate more money compared to past years due to the earthquake. Therefore, performance could not affect donation amount. Hence, earthquake could only affect a firm's CSR engagement but not its financial performance.

Data and Summary Statistics

The data for this study was obtained from the CSMAR Databases, which is a primary source for information on stock markets and the financial statements of Chinese listed firms. This database has been extensively used in prior literature (Chen, Choi & Jiang, 2014; Marquis & Qian, 2014; Wei, Xie, & Zhang 2005; Zhang, 2017; etc). Although evidence suggest that SOEs are more likely to engage in CSR activities under the direction of SASAC, China's CSR regulation and legal framework applies to private firms as well. Thus, looking at both types of firms will yield a comprehensive and robust result. The summary statistics of the relevant performance variables in the final dataset are presented in Table 1.

Table 1
Summary Statistics

<u>Year</u>	<u>Sales</u>	<u>ROA</u>	<u>Operating Margin</u>	<u>ROI</u>	<u>PE Ratio</u>	<u>Stock Return</u>	<u>Yearly Donation</u>
2006	2.41E+09	-1.285055	-50.23782	17.66301	55.28902	93.2%	22038.09
2007	3.84E+09	0.5683351	28.51412	23.60423	100.7566	203.8%	23339.21
2008	4.43E+09	0.0223741	8.089196	14.63225	45.89864	-58.0%	592864.9
2009	3.94E+09	-0.0058625	35.5066	22.20539	108.0305	147.0%	325834.5
2010	4.86E+09	0.0424622	24.12374	95.67581	93.35932	14.7%	1646766
2011	5.13E+09	0.0544268	7.670993	49.03465	54.95475	-30.0%	2222901
2012	9.29E+09	0.0396697	158.5608	33.3889	61.478	4.0%	1793924
2013	1.03E+10	0.0824151	9.045063	193.9171	42.84009	28.2%	1426097
2014	1.08E+10	-0.919497	17.37798	189.8454	93.59628	46.1%	1391376
2015	9.76E+09	0.027592	23.2766	50.7545	285.6439	77.8%	2852794
Total	22,111	22,371	21,567	20,654	22,383	20,879	22,398

Table 1 reports the summary statistics for each year from 2006-2015 and the pooled sample. Sales and Yearly Donation are in remimbi (RMB). ROA is computed as net profit divide by total assets balance. Operating Margin is calculated by dividing the operating income by the net sales. ROI is calculated as returns from investment divided by the cost of the investment. PE ratio is computed as the closing share price divide by the total value of owner's equity at the end of the period. Tobin's Q is computed as the sum of market value of equity and book value of debt divided by book value of assets. Stock Return is the annual returns plus reinvestment of cash dividends. All variables are year-end mean values.

The dataset included all firms traded on the two Chinese stock exchanges from the period 2006 to 2015. There are 2892 firms in total. The primary financial performance measures I focused on are Sale, ROA, Operating Margin, ROI, P/E Ratio, and Annual Stock return. To measure a firm's CSR engagement, I looked at the company's yearly donation.

Marquis & Qian (2014) talked about the fact that larger firms may be more profitable than smaller firms, therefore I need a control for firm's book value and market value, measured by total asset and total market capitalization. Stock market exchange is also controlled because there could be a difference between firms listed in the Shenzhen and Shanghai stock exchanges. Leverage ratio and Tobin's Q ratio are used to control for firm's financial health. Leverage ratio is calculated by using firm's total asset divide by its total equity. Tobin's Q ratio is measured by the market value of a firm's outstanding stock and debt divided by its total assets. Additionally, firms have the freedom to choose what they want to disclose in their annual report, and investor perception of firm's CSR engagement will be based on the degree of disclosure. I controlled for this difference by including CSR related disclosures variables. Dummy variables "Staff Protection", "Customer Protection", "Environment Protection", and "Public Relations" tracks whether a firm disclosed its practices in these domains. Furthermore, an approach by Deng, Kang, & Low (2013) also controlled for possible differences in CSR reporting across industries by including industry dummies to represent the different business sectors. However, since the firm-fixed model is used in my study, dummies for industry will not be necessary. For Stock Returns, an additional control variable called Market Index will be used to control for abnormal market trends each year.

In addition, I wanted to examine if the effect of CSR engagement on firm's financial performance is different for firms of different size. Following Kim, Singh & Upneja's empirical research on the difference in financial characteristics between small and large Firms (2000), I classified the companies into small firms and large firms based on their total assets in the year of 2008, which is when the earthquake occurred. I used the median value as my threshold for classification.

Methodology and Results

Univariate Model

I first used a univariate model to analyze a smaller sample of 53 firms that have donated for the 2008 earthquake with specific amounts that are disclosed to the public through media press. I matched these 53 firms with other similar firms in the same industry, therefore increasing my total sample firms to 106. The figures below depict the yearly sales and stock return of firms that have donated and have not donated. The firm's financial performance did not differ based on whether or not they donated during the 2008 earthquake. Other performance measures also showed the same effect.

Figure 3 Sales Performance from The Match Samples

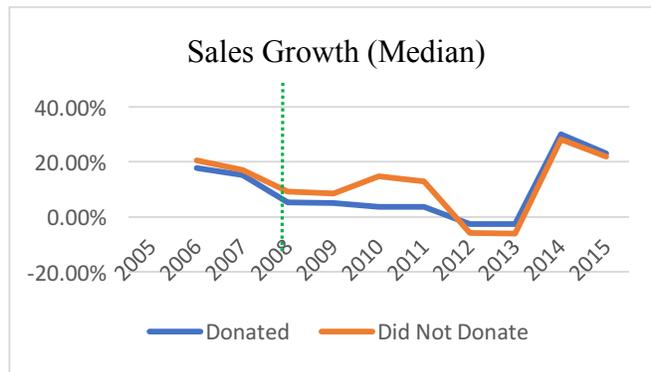
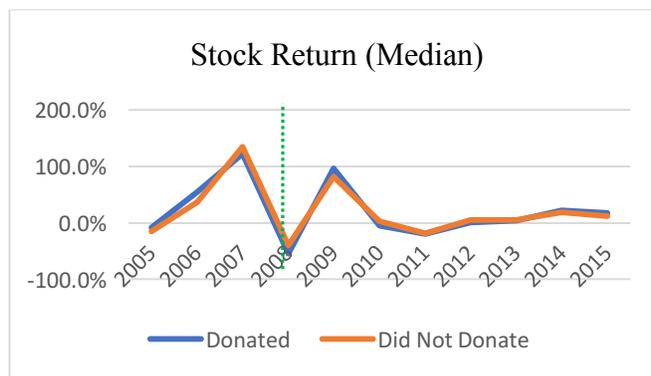


Figure 4 Stock Return Performance from The Match Samples



Multivariate Regression

To evaluate the effect of CSR engagement on financial performance, a least squares regression equation based on the model below is needed:

$$Performance_{it} = \alpha + \beta \times Donation_{it} + Controls + \epsilon_{it} \quad (1)$$

The control variables are total assets, leverage ratio, Tobin's Q, market value, staff protection, customer protection, environment protection, and public relations. These control variables are included to eliminate extraneous variables that could also affect firm financial performance. The result of multivariate regression model projecting variables of interest in the current period, forward one year, and forward two years is shown below:

Variable of Interest	Sales	F. Sales	F2. Sales	ROA	F. ROA	F2. ROA	Operating Margin	F. Operating Margin	F2. Operating Margin
Yearly Donation Amount	-35.75006* -1.85	355.1799 1.01	653.883 0.99	3.68E-10 0.64	0.0000** 2.19	-8.73E-12 -0.16	2.05E-07 0.63	3.02E-09 0.01	2.44E-07 1.23
<i>Controls</i>									
Total Assets	0.015889*** 4.22	0.025016*** 7.97	0.0298898*** 5.35	9.49E-14 0.86	-7.05E-15 -1.59	3.11E-16 0.28	7.45E-12 0.93	9.87E-12 0.97	1.13E-11 0.97
Leverage Ratio	-267346.9 -0.84	-48993.18 -0.22	-120212.5 -0.87	0.0002208 0.89	5.13E-06 0.09	-0.0002125 -1.49	-0.0868802 -0.85	-0.006957 -0.63	0.02432 0.85
Tobin's Q	2115.616*** 3.49	6193912 1.00	3819.931** 3.06	-0.0004731 -0.63	-0.0000354 -0.85	0.0009865*** 55.38	1.678721 0.91	-4.044318** -1.99	-0.0457383*** -15.92
Market Value	-0.03339*** -4.67	0.0097629 0.7	-0.0713668*** -3.99	3.53E-13 0.92	-9.05E-15 -0.59	-3.34E-15 -0.89	6.94E-12 0.26	-2.88E-12 -0.22	2.94E-11 0.81
Staff Protectio Disclosure	9.81E+08 1.18	-1.71E+10 -1.33	7310000000* 1.69	0.0287362 1.07	-0.021785 -0.67	-0.0938033*** -4.33	271.1365 1.31	-331.4456 -0.97	-344.6248 -1.06
Customer Protection Disclosure	1.29E+09 1.57	5370000000* 1.65	-1.22E+08 -0.08	-0.0366473 -1.16	-0.0190758 -0.59	0.052544** 2.52	-199.8233 -1.00	-293.1042 -1.5	522.6001 1.10
Environment Protection Disclosure	1.00E+09 0.80	1.31E+10 1.29	-3.34E+09 -0.96	-0.0041371 -0.25	0.0193731 0.85	0.048507*** 3.38	-106.4777 -0.70	466.5594 1.45	-55.17905 -0.44
Public Relations Disclosure	-2.07E+09 -0.86	-7.29E+07 -0.03	-2.39E+09 -0.9	0.0112883 0.71	0.0125608 1.00	-0.0071854 -0.75	-0.3271035 -0.01	140.3538 1.46	-133.4518 -1.00
Market Index	-	-	-	-	-	-	-	-	-
Number of Observations	5934	5934	5934	5934	5934	5934	5934	5934	5934

Note. Numbers below coefficient are t-values
*p < 0.10, **p < 0.05, ***p < 0.01

Table 2 B
Multivariate Regression

<i>Variable of Interest</i>	<u>ROI</u>	<u>F. ROI</u>	<u>F2. ROI</u>	<u>PE Ratio</u>	<u>F. PE Ratio</u>	<u>F2. PE Ratio</u>	<u>Stock Return</u>	<u>F. Stock Return</u>	<u>F2. Stock Return</u>
Yearly Donation Amount	1.05E-07 0.63	3.61E-09 0.19	-1.14E-07 -0.68	-6.34E-08 -0.59	-2.96E-08 -0.33	-4.90E-09 -0.04	-5.60E-09 -1.14	4.88E-10 0.78	2.19E-09 1.24
<i>Controls</i>									
Total Assets	-4.25E-11 -1.21	-5.72E-12 -0.99	-2.29E-11 -1.35	-5.19E-13 -0.15	-5.75E-12 -1.57	5.28E-12 1.27	5.54E-13 1.16	-1.66E-13 -1.02	-0.0000** -2.59
Leverage Ratio	-0.0041012 -1.03	-2.20E-06 0.00	-0.0048127 -0.52	-0.0110593 -1.15	0.0538068** 2.10	-0.0075749 -0.40	-0.0005*** -2.84	0.0000821 0.41	-0.0001557 -1.06
Tobin's Q	0.3646712 0.61	0.7026873 0.64	-0.0000401 -0.65	-0.0188949*** -52.99	-0.0142302*** -89.59	0.0673199*** 56.76	0.0000*** 4.35	-0.0000156*** -12.78	-0.0000104*** -3.75
Market Value	1.45E-10 0.95	-6.71E-12 -0.68	-1.09E-10 -1.01	2.69E-11 1.55	-1.58E-11 -1.01	2.40E-11 1.39	0.0000*** 2.92	6.00E-14 0.27	-0.0000*** -3.12
Staff Protection Disclosure	3.792487 1.64	-7.347468 -1.32	-0.2271044 -0.50	28.4673 1.34	116.7491 0.91	54.23502 0.69	0.0570495 0.09	0.0452036 0.10	0.0119199 0.03
Customer Protection Disclosure	2.415824 1.31	-0.8192494 -0.72	0.5502833 1.28	-20.23164 -0.76	-192.8048 -1.00	-125.0206 -1.03	-0.3756025 -0.81	-0.4679101 -1.50	0.2238686 1.36
Environment Protection Disclosure	-4.140993 -1.61	6.741269 1.27	0.4321077 0.96	6.763293 0.43	32.87934 0.70	-13.7033 -0.35	0.7160833 1.10	0.2086605 0.58	-0.1319551 -0.31
Public Relations Disclosure	1.660518 0.93	1.863659 1.42	-0.4041626 -0.63	-12.87034 -0.53	38.34528 0.62	81.10374 1.34	-1.485505*** -3.71	-0.4627257*** -2.67	-0.1034985 -0.60
Market Index	-	-	-	-	-	-	-	-0.000695*** -97.93	0.00043*** 67.63
Number of Observations	5934	5934	5934	5934	5934	5934	5934	5934	5934

Note. Numbers below coefficient are t-values
*p < 0.10, **p < 0.05, ***p < 0.01

The results of multivariable regression show that only Sales and Forward One-year ROA is significant. The significant sales coefficient of -35.75 means that CSR donation actually harmed the firm's sale performance for the concurrent year. Although the list of control variables can help reduce omitted variables bias in estimating the relationship between a firm's CSR score and financial performance, the results could still suffer from endogeneity bias caused by unobservable omitted variables. For example, there could be a dual causality relationship between financial performance and CSR initiatives, which means that the connection between the two variables is not one-directional. Not only does financial performance influence CSR initiative, but also CSR initiative influences financial performance. In that case $CSR_{i(t-1)}$ is not exogenous in that its value is not wholly causally independent from other variables in the model. The error term e_{it} is correlated with $CSR_{i(t-1)}$, which will result in the coefficient for CSR b_1 to be biased. In this case, one cannot establish causality even if b_1 is found to be positive and statistically significant.

However, based on this result we can see the effect of donation on financial performance is the greatest after two years. Therefore, forward two-years financial performance will be the focus in the next analysis.

Difference- in-Differences (DID)

Difference-in-differences is another statistical method that can be employed to study the effect of donation on firm's performance. This method was first used by Ashenfelter and Card (1985) to test data with multiple time dimensions and measure the effect of group-level shocks. In the context of our study, we are looking at two firms that are exactly the same, where one firm donated during the earthquake, and one firm did not donate. We are then comparing the firm's post-earthquake performance to its pre-earthquake performance. The performance difference between two time periods for the firms that did not donate is subtracted from the difference of the firms that did donate. This method removes biases in post-earthquake period comparisons between the two groups that could be due to inherent differences between those groups, or trends due to changes over time. We are able to control for things that is intrinsic about the firm or anything that is shows up in both periods. However, what we cannot control is elements that changed during the shock event.

The regression model in a DID analysis uses dummy variables to capture possible differences between the treatment and control groups prior to the earthquake:

$$Performance_{it} = \beta_0 + \beta_1 Donated_firms_i + \beta_2 Post_earthquake_t + \beta_3 (Donated_firms_i \times Post_earthquake_t) + \epsilon_{it} \quad (2)$$

Donated $_{firms_i}$ a dummy variable set to 1 if the firm donated money for the earthquake in both time period. Post $_{earthquake_t}$ is another dummy variable set to 1 if the firm is from the post-earthquake period in either group. β_3 is the DID estimate of the treatment effect, which is identical to the difference-in-differences estimate:

$$DID = \Delta Performance_{donated\ firms} - \Delta Performance_{no\ donation\ firms} \quad (3)$$

Table 3 below shows the effect of earthquake donation on firm's forward two-years financial performance variables. Only Forward Two-years Sales is statically significant. The affect is that for every Yuan that a firm donates, it will see an increase in its forward two-years sales by 2666 Yuan.

<i>Variable of Interest</i>	<u>F2. Sales</u>	<u>F2. ROA</u>	<u>F2. Operating Margin</u>	<u>F2. ROI</u>	<u>F2. PE Ratio</u>	<u>F2. Stock Return</u>
Yearly Donation Amount	2665.558*** 9.85	-8.07E-10 -0.06	2.24E-07 0.02	-0.0000191 0.95	5.20E-06 0.41	1.04E-08 0.46
<i>Controls</i>						
Total Assets	0.0233023*** 11.11	-9.73E-15 -0.08	1.26E-11 0.12	4.12E-11 0.23	-1.45E-11 0.15	-9.40E-14 -0.54
Leverage Ratio	-91896.7 -0.02	-0.0002102 -1.12	0.0241944 0.13	-0.0034699 0.01	-0.0074089 0.04	-0.0001747 -0.57
Tobin's Q	-3939.965 -0.02	0.0009859*** 77.81	-0.0463341 -0.41	-0.0002413*** 0.01	0.0672619 5.8	-8.56E-06 -0.42
Market Value	-0.0654341*** -24.33	1.22E-14 0.09	2.69E-11 0.2	-1.80E-10 0.9	4.81E-11 0.38	0.0000*** -1.74
Staff Protectio Disclosure	11300000000* 1.84	-0.0878821 -0.28	-391.6336 -1.3	-20.56435 0.05	60.00714 0.21	-0.02513 -0.05
Customer Protection Disclosure	-1.95E+08 -0.05	0.0368073 0.19	599.686** 3.09	1.953435 0.01	-126.048 0.7	0.3703712 1.16
Environment Protection Disclosure	-5.70E+09 -0.99	0.0539088 0.18	-66.10903 -0.23	16.9008 0.04	-17.70736 0.07	-0.1825089 -0.38
Public Relations Disclosure	-1.49E+09 -0.43	-0.0279337 -0.16	-150.6648 -0.88	-6.392317 0.03	78.61493 0.49	-0.0656266 -0.23
Market Index	-	-	-	-	-	0.0004135*** 55.25
Number of Observations	5934	5934	5934	5934	5934	5934

Note. Numbers below coefficient are t-values
*p < 0.10, **p < 0.05, ***p < 0.01

This result using DID method still have an endogeneity problem. Although forward-two-years sale is positive and significant, this could be because firms want to signal that they are doing well when in fact they are not. This methodology does not look at the underlying performance of each firm.

Two-Stage Least Squares (2SLS)

To fully address the endogeneity problems, I used an instrumental variable – earthquake that correlates with the firm’s CSR engagement but not with its financial performance or error term. Furthermore, since some industries are affected by earthquake such as construction and public facilities sectors, which could cause them to donate more for the cause. Therefore, for a more robust result, I used earthquake, affected industry, and the interaction of earthquake and affected industry as the instrumental variables. Since firm fixed effect is used, the affected industry IV will be omitted, leaving only earthquake and the interaction terms the IVs. The time period being investigated is 2006-2009, where 2006-2007 is the pre-earthquake period with no IV affect, and 2008-2009 is the earthquake period where IV is used to estimate the effect of donation on performance.

The key to using instrumental variables in this study is the fitted value of donation amount. The fitted value is the donation amount that we predict a firm will make after assessing its public available information, such as firm performance, asset size, etc. For example, two identical firms should have the same fitted donation value. However, if one firm donates more than the fitted value, it could be because of private information such as signing of a new contract, which lead them to donate more in a particular year. However, since we are only using the fitted

value derived by the IV, the donation amount will not be affected by firm's performance and the data should not suffer from the endogeneity problem.

The statistical analysis called Two-Stage Least Squares (2SLS) method using STATA data software is then used to analyze the data. This method avoids simultaneity bias by using instrumental variables to estimate for CSR, then substituting the estimated CSR effect into the financial performance equation. This model consists of two equations to determine firm's performance post its CSR engagement:

$$\text{First stage: Donation} = F(\text{Earthquake}, X) \quad (4)$$

$$\text{Second stage: Performance} = \alpha + \beta \times \widehat{\text{Donation}}_{it} + X\gamma + \epsilon_{it} \quad (5)$$

Performance in equation (x) and donation in equation (x) are jointly dependent variables, and earthquake is the exogenous variable (instruments). The ϵ variable in the first stage represents unobservable factors the firm knows but the public doesn't know (i.e. private contract). This variable could correlate with what we are trying to measure in the second stage - performance. By using IV to find the fitted value, this unobservable ϵ is taken out, as the fitted value has no correlation with performance. Now, a firm's performance will be insensitive to their actual donation.

The result using 2SLS for all the interested financial performance variables is shown in the Table 4 below: The results showed only Stock Returns is significant, and it is not affected by the firm's yearly donation. The sales variable is almost significant with a 0.121 p-value.

Table 4

Two-Stage Least Squares Model

	Donation (First Stage)	F2. Sales (Second Stage)	Donation (First Stage)	F2. ROA (Second Stage)	Donation (First Stage)	F2. Operating Margin (Second Stage)	Donation (First Stage)	F2. ROI (Second Stage)	Donation (First Stage)	F2. PE Ratio (Second Stage)	Donation (First Stage)	F2. Stock Return (Second Stage)
<i>Variable of Interest</i>												
Yearly Donation Amount	-	1160.665 1.55	-	-2.13E-08 -1.49	-	-0.0000129 -0.72	-	-8.99E-06 -0.5	-	3.60E-06 0.35	-	0.000000159* 1.78
<i>Instruments</i>												
Earthquake	-3175899** -2.22	-	-2953507** -2.09	-	-3154914** -2.22	-	-2796127** -2.02	-	-2925514** -2.1	-	-2963618** -2.13	-
Affected Industry=1*Earthquake=0	-2749232** -2.06	-	-2594011* -1.95	-	-2726839** -2.05	-	-2458975* -1.9	-	-2566949* -1.95	-	-2493776* -1.88	-
Affected Industry=0*Earthquake=1	3142050** 2.25	-	2918762** 2.12	-	3123688** 2.24	-	2756870** 2.03	-	2893374** 2.12	-	2894061** 2.12	-
<i>Controls</i>												
Total Assets	4.79E-06 1.11	0.0274629*** 4.32	5.40E-06 0.99	1.15E-13 0.89	4.79E-06 1.11	7.40E-11 0.73	4.58E-06 1.01	1.77E-11 0.2	4.79E-06 1.11	-1.20E-11 -0.24	4.83E-06 1.12	-8.74E-13 -1.14
Leverage Ratio	59.09216 0.95	-150851.5 -1.1	57.2194 0.95	-0.0002112 -1.49	59.09897 0.96	0.025113 0.87	47.44187 0.82	-0.0043559 -0.51	59.60317 0.97	-0.0077972 -0.41	34.47442 0.56	-0.0001628 -1.09
Tobin's Q	0.5009234 0.34	3852.809** 2.81	0.5219037 0.36	0.0009865*** 55.35	52.92565 -1.11	-0.0463318*** -14.29	0.564287 0.38	-0.0000409 -0.62	0.469863 0.33	0.0673202*** 56.84	0.223159 0.16	-0.0000103*** -3.66
Market Value	-8.66E-06 -0.79	-0.0669898** -3.07	-8.55E-06 -0.77	-1.85E-13 -0.79	-8.66E-06 -0.79	-8.37E-11 -0.43	-8.34E-06 -0.73	-1.83E-10 -0.79	-8.65E-06 -0.79	5.51E-11 0.53	-8.54E-06 -0.78	9.30E-13 0.58
Staff Protection Disclosure	1179143 1.31	6810000000* 1.69	1039749 1.14**	-0.0753563*** -3.55	1222995 1.35	-331.1267 -1.04	1173919 1.32	8.065497 0.45	1034542 1.14	51.12343 0.66	1078524 1.22	-0.1291828 -0.38
Customer Protection Disclosure	1618945** 1.97	-1.03E+09 -0.61	1823869 2.12	0.0942291*** 2.69	1526127* 1.8	544.8962 1.09	1520289* 1.89	16.29538 0.52	1813018** 2.13	-132.0462 -1.06	1830688** 2.16	-0.0815277 -0.43
Environment Protection Disclosure	-524335.3 -0.75	-3.07E+09 -0.93	-551179.1 -0.76	0.0368636*** 2.69	-508413.7 -0.74	-61.88176 -0.46	-496378.1 -0.73	-4.093849 -0.39	-545177.3 -0.76	-11.74998 -0.3	-573262.5 -0.82	-0.0444353 -0.12
Public Relations Disclosure	2020250** 2.49	-3.33E+09 -1.17	1959331** 2.42	0.0313979 1.26	2028150** 2.5	-108.8326 -0.93	1982430** 2.5	15.66311 0.49	1945465** 2.43	74.60472 1.22	1913179** 2.37	-0.3796986** -2.37
Market Index	-	-	-	-	-	-	-	-	-	-	-	0.000434** 54.03
Number of Observations	5934	5934	5934	5934	5934	5934	5934	5934	5934	5934	5934	5934

Note. Numbers below coefficient are t-values for first stage and z-values for second stage

*p < 0.10, **p < 0.05, ***p < 0.01

Additionally, I wanted to see the effect of CSR engagement on firm's financial performance is different for firms of different size. Table 5 shows the 2SLS results for large Firms vs Small Firms:

Table 5
Two-Stage Least Squares Model: Big Firms Vs. Small Firms

<i>Variable of Interest</i>	F2. Sales	F2. ROA	F2. Operating Margin	F2. ROI	F2. PE Ratio	F2. Stock Return
Small Firms Yearly Donation Amount	-6118.174	9.96E-08	0.0000241	-0.0001866	0.0000875	0.000000801**
	-1.01	0.54	0.3	0.58	0.74	2.48
Big Firms Yearly Donation Amount	1780.487**	-5.16E-08	-0.000016	0.0000133	-8.28E-06	0.000000142*
	2.17	-1.56	-0.85	0.77	-0.39	1.84
<i>Controls</i>						
Total Assets	0.024314***	2.81E-13	9.08E-11	-8.87E-11	4.75E-11	-7.80E-13
	2.9	0.89	0.8	0.81	0.43	-1.13
Leverage Ratio	-183802.8	-0.0002106	0.0240921	-0.0060723	-0.0079515	-0.00016
	-1.22	-1.49	0.86	0.59	-0.42	-1.09
Tobin's Q	2.10E+07	0.0005297	-2.672098	-0.6354441	-0.9978052	-0.0069301
	1.03	0.07	-1.06	0.74	-1.56	-1.09
Market Value	-0.061735**	-4.42E-13	-1.03E-10	4.63E-12	-4.41E-11	7.92E-13
	-2.21	-0.76	-0.47	0.02	-0.22	0.54
Staff Protectio Disclosure	5.46E+09	-0.0340317	-323.2132	-30.47292	71.2582	-0.0534807
	1.29	-0.7	-1.01	0.49	0.82	-0.21
Customer Protection Disclosure	-2.04E+09	0.1498375**	549.1063	-21.47804	-111.3049	-0.0655464
	-1.11	2.31	1.09	0.6	-0.82	-0.37
Environment Protection Disclosure	-1.74E+08	-0.0287353	-77.6421	71.9368	-49.62844	-0.2665941
	-0.04	-0.38	-0.58	0.57	-0.78	-1.07
Public Relations Disclosure	-5140000000*	0.0990107	-100.9548	-41.4453	103.7709	-0.2891737**
	-1.67	1.58	-0.86	0.7	1.37	-1.88
Market Index	-	-	-	-	-	0.0004384***
						50.74
Number of Observations	5934	5934	5934	5934	5934	5934

Note. Numbers below coefficient are z-values
*p < 0.10, **p < 0.05, ***p < 0.01

For big firms, Forward Two-Years Sales is positive and significant. As big firms donate one Yuan, their sales in two years will increase by 1780 Yuan. This is a drastic difference compare to the small firms, which have a negative but insignificant coefficient for Forward Two-Years Sales. Although the magnitude of that coefficient is large, since it is not statistically significant, it essentially means donation has no effect on small firm's future sales. The other variable that is significant is Forward Two-Years Stock Returns. The magnitude of coefficients are almost zero for both big and small firms, and since it is statistically significant, the result suggest that yearly donation has no effect on firm's stock returns.

Conclusion

This study explored the effect of CSR engagement on Chinese firm's financial performance across a sample of 2892 firms from the years 2006 – 2015. The results show that only Sales performance is affected by firm's CSR engagements. Furthermore, only large firms are rewarded. Small firms are not reward at all and some may even experience negative impact on sales. The results from big firms satisfies both the reward hypothesis and doing good hypothesis, which means that big companies could either be motivated by rewards from the market to be more socially friendly or they just wanted to do good in the community. The negative sales coefficient for small firms show that the doing good hypothesis is true, therefore rejecting the doing-good hypothesis which stated that firms are not implanting their CSR initiatives for financial reasons.

The results suggest that when large firms engage in socially responsible activities, the consumers will reward the firm, as evident by the increase in sales. This reward could also come from the government, as it provides those companies with better platforms to increase their sales. This effect is not seen on small firms, which could be resulted from they are less well known to the public and that government did not back them after they donate. However, this effect is limited to just top line growth and will diminish overtime. Other accounting financial metrics such as ROA and ROI are not affected by CSR efforts. Corporate transparency has been a constant struggle for Chinese firms, as they are all directly and indirectly influenced by the government. Therefore, consumers don't have much information disclosed to them when it comes to company loyalty.

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