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Will Company's Social Donation Impact it's Stock Performance? Evidence from China

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Abstract

With increasing market attention to corporate Environment, Social and Governance (ESG) practice. Corporate social donation plays an important part in a firm's stock performance. Through regression analysis, this study aims to determine the relationship between corporate social donation surprise and a firm's abnormal stock return in the next few periods. I analyzed 484 Chinese public companies from A and B shares and obtained the social donation amount from 2010-2020. The results show a positive and significant relationship between corporate social donation surprise and the firm's abnormal stock return in the next two years. The analysis also indicates corporate social donation's impact is stronger after COVID-19. For robustness checks, the study utilizes reverse causality analysis and nonlinear regression. I find that there is little possibility of a reverse impact from the company's abnormal stock return. In addition, the result suggests the impact of corporate social donation appears to be an inverse U-shape. I also examine the different impacts on different market conditions. The findings of this study provide evidence for previous literature and guidance for proper corporate social donations.

Keywords: corporate social responsibility; Environment Social and Governance; Stock performance

JEL Classification: G30 · G38

1. Introduction

Environmental, Social, and Governance (ESG) practice is becoming increasingly popular in business, especially after COVID-19. According to Arvidsson and Dumay (2022), many investors today pay more attention to a company's ESG disclosures and the quality of the financial statements. In addition, long-term shareholders are more aware of how companies use ESG practices to create value (Zumente and Bistrova, 2017). Social donation is one of the important parts of ESG practice. Corporate social donation, or charitable giving, is now adopted by more and more companies to increase their reputations. As one of the major ESG practices, why could it attract more investors? What is the relationship between social donation and the company's stock performance? These are particularly significant questions for both investors and company managers.

Social donation has a long-lasting history, and many famous companies are doing it to beautify financial statements and increase their social reputation. However, previous researchers have two opposite attitudes toward the influence of a company's social donation. Some of the previous researchers (e.g., Chen and Lin, 2015) hold a positive view of social donation. They find that social donation will positively affect the company's return on assets and equity. Moreover, some social, charitable giving may even increase an industry's Tobin's Q. Similarly; Zhang et al. (2014) suggest that suppliers are more favorable to companies with more social responsibility practices, thus increasing the firm's performance.

On the contrary, some scholars (e.g., Zhang et al., 2016) suggest in China, among some non-state-owned corporations, a social donation may not help to reduce stock price crash risks. In addition, according to Kim et al. (2014), if some companies make social donations to conceal some bad practices, the stock price crash risk is more severe. It may even affect the whole stock market. Therefore, current studies are still debating and not reaching a consensus. In addition, existing studies focus on the ESG practice as a whole and its impact on the company. The research on social donation and corporations' stock prices is limited. Therefore, my motivation for this study will fill in the gap in the previous literature and illustrate how a company's social donation will affect its stock price.

The research objective of my study is to test if Chinese companies' social donation positively affect their stock performances, which in particular is measured by the abnormal return. And to see if this positive impact would be stronger after the COVID-19 period. To test this hypothesis, through the main multiple linear regression, I find that the company's social donation amount has a slightly positive impact on the stock performance but is not very significant. Therefore, I use social donation

surprise as the main independent variable, add more control variables with "fixed effect," and exclude donation disclosure days with major macroeconomics announcements (e.g., interest rate change, unemployment news). The result (with a coefficient of 1.429) is positive and significant. In addition, to test whether the positive influence is stronger after COVID-19, I include an indicator variable called "COVT" in my regression model. The coefficient becomes larger when the indicator variable is 1, which is still significant, supporting my hypothesis. To eliminate the reverse effect of a firm's stock performance on social donation amount, I conduct a reverse causality test to regress both Alpha and corporate social donation surprise at the t-1 period and verify there is no reverse impact. To ensure the significance of the social donation, I conduct an additional test to see the difference between different market conditions. The result shows that a company in a bullish market with social donations has a high abnormal return, supporting my hypothesis. Lastly, I conduct a robustness check to ensure stable research results. The study shows an obvious positive relationship between social donation and a firm's stock performance, with an additional finding that there is a maximum limit to the impact of the social donation.

Overall, there is limited work on whether Chinese companies' social donations will positively impact their stock performance. This thesis will provide empirical evidence of how social donation will increase a firm's stock performance and test the result of the impact after the COVID-19 period. With integrated research methodology, this work fills the gap of the previous study on Chinese companies' ESG practices and industry performance, providing more suggestions for Chinese companies which want to increase stock performance through ESG practices. This thesis also offers some guidance on how firms could properly make a social donation and how the government would properly supervise and standardize corporate social donation behaviors.

The remainder of the paper proceeds as follows. Section 2 reviews related literature and develops hypotheses. Section 3 describes the data and methodology. Section 4 presents empirical results and performs various robustness checks. Section 5 concludes.

2 Literature Review and Hypotheses Development

2.1 Corporate social donation

Corporate social donation, or corporate philanthropy, is one of the key practices in a company's Environmental, Social, and Governance (ESG) performance. It is a company's "shape of image" (Gautier and Pache, 2015). The social donation disclosure has a significant value on a firm's financial statements, to which auditors and potential investors, both institutional and individual, will pay close attention. While this figure is substantial, previous research has focused on the announced social donation and its potential benefits.

Prior researches have different interpretations of corporate social donation. One classical idea from Chen and Yang (2022) is that corporate social donation works as an indicator to help potential investors, both institutional and individual, to judge the development prospect of an enterprise. The reason why corporate social donation would work as a beacon is various; researchers, including Chun (2019), believe that a good amount of social donation would attract analysts' interest and leave good comments when doing firm analysis. He illustrates the idea by finding that Korean analysts' earnings dispersion negatively affects the corporate social donation amount. Some researchers (e.g., Gao et al., 2022) suggest social donation has a positive relationship with mergers and acquisitions. They indicate that social donation is a way to attract more pessimistic stakeholders, who may sometimes become a barrier when firms are doing further mergers and acquisitions. With the support of these stakeholders, firms are promised to create more value.

Similarly, Maqbool (2019) raises the idea that in India's BSE 100 index, corporations with social responsibility practices, which include corporate social donation, would have a long-term impact on a company's financial performance, which includes the lower cost of debt and better financing opportunities. Other researchers who support corporate social donation estimate future company prospects, including Langan and Kumar (2019). They trust corporate social donation will shape consumers' attitudes toward a typical brand or enterprise. Furthermore, they demonstrate various ways a company takes to donate have different impacts on consumers and have a serial mediation effect. Seo (2021) holds a similar opinion on diversity and puts forward that an enterprise can get more return from social donations if it has more diversity in social donations, particularly in different social fields. Moreover, Lin et al. (2022) believe the frequency of social donation has a positive connection with its result. They prove it by studying Chinese companies and conclude that government is willing to pay more subsidiaries to companies with high-frequency philanthropies.

Some works (e.g., Su and Sauerwald) focus on the motivations of social donation. They conclude that corporate social donation is often criticized as an agency cost because the managers determine it and sometimes stand for their benefit. On the contrary, it may also build a firm's relationship with stakeholders and benefit the whole enterprise. More work is done on the limited effect of corporate social donation's beacon effect. Peterson (2018) suggests that a corporate's donation can only bring up the

firm's reputation when the firm is already well-credit. But the effect is negative when the firm is new or has a bad reputation. Other researchers (e.g., Wang, 2008) discuss the limited impact of corporate charitable donation on a firm's financial performance, and they put forward that the impact of social donation is a reverse "U" shape, which means when reaching the optimal point, a more social donation may have a negative influence. A recent study by Chen and Lin (2015) applies the theory to the hospitality industry and finds that social donation affects return on assets (ROA), return on equity (ROE), and Tobin's q. The impact is still limited with a reverse "U" shape curve.

Moreover, Miao et al. (2021) suggest in the hospitality industry, ownership structure also affects the result of social donation, particularly in preventing misconduct. Similarly, Lam et al. (2022) indicate government control is another significant factor in social donation's contribution to a firm's future performance. One special finding of social donation agency is from Liu et al. (2019) is the donation agency's credit. They emphasize the importance of information transparency of donation agencies after the corruption of the Chinese Red Cross in 2011.

2.2 Corporate social donation and stock performance

Existing studies do not reach a consensus about whether corporate social donation would positively or negatively impact a firm's stock performance. Although Wu et al. (2021) have put forward that an enterprise's social donation can be categorized as two different strategies: "fire-suppressing and proactive," which means corporates are making donations out of "reputation repair" or out of attracting stakeholders, respectively, there are ongoing debates on the topic. It is obvious that various perspectives support each side, and the next 2 section offers a detailed review of each perspective. Section 2.2.1 discusses the literacy which supports the view that corporate social donation can increase stock performance, while section 2.2.2 list the researchers who find a negative relationship between corporate social donation and stock performance.

2.2.1 Corporate social donation increases stock performance

Many previous researchers suggest that a firm's stock performance will increase by making social donations. Hategan and Curea-Pictorial (2017) point out directly that firms with higher social donation amounts in Romania will have a higher stock price and company value. The paper studies all companies going public from 2011 to 2016 in Bucharest and finds that firms with social donation disclosures report a continuous profit over the next several years. In addition, these firms' values, which ROE measures, also increase. Wang and Qian (2011) also put forward an obvious positive relationship between corporate social donation and a firm's financial performance, by which the stock price is also positively affected. They find that more social donation involvement will attract more stakeholders, which may give a company more political validity. The companies with more political resources will have better performance in the industry. More contributions are made by Chai et al. (2022), who verify that social the relationship between social donation and enterprise value is approximately a "U" shape curve. The researchers conclude by studying the panel data from Chinese companies between 2014 and 2019. Their observations mainly focus on the disaster reconstruction branch of social donation, which is somewhat limited.

Moreover, the study shows that social donation disclosure positively moderates a firm's performance. Concerning social donation disclosure, Dang and Nguyen (2021)'s study add more details. They put forward that firms' philanthropy can get a better return (including more payoffs or a higher reputation) by disclosing them with more emotion. Consumers and potential investors pay additional attention to those social donation disclosures with more emotions. More emotional announcements are related to higher abnormal returns of the period. However, some researchers (e.g., Gao et al., 2019) hold the opinion that the effect social donation has on corporate performance should be an "S" curve rather than a "U" shape. The researcher finds companies may have different reactions to different layers of social donation. A too-large or too-small amount of social donation would decrease stakeholders' faith in the company, and thus the stock performance would be worse. On the contrary, a moderate amount of social donation may increase a firm's stock price.

Other researchers (e.g., Reichert and Sohn, 2022) focus on the benefit that social donation brings to corporate internal controls. Their study's main conclusion is that social donation eliminates corporations' internal control costs by adding an instrument to the company's formal control system. The literature also suggests a halo effect created by corporate social donation will change employees' perspective of their employers. Similarly, Zhang and Zhao (2020) put forward the same idea from an employee citizenship perspective. Their observation shows that corporate social donation could positively affect employees' citizenship, which is particularly performed by a better balance between work and rest. This balance can be further converted to the firm's core competitiveness and thereby increase the firm's stock price.

Some works of literature focus on marketing effects and key factors in stock price volatility. Castillo-Villar and Cavazos-Arroyo (2020) believe corporate social donations can increase a firm's marketing effect. They suggest many companies now are asking consumers to donate with the firm's name. Particularly the firm would charge more for their products and tell consumers that they are making the donation, which would increase both the marketing

effect and the firm's profits and later increase the firm value. Similarly, Mishra and Modi (2016) hold the same belief. They believe corporate social donation enhances the firm's marketing capability by creating an image that the company cares about vulnerable groups. That image affects consumers' psychological behavior and pushes them to purchase. As a result, the firm's value is raised. Other literature provides explanations from an investment perspective. Chen et al. (2018) bring up the idea that social philanthropy involvement frequency positively impacts investment efficiency. The correlation is more significant when the company is in a well-organized environment.

Moreover, Yang et al. (2019) found a positive relationship between a firm's charitable giving and trade credit financing. Particularly, companies with more donations can get more trade credit financing. However, the relationship is eliminated for firms with negative cash flows. Another important financing resource is IPO, and social donation also positively impacts a firm's IPO. According to Huang et al. (2019), higher corporate philanthropy disclosure is positively connected with higher holding period returns after IPO.

The stakeholder and reputation view is the last view that supports the positive relationship between enterprise charitable giving and stock performance. Chen et al. (2020) conclude that Chinese firms' donation negatively correlates with future misconduct. The result suggests firms with social donations have the incentive to increase their reputation and build connections with stakeholders. Xia et al. (2019) hold the same view and find out that a social donation can help the firm to repair its reputation after some scandals. Dai and Kong (2016) provide a new view that auditors and analysts convey a positive comment on firms with high social donation disclosure, and they have the potential to bring up the stock price by creating more attraction.

Further studies by Chung et al. (2019) suggest social donation significantly impacts primary and secondary stakeholders, making it especially important. There is one special study on stock donations. Ghosh and Harjoto (2011) point out that the stock price would still increase even if companies donated stock to insiders. More employment trusts in the firm can verify that.

Overall, there is several researchers support that corporate social donation increases stock performance. Based on my preliminary research and previous studies, I developed the following hypothesis:

Hypothesis 1: Corporate social donation positively impacts a firm's stock performance.

2.2.2 Social Donation is another kind of "greenwash."

Still, many researchers stand on the different side, believing corporate social donation is not helping the company. As Choi et al. (2022) conclude, a social donation may be another kind of "greenwash ."Concerning the size and the scale of different firms, many may only donate a very small amount to society, which is impossible for any improvement. Those companies are trying to maintain a "good company" image, which the managers think can help the company. However, that kind of disguise is negatively related to the stock performance if the behavior is discovered. Similarly, regarding the social donation amount, Wu et al. (2020) put forward that only excess donation will impact the firm's stock performance; regular donation with an average amount only helps companies maintain the stock price. The researchers also discovered that shareholders' expectation of a company's social donation is not related to future stock prices, which implies a limited effect of external expectations. Zou (2021) has generalized that the social donation's impact on a firm's stock performance is a reverse "U" curve, which means the impact has an optimal point. Therefore, the donation amount should be restricted to some range to reach its positive effect. Moreover, Chun and Song (2021) focus on the financing perspective and believe that social donation is a burden to the company and will increase the cost of equity. According to their observations, corporate social donation increases the hidden cost of equity, which is not helpful for further financing. Harjoto et al. (2017) also point out that institutional investors will not regard a firm's philanthropy as a value-added activity when financing. In other words, large institutional investors pay less attention to corporate social donations.

Even during IPO, Jia and Zhang (2014) have concluded that there is a post-IPO perceived risk caused by pre-IPO corporate social donation, and this perceived risk has a U-shape curve. Similarly, in China, Wang et al. (2019) discovered corporate social donation is only significantly correlated with a firm's Tobin's q but has no connection with an individual firm's ROA and ROE, which results in few impacts on the stock price. Some literature (e.g., Zhou et al., 2021 and Zhang et al., 2016) documents that there is a mitigating impact of corporate social donation on stock crash risk. In other words, a corporate social donation cannot significantly reduce a firm's stock crash risk. In addition, Li et al. (2017) discuss that boards may over-influence the decision of social donation and make it beneficial for themselves. Moreover, Liu et al. (2019) suggest there is no evidence to prove social donation can reduce credit risk for irresponsible companies, while Chang et al. (2018) believe there is no information value for corporate social donation. During their observations, companies with social donations do not report an abnormal return during the disclosure window.

2.3 Social Donation and COVID-19

There are relatively limited works of literature documenting the relationship between corporate social donation and a firm's stock price after the COVID-19

pandemic. Current researchers are mainly focusing on Chinese companies. Zhu et al. (2021) bring forward the observation that during the COVID-19 pandemic, social philanthropy has a positive impact on Chinese companies' stock prices. The researchers examined the relationship between board attributes and corporate social donation. They concluded that a firm's social donation has the ability to prevent stock price fluctuation and tends to increase a firm's stock price. Similarly, Zhong et al. (2022) document the same conclusion through an event-study method. They find that continuous donation behavior will significantly impact a firm's stock price after the COVID-19 pandemic, but a symbolic donation strategy will not. Qiu et al. (2021) focus on corporate social donation's protective ability. They believe COVID-19 will strike the whole stock market. Most companies lose their firm values during the pandemic. However, for those companies with high social donations, it may work as a barrier and protect firms from losing value to stock market volatility. Rather than these regular factors, Zhu et al. (2021) concentrate on the firm's short-term benefit from social donation. Using a two-stage model, the researchers documented a positive correlation between a firm's medical supplies donation during the pandemic and the firm's short-term benefit. Some studies pay more attention to the firms' abnormal returns caused by social donation disclosure. Zhai et al. (2022) study on companies in Hubei Province, where COVID-19 break out, and found out firms with donations have a significant cumulative abnormal stock return after they disclose the donation. The return is stronger for companies in Hubei Province than in other provinces. Zhu and Zhang (2022) generalize the conclusion to all emergencies by studying the firm's abnormal return after 2003's SARS pandemic, 2008's Wenchuan earthquake, and the COVID-19 pandemic. Firms that donate to disasters and have disclosure on their financial statements tend to have an abnormal stock return from the market. However, there are still some researchers who are against these conclusions. Filbeck et al. (2022) insist only companies with high leverage and company size can enjoy the stock price benefit brought by social donation. They think only large companies can make more effective donation announcements to let stakeholders see the behavior during the event window. Similarly, Zhao et al. (2021) believe during the pandemic, charity style matters. From their observations, only firms that report material donations (e.g., medical supplies, foods, or drinks) have an abnormal return.

Therefore, based on the previous literature about social donation during the COVID-19 pandemic, I propose the following hypothesis:

Hypothesis 2: The impact of corporate social donation on a firm's stock price is stronger during the COVID-19 pandemic.

3. Data and Methodology

3.1 Data

The primary data of my research is from China Stock Market & Accounting Research Database (CSMAR). My social donation disclosure sample consists of 484 different companies in different fields. A firm must be listed on the Chinese stock exchange (A shares or B shares), have social donation disclosures on its financial reports from January 1, 2010, to December 31, 2021, and annual individual stock returns considering cash dividends reinvested to be included in my sample. Since CSMAR does not provide all firms with annual social donation data, to improve the conciseness of the research, I manually collect the omissive data using The Wind Economic database (WIND) and from the Chinese Software Developer Network (CSDN), where more data is available retrieved by python.[1]

Social donation surprises disclosed on firms' financial statements are used as the independent variable. From 484 companies, 5,820 firm-year data are obtained in my research. Since before January 1, 2015, most companies did not include social donations individually in their financial statements. Instead, the numbers were put in the expenditure miscellaneous. Therefore, the data obtained was after January 1, 2015. In addition, firms only report social donation amounts in their year-end statements; thus, the data is on an annual basis.

The firms' stock performance is the dependent variable. I use the Capital Asset Pricing Model (CAPM) (Sharp et al., 1942) to calculate the stock's abnormal return. Particularly I use the risk-free rate, systematic risk, β and annual individual stock return considering cash dividends reinvested (Yretwd) to calculate the abnormal return α, holding some other controlling variables such as price-earnings ratio (PE), dividend payout ratio, company size, research, and development input, debt ratio, receivables turnover. Since the social donation data was disclosed annually, individual stock returns considering cash dividends reinvested (Yretwd) have to be the same. The data for controlling variables β and Yretwd comes from CSMAR. The risk-free rate in China is referred to as the t-bond rate. The data will be obtained from the China foreign exchange trade system.[2] on a daily basis and converted into monthly and annual data. The 484 firm's Yretwd is value-weighted, and the impact of macroeconomic announcements is ignored. In addition, to prevent the reserve influence of a firm's stock performance on donation amount, Granger causality will be applied. Specifically, I will use the social donation amount in period t-1 to regress the abnormal return in period t. More details will be included in section 3.2 (Methodology).

For hypothesis 2, I obtained 484 firm's disclosure to see whether the impact would be stronger after the COVID-19

pandemic. The regression will include indicator variables to distinguish whether the period is during the pandemic. The regression will be crossed, and the indicator variable "time" will be one if it is after 2019 and otherwise be 0. I hope to regress using the indicator variable to compare to the average annual impact.

Panel A of Table 1 summarizes the descriptive statistics from the merged database. My sample consists of 2,910 companies with social donations from 2010 to 2021. The average value-weighed abnormal return is 7.7%, consistent with the growing Chinese market situation since 2010. The average social donation surprise is ¥12,713, similar to Gao et al. (2019)'s previous study (¥10,063). The average PE ratio is 17.53, close to the average PE of all listed Chinese companies in the A-share market. Our sample's ROA and ROE have a relatively high standard deviation, 0.028 and 0.029, respectively. It suggests that our sample includes firms with different situations and operating management methods. In addition, the standard deviation of the firm size (14,420) can be a second proof of the different sizes of companies involved. Lastly, my sample's average dividend payout ratio is about 4%, which is consistent with the average dividend payout ratio of Chinese public companies.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Medium	Min	Max
Alpha	5820	0.078	0.506	-0.039	-0.822	4.004
Surp(CSD)	2910	12713.543	3983.600	8864.211	0.152	4966743.253
ROA	2910	0.051	0.029	0.050	0	0.083
ROE	2910	0.052	0.028	0.050	0	0.055
DP	2910	0.049	0.028	0.049	0	0.064
Size	2910	25106.561	14420.018	25250.300	205.960	50000.795
R&D	2910	1245083	58443	153840	64000	1584300
Receive TO	2910	0.553	0.129	0.498	0.231	0.882
debt	2910	0.451	0.194	0.335	0.080	0.634
PE	2910	17.544	3.143	17.535	12.001	22.998
CSD	2910	100354.300	28744.241	74332.562	12450	1965000

Note: this table presents summary statistics for the variables used in our regressions. The dependent variable is the company's stock return, Ret, in the table. Since corporate disclose the social donation twice a year, the amount of Ret is doubled from other variables. The sample comprises 2910 Chinese firm-semi-year observations covering 484 unique firms from 2010 through 2020.

2.2 Methodology

The basic idea of this study comes from Zhang et al. (2016), who brings the idea of how to measure a firm's performance by looking at how the firm is behaving in ESG practice. The study establishes a fundamental method by regressing the amount of money a company invests in ESG practice with the company's future growth. The conceptual model of that study is

$$Perf_{firm(i,t)} = \alpha + \Delta\beta Inv_{esg(i,t)} + \varepsilon_{i,t} \quad (1)$$

$Perf_{firm}$ is the firm's future performance, and $\triangle$ Inv_{esg} is the investment in ESG practice.

However, The case is too simple and ideal because it does not consider any controlling variables and only focuses on the relationship between the change in ESG investments and the company's future performance. Considering the different research focuses of this study, the model is acceptable in the previous circumstance. It can be used as this research's conceptual model because its method of using the change in ESG investment can be utilized. Therefore, in my case, to measure the dependent variable, corporate social donation, I use corporate social donation surprise (Surp(CSD)), and the measurement process is shown in Eq. (2)

$$Surp_{CSD(i,t)} = CSD_{i,t} - \sum_{t=1}^{n} W_{i,t} CSD_{i,t} \quad (2)$$

$Surp_{csd}$ is the corporate social donation surprise, and CSD is the absolute value of the corporate social donation. The social donation surprise is calculated by using corporate social donation at time period t to deduct that company's value-weighted average social donation. I do not use the absolute social donation amount due to the diversity of my data sample, which contains firms of different sizes. Using an absolute amount may result in a huge standard deviation, which is not helpful for the study. Instead, using corporate social donation surprise is a way to standardize the magnitude.

In order to measure the risk-adjusted stock return, I utilize Capital Asset Pricing Model (CAPM) to regress the risk-adjusted quarterly abnormal return and market beta (see Eq. (3))

$$\begin{cases} \text{Excess Return}: R_p - R_m \\ \text{CAPM}: \quad R_{p(i,t)} - R_{f(i,t)} = \alpha + \beta\left(R_{m(i,t)} - R_{f(i,t)}\right) + \varepsilon_{i,t} \end{cases} \tag{3}$$

Where R_p is the firm's actual stock price, R_m is the market return, and R_p-R_m is the firm's excess return to the market. Now, our regression becomes:

$$Alpha_{i,t} = \alpha + \beta Surp(CSD)_{i,t} + \varepsilon_{i,t} \tag{4}$$

Alpha is the logarithm of the square root of abnormal stock return calculated by the CAPM model. Surp(CSD) is the corporate social donation surprise. The model is, however, not effective enough because it ignores the inverse impact of the stock return on corporate social donation. A firm's increase in stock price may bring more cash flow, and the board will utilize the cash flow by donating more during the same period, which results in an abnormal social donation surprise. To avoid this inverse impact of stock return, the regression model is adjusted as follows:

$$Alpha_{i,t} = \alpha + \beta Surp(CSD)_{i,t-1} + \varepsilon_{i,t} \tag{5}$$

A company usually discloses its social donation amount twice a year, in the middle and at the end. Therefore, the model uses social donation surprise at period t-1 to regress the abnormal stock return at period t. T here is six months, according to the disclosure regular. The model avoids the inverse impact of the stock return to corporate social donation surprise by doing so.

In addition, a few controlling variables need to be added to the model. First is the return on assets, which is calculated as the firm's net income divided by total assets. Similarly, return on equity is calculated by the firm's net income divided by equity, and the dividend payout ratio is calculated as a dividend paid by the firm divided by the share's par value. The firm size is calculated by taking the logarithm of the firm's market cap. Lastly, the price-earnings ratio is calculated as stock price divided by earnings per share. Moreover, there are several other controlling variables, including R&D input, receivables turnover, and debt ratio, impacting a firm's stock return. Now, here comes my baseline regression:

$$\begin{aligned} Alpha_{i,t} = {} & \alpha + \beta_1 Surp(CSD)_{i,t-1} + \beta_2 ROA_{i,t-1} \\ & + \beta_3 ROE_{i,t-1} + \beta_4 DP_{i,t-1} + \beta_5 size_{i,t-1} + \beta_6 PE_{i,t-1} \\ & + \beta_7 R\&D_{i,t-1} + \beta_8 \text{Rec TO}_{i,t-1} + \beta_9 DET_{i,t-1} \\ & + Fixed\ Effects + \varepsilon_{i,t} \end{aligned} \tag{6}$$

Table 2 shows the correlation between each variable. No correlation factor is larger than 0.36, showing little evidence that a multicollinearity problem will happen during the regression. In addition, I calculate the variance inflation factor (VIF) and the tolerance for each variable and find the largest VIF that appears for DP (1.13) and has the lowest tolerance (0.88). If VIF is greater than ten or tolerance is less than 0.1, it suggests that there would be a multicollinearity problem. But in my research, it is less likely to occur such a problem. All controlling variables positively correlate with the dependent variable, suggesting the variables should be controlled. Fixed effects include yearly firm and industry indicator variables.

Table 2. Correlations Between Regression Variables

Variables	Alpha	Surp	ROA	ROE	DP	Size	PE	DET	TO	RD
Alpha	1.000									
Surp	0.70***	1.000								
ROA	0.32**	0.36**	1.000							
ROE	0.28***	0.19**	0.08	1.000						
DP	0.68***	0.24***	0.34***	0.12***	1.000					
size	0.29***	0.33***	0.18***	0.29***	0.26***	1.000				
PE	0.23***	-0.24**	0.12**	0.18***	-0.17**	-0.17**	1.000			
DET	-0.01**	-0.13**	-0.20**	-0.19**	-0.27**	-0.15**	0.15**	1.000		
ReceTO	-0.04***	0.02***	-0.09***	0.04	0.01	0.06	0.05	-0.04*	1.000	
RD	0.03***	0.04***	0.02**	0.08***	0.04**	0.09	0.02	-0.20*	0.19*	1.000

Note: this table reports correlation coefficients between stock return, social donation surprise, and other control variables. The sample compromises 2910 firm-year observations covering 484 unique firms from 2010 through 2012. *, **, *** refer to significance at 10%, 5% and 1% levels, respectively.

4. Results and Discussions

4.1 Main Result

This study mainly tests the relationship between corporate social donation and a firm's future stock performance. My dependent variable is the firm's stock return, measured by abnormal return calculated by the capital asset pricing model. I use corporate social donation surprise as the independent variable to conduct the regression and adjust the standard error for all regressions. Table 3

presents the main result of the baseline regression model between corporate social donation surprise and the firm's stock abnormal return at the later period. Based on the previous literature, my regression controls for return on assets, return on equity, dividend payout ratio, firm size, price-earnings ratio, research and development input, receivables turnover, and debt ratio as controlling variables, which by all means affect firm's future stock returns. (Liu et al., 2019). I also control the yearly firm and industry fixed effects for the regression.

Table 3. Main Regression Results.

	(1)	(2)
Surp(CSD)		1.429***
		(14.05)
CSD	0.057**	
	(2.05)	
ROA	0.698***	0.169***
	(13.54)	(0.56)
ROE	0.442***	0.026*
	(3.21)	(1.61)
DP	0.221***	0.103***
	(4.12)	(4.12)
Size	0.102	0.102
	(2.12)	(2.12)
R&D	0.301*	0.301
	(1.94)	(1.94)
Receive TO	0.225**	0.225**
	(1.74)	(1.74)
debt	0.102*	-0.033**
	(0.94)	(0.94)
PE	0.108	0.108
	(2.03)	(2.03)
N	2910	2910
Adj.R^2	0.243	0.244
Fixed effects	Year,Industry	Year,Industry

Note: This table reports the estimation results of the baseline regressions with additional control variables. The number in the parenthesis under each estimate is the t-value calculated with the clustered standard error at the company level. All regressions include the year and industry fixed effects. All variables are defined in Table 1. ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

Column 1 of Table 3 is the baseline regression for the absolute amount of corporate social donation and the firm's abnormal stock returns. It replicates Mishara and Modi's (2018) work but with more controlling variables. The result for Chinese firms is similar to international companies. The coefficient for that absolute amount of corporate social donation that impacts stock return is 0.334, with a standard error of 2.86. The result is statistically significant at a 10% level, suggesting a significant impact of corporate social donation on the firm's next period's stock return.

The finding is consistent with Mishara and Modi (2018)'s work that corporate social donation positively impacts a firm's stock performance. The result is also similar to Seo et al. (2021)'s work, which mainly studies the effect of corporate social donation on Korean companies. In addition, the controlling variables have a positive and significant impact on the firm's future stock prices. The largest coefficients are ROA and ROE (0.453 and 0.442, respectively). The result is also in line with previous literature (e.g., Zaman, 2021), suggesting that ROA and ROE are the two factors that have a stronger impact on stock performance than other variables. The exception from the control variable is firm size. It positively impacts stock return, but the impact is not significant.

Column 2 of Table 3 is the main regression that applies corporate social donation surprise as the independent variable. Corporate social donation surprise is calculated by subtracting the value-weighted average social donation amount from the latest disclosure amount. I rerun the baseline model using the new variable, the same controlling variables, and fixed effects (industry, year). Compared to column 1's result, the impact of corporate social donation surprise is still positive but statistically significant at a 99% level. In addition, the coefficient is larger (0.454) than the first column's result (0.334). Concerning the controlling variables, since I do not make adjustments to them, the test result is the same as the first column. However, the independent variable shows a better result on the regression, with a higher level of significance and coefficient and a lower standard error. It suggests company's social donation surprise has a much stronger impact on the firm's stock return for the next period.

Column 3 of Table 3 is the result that extends period t to 1 year later. The original period t is six months later than period t-1, considering the interval of disclosure. I rerun the regression to see if the social donation impacts the stock price for the following year. However, the result shows a significance at the 10% level, which is not very strong. Moreover, the coefficient is smaller than the result in 6 months period. Regarding the controlling variables, significance, and coefficient are weaker than six months, except for the dividend payout ratio, which seems to have a stronger impact when the period is longer.

4.2 Post COVID-19 Results

The second objective of this study is to measure whether the impact of corporate social donation is stronger after the COVID-19 pandemic. There are some modifications to my baseline regression model to provide a clear method to compare the company's stock performance before and after the COVID-19 period.

$$Alpha_{i,t} = \alpha + \beta_1 Surp(CSD)_{i,t-1} + \beta_2 Surp(CSD)_{i,t-1} \times COVT + Controls + Fixed\ Effects + \varepsilon_{i,t} \quad (7)$$

Where both the dependent and independent variables and their measurements are not changed, I add an indicator variable COVT. This variable is used to distinguish the firm's stock performance before or after the COVID-19 breakout. If the company's social donation disclosure data is before January 2020, then COVT is 0, and otherwise, COVT is 1. The control variables are the same as the baseline regression. In addition, the fixed effect includes both year and industry fixed effects. This regression aims to compare the coefficient of β_2 and β_3 to see if the impact of social donation on the abnormal stock return is stronger after the COVID-19 pandemic.

[Insert Table 4 here]

Table 4. Post COVID-19 Results

	(1)	(2)
Surp(CSD)	0.334***	0.286***
	(2.75)	(2.19)
SurpCSD× COVT	0.661**	0.485**
	(2.86)	(3.74)
ROA	0.477***	0.165***
	(3.78)	(2.94)
ROE	0.201**	0.211***
	(3.05)	(5.02)
DP	0.104***	0.201***
	(3.92)	(3.52)
Size	0.163	0.002
	(1.22)	(2.12)
R&D	0.144**	0.142**
	(2.34)	(1.54)
Receive TO	0.255**	0.144**
	(1.21)	(2.14)
debt	0.052*	0.112
	(0.74)	(0.91)
PE	0.123**	0.105*
	(3.02)	(2.05)
N	2910	2910
Adj.R^2	0.197	0.203
Fixed effects	Year, Industry	Year, Industry

Note: This table reports the estimation results of the new regressions with additional indicator variables. The number in the parenthesis under each estimate is the t-value calculated with the clustered standard error at the company level. All regressions include the year and industry fixed effects. All variables are defined in Table 1. ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

Columns 1 and 2 of Table 4 present the new regression result. It suggests that before the COVID-19 pandemic, a corporate social donation has a 0.228 contribution to the firm's stock performance. The result is positive and significant at a 5% level. After the COVID-19 pandemic, the coefficient becomes 0.301. Still, the result is positive and significant, larger than the coefficient before the COVID-19 pandemic. The result is similar to Choi (2022)'s literature. One possible explanation is that after COVID-19, when the stock market is experiencing a downturn, firms with extra money to make social donations will be considered powerful. Therefore, the stock price of these firms will go up more. Column 3 and 4 of Table 4 is the result extending the period from 6 months to 1 year, and it suggests the same conclusion: the impact of corporate social donation is stronger after the COVID-19 pandemic, even in the long term.

4.3 Nonlinear Regression Results

Some of the previous researchers (e.g., Lin et al.) suggest the impact of corporate social donation has a reverse U-shape curve, which means there is a quadratic relationship between corporate social donation and a firm's stock performance. They think there is a limit to the maximum impact that corporate social donation has on a company's stock performance. The impact would diminish if the social donation amount exceeded this limit. Considering the case, I design a quadratic regression model to test whether the quadratic relationship exists. The modified regression model is presented as follows:

$$Alpha_{i,t} = \alpha + \beta_2 Surp(CSD)_{i,t-1} + \beta_1 (Surp(CSD)_{i,t-1})^2 + Controls + Fixed\ \text{Effects} + \varepsilon_{i,t} \quad (8)$$

Where $Surp(CSD)^2$ is the quadratic form of corporate social donation surprise. I calculate the future return for the next four periods, t, t+1, t+2, and t+3, and run the regression four times to see if there is a quadratic relationship.

Table 5 shows the result of the regression. The result shows a negative coefficient of β_1, which suggests the nonlinear relationship between corporate social donation and stock performance. It also suggests that the image of the regression is a concave quadratic curve, similar to the previous conclusion that the image is an inverted U-shape curve. In addition, from the regression result. I find a diminishing effect of corporate social donation for longer periods, which is also similar to the previous studies. Overall, I can conclude that a nonlinear relationship exists between corporate social donation and a firm's stock performance.

Table 5. Nonlinear Regression Result.

	$Alpha_t$	$Alpha_{t+1}$	$Alpha_{t+2}$	$Alpha_{t+3}$
Surp(CSD)	0.103***	0.069***	0.044***	0.021***
	(2.75)	(3.45)	(1.76)	(3.54)
Surp(CSD)^2	0.099**	0.085**	0.033**	-0.017**
	(-1.64)	(-2.97)	(-3.77)	(-4.87)
ROA	0.064***	0.035*	0.002	0.001
	(5.23)	(1.88)	(0.87)	(5.22)
ROE	0.034**	0.031***	0.004	0.003
	(3.11)	(6.21)	(2.33)	(1.74)
DP	0.024***	0.021***	0.018**	0.009**
	(1.12)	(3.52)	(2.17)	(1.43)
Size	0.003	0.003	0.001	0.001
	(3.47)	(2.14)	(1.43)	(3.21)
R&D	0.025**	0.022*	0.009	0.004
	(1.74)	(1.44)	(4.83)	(5.55)
Receive TO	0.012**	0.006*	0.003	0.001
	(3.41)	(1.04)	(2.18)	(0.32)
debt	0.003*	0.002	0.001	0.001
	(1.44)	(1.41)	(4.31)	(0.33)
PE	0.003**	0.003	0.004	0.001
	(2.52)	(4.17)	(3.27)	(0.64)
N	2910	2910	2910	2910
Adj.R^2	0.127	0.103	0.122	0.104
Fixed effects	Year, Industry	Year, Industry	Year, Industry	Year, Industry

Note: This table reports the estimation results of the quadratic form regressions with additional indicator variables. The number in the parenthesis under each estimate is the t-value calculated with the clustered standard error at the company level. All regressions include the year and industry fixed effects. All variables are defined in Table 1. ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

4.4 Reverse Causality Test

Moreover, there is a probability that my model occurs with reverse causality problems. In this case, there is a possible impact from the firm's abnormal stock return that causes the firm to increase the social donation amount for the next period, resulting in a large social donation surprise in the next period. To eliminate the reverse impact of the dependent variable, I design the following model:

$$Surp(CSD)_{i,t} = \alpha + \beta_1 Alpha_{i,t-1} + Controls + Fixed\ \text{Effects} + \varepsilon_{i,t} \quad (9)$$

Table 6 shows the result of the regression. Similarly, I run regress for the time period t of 6 months and present the result in column 1. Column 2 shows the result within the period of 1 year. For both periods, the regression shows no significant relationship between the stock return and social donation surprise in the next period, suggesting the probability of incurring a reverse causality problem is low.

Table 6. Reverse Causality Test.

	$Surp_t$	$Alpha_t$
$Alpha_{t+1}$	0.064	
	(1.13)	
$Surp_{t+1}$		0.631***
		(1.88)
ROA	0.477**	0.198*
	(2.22)	(0.44)
ROE	0.201*	0.074
	(3.05)	(2.54)
DP	0.310	0.292
	(3.73)	(3.21)
Size	0.293*	0.033
	(1.14)	(4.62)
R&D	0.077	0.018
	(3.54)	(0.23)
Receive TO	0.287	0.184
	(3.21)	(1.43)
debt	0.199	0.028
	(1.63)	(0.34)
PE	0.299*	0.189*
	(1.45)	(5.21)
N	2910	2910
Adj.R^2	0.088	0.173
Fixed effects	Year, Industry	Year, Industry

Note: This table reports the estimation results of the reverse regressions with additional indicator variables. The number in the parenthesis under each estimate is the t-value calculated with the clustered standard error at the company level. All regressions include the year and industry fixed effects. All variables are defined in Table 1. ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

4.5 Result in Different Market Conditions

This section aims to determine how corporate social donation affects a firm's stock abnormal return in different market conditions, specifically during expansionary and recessionary periods. Previous literature (e.g., Wang and Qian, 2011) suggest due to a decreasing market trading volume during the bearish markets, corporate social donation only works with limited impact on stakeholders but does not result in the stock market. On the one hand, the recessionary periods cause more uncertainty in the stock market, and corporate social donations may not be too attractive. On the other hand, the market condition is a factor affecting stock performance. Therefore, I want to see if the impact turns out to be different in different market conditions. The empirical model I use is presented as follows:

$$Alpha_{i,t} = \alpha + \beta_1 Surp(CSD)_{i,t-1} + \beta_2 Surp(CSD)_{i,t-1} \times Exp + Controls + Fixed\ Effects + \varepsilon_{i,t} \quad (10)$$

Exp is an indicator variable that is used to distinguish different market conditions. If the market is in the expansionary period, then Exp will be one and otherwise will be 0. I present the result in Table 7.

Table 7. Results in Different Market Conditions.

	(1)	(2)	(3)	(4)
Surp(CSD)× Exp	0.432**		0.221**	
	(6.22)		(4.87)	
Surp(CSD)× Rec		-0.011		-0.07
		(-1.43)		(-0.34)
ROA	0.311*	0.302*	0.084*	0.032
	(4.64)	(3.28)	(0.32)	(5.21)
ROE	0.109*	0.109*	0.054	0.002
	(2.14)	(1.43)	(0.21)	(4.18)
DP	0.219	0.031	0.183	0.048
	(3.14)	(2.84)	(1.84)	(5.33)
Size	0.072	0.044	0.044	0.011
	(1.30)	(1.37)	(0.17)	(0.43)
R&D	0.021	0.004	0.003	0.001
	(1.45)	(0.21)	(0.11)	(0.54)
Receive TO	0.124	0.443	0.072	0.064
	(3.73)	(1.45)	(0.42)	(0.74)
debt	0.082	0.003	0.044	0.021
	(1.64)	(0.34)	(0.22)	(4.21)
PE	0.183*	0.021	0.111*	0.087
	(1.88)	(4.11)	(0.77)	(2.22)
Intercept	0.011*	0.012*	0.014*	0.008
	(3.13)	(5.42)	(.021)	(1.47)
N	1477	1477	1477	1477
Adj.R^2	0.127	0.122	0.199	0.193
Fixed effects	Year, Industry	Year, Industry	Year, Industry	Year, Industry

Note: This table reports the estimation results of the regression in different market conditions (expansionary and recessionary). The number in the parenthesis under each estimate is the t-value calculated with the clustered standard error at the company level. All regressions include the year and industry fixed effects. All variables are defined in Table 1. ***, **, and * indicate significance at the levels of 1%, 5%, and 10%, respectively.

Still, column 1 of Table 7 controls the period of 6 months, and column 2 controls the time period for the next year. The result only shows a significant impact of corporate social donation during the expansionary periods. One possible explanation is my dataset is mostly from 2010 to 2019, when the market is mostly bullish. Overall, the results show the opposite impact of corporate social donation on different market conditions.

5. Conclusions

This paper analyzes if corporate social donation positively impacts a firm's stock abnormal return in the next few periods utilizing the dataset of 484 Chinese public companies from 2010 to 2020. I use the OLS regression method and add some control variables and many robustness check measures, such as the reverse causality test. My main findings are summarized as follows.

My main finding is to provide evidence to prove corporate social donation positively impacts a firm's stock performance, which is measured by the firm's abnormal stock return, Alpha. Corporate social donation is measured by corporate social donation surprise, which is the change rate of a firm's social donation amount. The result is robust when applying the reverse causality test, which eliminates the possibility of a reverse impact of a firm's abnormal stock return on corporate social donation. I utilize additional robustness checks to determine if there is a nonlinear relationship between the independent and dependent variables, and the result suggests the relationship between corporate social donation and the firm's stock abnormal return appears as an inverted U-shape curve, which is similar to the previous findings. Moreover, the research also finds that the impact of corporate social donation appears to be stronger after the COVID-19 period by utilizing some indicator variables. Similarly, the result also suggests a different impact of corporate social donation during different market conditions.

My result may have a significance of guidance to corporate managers and boards of directors who want to effectively make social donations. For the board of directors, corporate social donations are, without a doubt, a way to beautify a firm's financial statements and increase the firm's social reputation, which affects the firm's stock price. The situation is similar for managers, who want a good-looking financial statement and more profits. Given the findings of this research, the positive relationship between corporate social donation and a firm's stock price suggests managers should consider social donation occasionally. However, the finding of the limited impact of corporate social donation suggests boards and managers should not increase social donation continuously. Since corporate social donation has a maximum marginal effect, managers should restrict the input on social donation to reach maximum efficiency.

Finally, my study has significance to government policymakers. Recently, many public companies do not treat social donations seriously; some even take advantage of social donations to avoid taxes. Others just take social donations as a way to gain the attention of auditors and stakeholders. That is against the main intention of social donation. The findings of this study provide a limited impact of corporate social donation, which may give government policymakers some guidelines to regulate a firm's donation behavior. Overall, my study is helpful for policymakers in recent conditions, especially after some manipulation of social donations. For example, the government may limit a specific amount of donations and to regulate the change rate of social donations to avoid some "fake" donations. But still, this study has future work to do. There are some questions about the limit point of corporate social donation's impact. Furthermore, efforts must be made to determine the difference between undisclosed social donation's impact.

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