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# Has corporate involvement in government-initiated corporate social responsibility activities increased corporate value?—Evidence from China's Targeted Poverty Alleviation

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Poverty remains the biggest challenge facing the world today. In 2016, the Chinese government launched a national campaign to eradicate poverty by 2020, among which Chinese listed companies have made significant contributions to. This paper focuses on the targeted poverty alleviation (TPA) and investigates the relationship between corporate participation in TPA and its corporate value. As compared to firm's own corporate social responsibility (CSR) initiatives, participating in government-initiated CSR activities can better enhance corporate value. This is especially so when firms engage in penetrative "integrated poverty alleviation" rather than the direct approach of "donative poverty alleviation". This paper adopts the Mediating Effect Model to explain the relationship between corporate participation in TPA and their corporate value, with the shareholding ratio of institutional investors, government subsidies and corporate reputation as mediating factors. Findings suggest that corporations' active implementation of TPA actions can increase the shareholding ratio of institutional investors and government subsidies and improve corporate reputation, thereby significantly increasing their corporate value. However, the impact of participation in TPA on corporate value is limited by factors including the nature of property rights, the intensity of competition in the industry and the degree of marketization. The impact is generally more significant in state-owned enterprises, areas with lesser industry competition and higher marketization. This study provides a fresh perspective for theories related to CSR, poverty eradication and corporate value of listed companies.

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## Introduction

Corporate social responsibility (CSR) embraces the overall value output of a company and is an important avenue for companies to achieve sustainable development (Alexander et al., 2018). Poverty is a universal challenge in countries around the world (Barkemeyer et al., 2014) and has become an important agenda for CSR. In the past few decades, there has been an increasing focus on the role of corporation in the formation of poverty alleviation mechanisms. Corporations are also gaining recognition as the main agent in the implementation of poverty alleviation measures. International organizations such as the World Bank and the United Nations also expect corporations to contribute to the achievement of anti-poverty goals (Chang et al., 2021). Corporate involvement in poverty alleviation activities is not new as it can directly boost macroeconomic growth. Poverty alleviation is also commonly prioritized as a corporate strategy by many large corporations (Zhao et al., 2022).

China has achieved remarkable results in the fight against poverty. After eight years of persistent efforts from the end of 2012 to the end of 2020, all 98.99 million impoverished people in rural areas have been lifted out of poverty, contributing significantly to the global goal of poverty eradication (Yang, 2021). The tremendous achievements in poverty reduction can be mainly attributed to the adoption of targeted poverty alleviation (TPA), a key feature of which is the mobilization of people and organizations from all fields. For example, listed companies, government officials, and university lecturers have all actively participated and contributed to TPA. This provides a unique research context for studying the involvement of listed companies in government-initiated CSR activities, whereas previous studies have focused on corporate-initiated social responsibility (Chang et al., 2021).

Existing literature has mainly analyzed the possible benefits of practicing CSR from a market perspective (Arevalo and Aravind, 2017). However, in the context of China, the implementation of TPA to fulfill CSR has a dual nature of serving public interest and meeting policy requirements. As TPA entails a certain degree of “semi-compulsory” characteristics, participating in TPA is not only a strategic philanthropic choice for companies, but also a way to counter government intervention. This paper considers TPA’s dual attributes of market regulation and policy requirements, thereby analyzing the economic consequences of corporate involvement in TPA from both aspects.

Existing literature has mostly focused on the possible gains of CSR activities when companies initiate them (Nofsinger et al., 2019). However, in the Chinese context, where TPA is initiated by the government, there is a semicompulsory connotation. The implementation of TPA thus becomes a CSR activity that serves public interest and at the same time fulfills policy requirements. Hence, corporate participation in TPA is not only a strategic philanthropic choice, but also a way to respond to government intervention. Under this circumstance, this paper integrates the dual attributes of market regulation and policy requirement for TPA when analyzing the economic consequences of corporations’ implementation of government-initiated social responsibility (i.e., TPA), to find out if participating in government-initiated TPA or traditional corporate-initiated CSR activities brings about higher value to companies.

The research object of this paper is the TPA data of listed companies from 2016 to 2018 obtained from their annual reports and CSR reports. Firstly, this paper describes TPA contributions made by Chinese listed companies. Figure 1 shows the number, annual average investment amount and outcome of listed companies’ involvement in TPA from 2016 to 2018 (see Fig. 1). Findings suggest that the number of companies involved in TPA and investment amount of listed companies in China have been

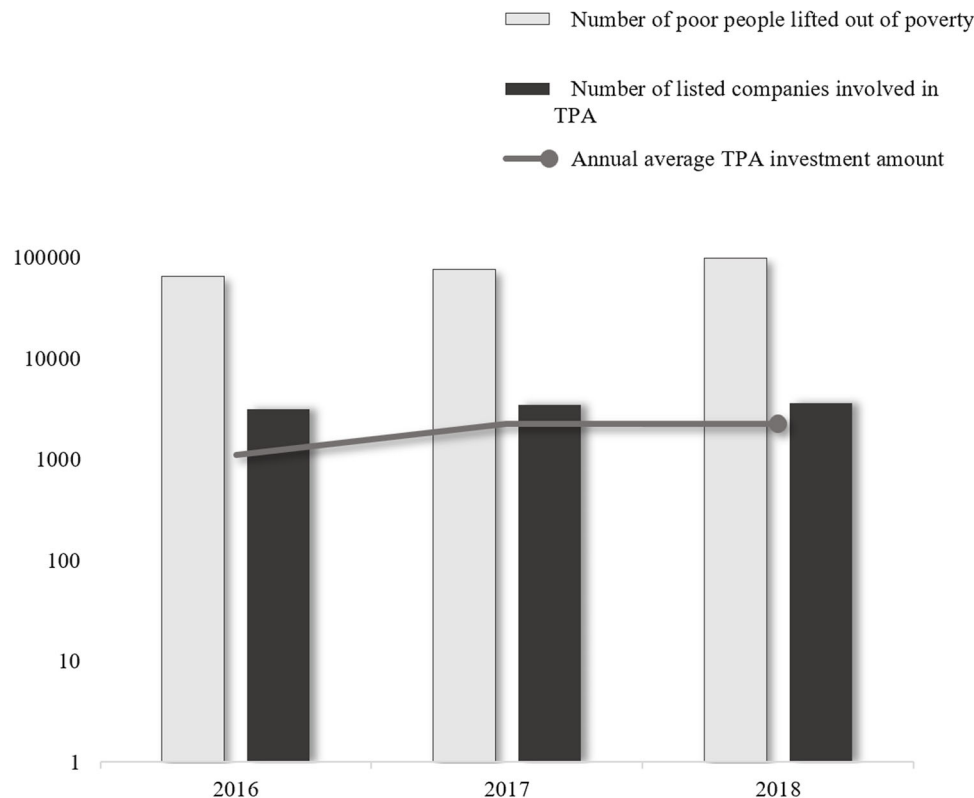
consistently increasing in the past three years, with donations totaling to 9.1 billion. They have also helped to lift approximately 200,000 people out of poverty. Overall, listed companies have actively participated in and made significant contributions to TPA activities. Secondly, we used the Differences-In-Differences (DID) approach to verify the economic consequences of listed companies taking up TPA. Results found that not only does it improve corporate reputation and indirectly increase corporate value as in existing studies, participating in government-initiated CSR also has a greater impact on corporate value than corporate-initiated social responsibility. Besides, “integrated poverty alleviation” can also increase corporate value more than directly donating to the poor. Next, this paper adopts the Mediating Effect Model to explain the relationship between corporate participation in TPA and their corporate value, with the shareholding ratio of institutional investors and government subsidies as mediating factors. Findings suggest that corporations’ active implementation of TPA actions can increase the shareholding ratio of institutional investors and government subsidies, thereby significantly increasing their corporate value. Finally, this paper finds that the impact of participation in TPA on corporate value is subject to different nature of property rights, industry competitive intensity and marketization degree, and is more significant among state-owned enterprises, areas with lesser industry competition and higher marketization.

Our main contributions include the following: Firstly, unlike previous literature which has been focusing on corporate-initiated CSR’s impact on corporate value, this paper is the first to examine the impact of corporate participation in government-initiated CSR activities on its corporate value. Furthermore, this paper compares the impacts on corporate value by these two approaches and finds out that corporate participation in government-initiated CSR activities is more likely to enhance its corporate value. To a certain extent, this paper has broadened the research field on the economic consequences of social responsibility and has expanded the scope of social responsibility research. At the same time, we have also presented and analyzed the contributions made by firms to the country when they participate in government-initiated CSR activities. Second, we provide a new literature reference on corporate participation in government political governance in the Chinese market by showing that Chinese firms can actively manage their political risk by participating in government-initiated social projects. In return, participating firms receive incentives from the government, which then help increase the value of listed companies. Finally, this paper clarifies the circumstances under which firms should engage in TPA activities to better enhance corporate value, and these results have significant implications for firms to fulfill their social responsibility in the Chinese market. This paper also offers inspirations for the international community on addressing major challenges around the world, such as poverty alleviation and global warming.

The rest of the paper is as follows. The second part is on theoretical analysis and research hypothesis, the third part covers the research design, the fourth part presents the empirical results and analysis, and the fifth part is the conclusion (see Fig. 2).

## Theoretical analysis and research hypothesis

**Theoretical Analysis.** Corporate social responsibility (CSR) covers environmental, social and governance (ESG) issues. For example, the United National Industrial Development Organization (UNIDO) defines CSR as “a management philosophy that enables companies to integrate social and environmental issues into their business activities and interact with their stakeholders”.



**Fig. 1** Input and outcome of Chinese listed companies' participation in TPA from 2016 to 2018.

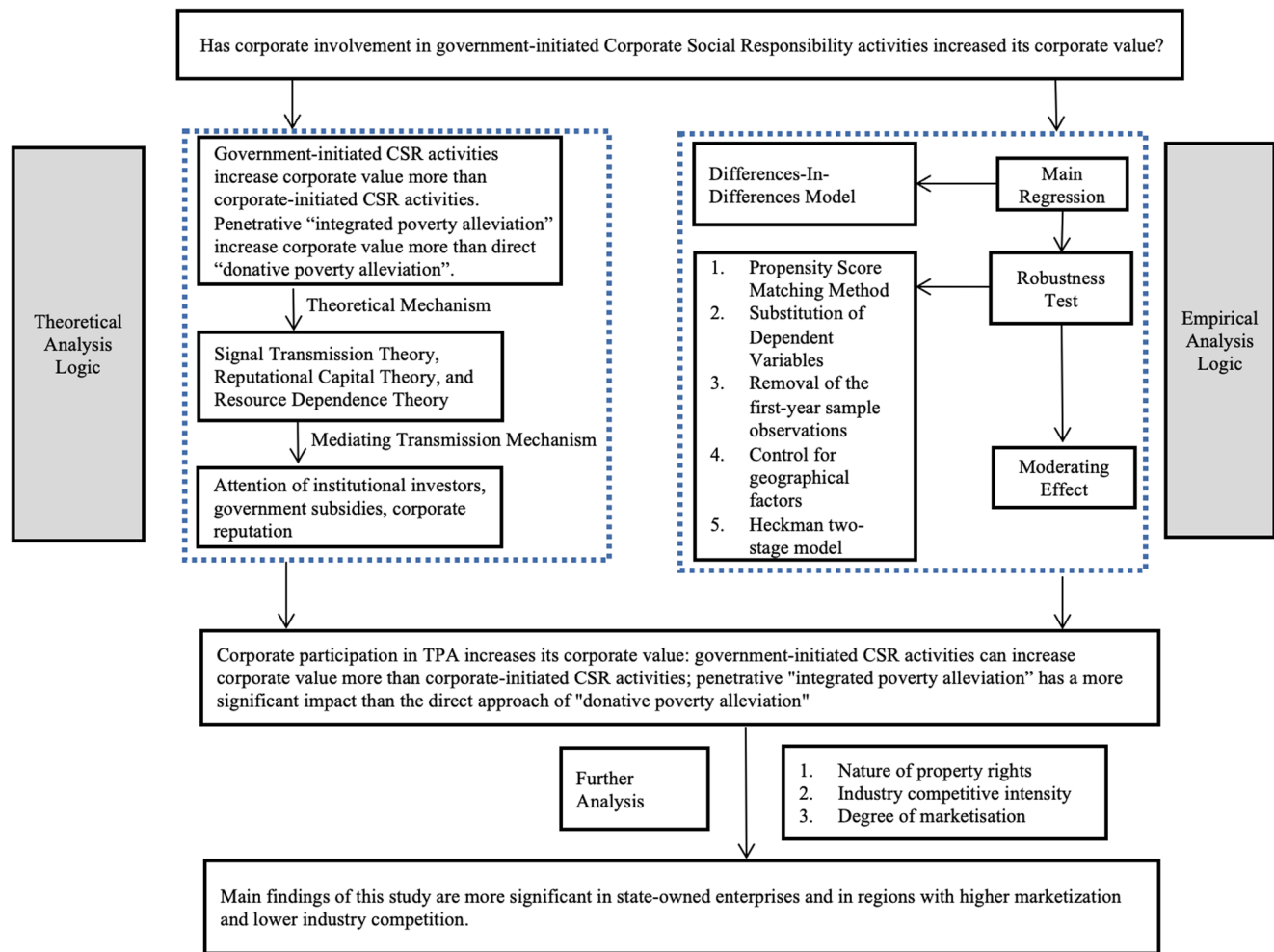
The United Nations has set 17 goals in its “Transforming our World: The 2030 Agenda for Sustainable Development”. These goals address the pressing issues facing humanity, the first being no poverty, the second being zero hunger, and the third being health and well-being, which are aligned with CSR.

Targeted poverty alleviation (TPA) emphasizes the importance of “targeted approach” to guarantee that aid reaches the poor villages and families. Specifically, it requires accurate identification of the poor, customized management for different kinds of impoverished people, and precise evaluation of the effectiveness of TPA. Under the guidance of government ministries, listed companies, for various subjective and objective reasons (e.g., for corporate sustainable development, enhancing corporate reputation, assuming social responsibility, etc.), fully utilize their talents, capital, technology, and other advantages, to carry out varied poverty alleviation work. For instance, listed companies donate rice, flour, oil and other cooking essentials to poor households, develop nutritious meals for children and educate them on healthy dietary options. Listed companies have also built village clinics and promoted village medical projects to improve the health conditions of the poor. The social value contributed by listed companies in the process of participating in TPA is in line with the goals proposed by the United Nations in the “Transforming our World: The 2030 Agenda for Sustainable Development”. Since listed companies play an important role in the implementation of TPA, it can be concluded that the participation of listed companies in TPA is it undertaking social responsibility.

However, listed companies' participation in TPA is not the same as the traditional and ordinary CSR activities initiated by themselves. On the one hand, TPA is led by the government, and corporations, as market players, should actively cooperate with the government (Hu and Zhang, 2020). On the other hand, TPA is both charitable and profitable. While TPA entails traditional poverty alleviation methods such as transferring employment,

relocation and education of the poor, improving healthcare, protecting ecological and environmental conditions and guaranteeing basic living standards for the poor, making it mainly a public welfare, it also has other profitable means of poverty alleviation such as through industrial development. On the whole, the way Chinese corporations undertake poverty alleviation includes both “integrated poverty alleviation”, which integrates poverty alleviation elements into business procedures, and “donative poverty alleviation”, making it a two-way approach of fulfilling social responsibility. (Wang et al., 2020). Charitable donation is an inferior way to fulfill social responsibility as compared to integrating social responsibility elements into business procedures to promote the joint development of economic benefits and social welfare (Adams and Zutshi, 2004).

Existing literature has considerably focused on corporate-initiated CSR's impact on corporate value, Deng et al. studied a sample of 1206 main board listed companies and concluded that the active fulfillment of social responsibility by companies is beneficial to their financial performance. Akisik et al. concluded that CSR reports audited by third parties can significantly improve corporate financial performance. Secondly, Zhu et al. argue that while CSR can significantly improve corporate financial performance in the long run, it has a significant negative impact on current financial performance (Zhu et al., 2014). Similarly, Yang et al. verified that CSR towards employees and customers is negatively related to the long-term financial performance of a firm (Yang and Yang, 2016). Moreover, there is a bi-directional relationship between the CSR performance and the financial performance of a firm (Liu and Song, 2010). From the above analysis, it can be concluded that although the relationship between CSR and financial performance is still controversial, the key reason for the contradictory research results may be the omission of important variables. Therefore, many scholars have gradually explored the path between CSR and corporate value in recent years. For example, Liu et al.



**Fig. 2** Structure of this paper.

investigated the relationship between CSR performance and corporate value using reputational capital as a mediating variable (Liu and Song, 2010). Rodriguez et al. explored the impact of CSR performance on social capital and corporate value (Rodriguez et al., 2013). These findings are important in revealing how CSR performance affects corporate value as a mechanism.

As for corporate participation in government-initiated social responsibility activities, existing literature typically revolves around corporate implementation of the government-initiated TPA. On the one hand, corporate involvement in poverty alleviation can improve the external reputation of a company. Fry et al. (1982) argue that the expenses incurred by donative poverty alleviation are similar to advertising expenses and can effectively improve corporate image. In the process of lifting the poor out of poverty, companies also accumulate moral and reputational capital, which provides underlying benefits for corporations, such as the necessary market resources and political resources among others, to maintain and improve their performance (Hu and Zhang, 2020). In addition, the implementation of charitable giving activities can significantly mitigate the negative social perception evolving from legal violations, and at the same time improve corporate investment to a certain extent (Faller and zu Knyphausen-Aufseß, 2018). On the other hand, corporate participation in poverty alleviation is closely related to their competitiveness. In the process of providing financial capital to the poor, such as microcredit, corporations can also earn profits to achieve synergistic development (Yunus, 2007). While

implementing poverty reduction initiatives and contributing to poverty alleviation, companies also gain competitive advantage in their own industry (Medina-Muñoz et al., 2016). Further, poverty alleviation is even seen as an important market opportunity for MNCs (Kirchgeorg and Winn, 2006). In general, CSR in poverty alleviation can positively improve financial profitability (e.g., in terms of corporate reputation, consumer satisfaction, employer attractiveness, employee organizational commitment, etc.) (Jeeva and Wood, 2012), effectively enhancing corporate performance and contributing to future performance (Hu and Zhang, 2020). In a sample of private firms alone, engaging in poverty alleviation improves investment efficiency and consequently firm performance (Wang et al., 2020). Evidently, while the outcomes of corporate participation in government-initiated CSR activities have been studied, little research is done on comparing which approach, corporate-initiated CSR or government-initiated CSR, can better enhance corporate value, and there is a lack of in-depth research on the path of corporate participation in government-initiated CSR activities i.e., how corporate participation in TPA impacts its own corporate value.

**Research hypothesis.** This paper discusses government-initiated CSR (TPA with Chinese characteristics) under the theoretical framework of CSR, and explores how government-initiated CSR affects corporate development, complementing research on the path study of corporate participation in government-initiated



CSR activities, i.e., how corporate participation in TPA impacts its own corporate value. Unlike existing literature which mostly analyzes the possible economic consequences of corporate participation in corporate-initiated CSR from the market perspective, this paper considers the impact of government-initiated CSR on corporate value, while incorporating the dual attributes of market regulation and policy requirements for TPA. This paper adopts a dual perspective of market and policy requirements when analyzing the socio-economic consequences of corporate implementation of TPA. It then analyses the impact of corporate participation in TPA on its own corporate value using four theories, namely the Signal Transmission Theory, Reputational Capital Theory, Stakeholder Theory and Resource Dependence Theory.

Corporate participation in government-initiated CSR, that is, being involved in poverty alleviation, sends out a positive financial signal. This is because participation in TPA is not mandatory and those who can participate would be the ones with extra resources after satisfying their daily operational requirements. As such, merely participating in TPA would be sufficient in showing a company's financial strength and sustainability. Unlike general charitable donations initiated and implemented by individual corporations which typically target disaster relief or a specific vulnerable group (such as poor children), TPA is a charitable activity initiated and advocated by the government, with many participating corporations, targeting a much wider audience with the goal of eliminating poverty both effectively and efficiently. TPA has the characteristics of wide coverage, strong support, and sustainability (Hu and Zhang, 2020). Participation in TPA is therefore more likely to gain public recognition, including the attention of institutional investors. Institutional shareholding will then signal to the market that it is bullish on the shareholding company in the long term, and the higher the shareholding ratio, the greater the influence it has over the company's business decisions. Since institutional investment returns depend on the company's performance, when the company encounters difficulties, institutional investors will take the initiative to help its holding company tide over difficulties. High shareholding ratio will also motivate the institutional investors to supervise the company and participate in its decision making, thereby improving the company's performance (Liu et al., 2017).

Fombrun's study found that the fulfillment of social responsibility can better protect a company's reputation and thus obtain a more positive social evaluation. Dhaliwal et al. believe that the fulfillment of social responsibility can significantly improve a firm's reputation (Dhaliwal et al., 2011). In addition, reputation improvement can draw the attention of consumers who value social responsibility, which can increase a company's competitiveness in the product market and thereby increase its corporate value. Corporate participation in TPA is also a way to strengthen their reputational capital, as it conveys to the public that they are actively helping the poor and taking social responsibility. As such, corporate participation in TPA establishes a good image among stakeholders such as the government, the impoverished and investors, and achieves favorable outcomes in market competition, both of which contribute greatly to corporate value enhancement.

Freeman (2010) pointed out that stakeholders are subjects who can influence or be influenced by the achievement of corporate goals. Stakeholders include investors, employees, and the government (Graves et al., 2001). After the introduction of TPA, implementing TPA has become a new expectation of the government, consumers and other stakeholders for corporations to fulfill their social responsibility, making poverty alleviation an important component of CSR in China. In such a context,

corporate participation in TPA does not only impact the poor they are helping, it also leads to positive interactions with the government and consumers. When firms exhibit a socially responsible image to stakeholders, they are satisfying the stakeholders' expectations of them, thus maintaining a good relationship with stakeholders and gaining their support. In TPA, especially in the industrial development component of TPA, corporations' efforts in the development of poor areas takes into account their own economic interests such that the economic value generated can be shared between firms and their stakeholders.

Resource dependence theory refers to the inability of a firm to create all the resources it needs. The improvement of performance is closely related to the acquisition of external resources. Corporate participation in industrial development provides good opportunities for corporations to obtain external resources such as political capital and other intangible resources. For example, corporations paired with poor villages can have priority in obtaining subsidies for poverty alleviation projects, subsidized loans for poverty alleviation, and preferential tax policies for all kinds of investments and donations in the paired villages.

To summarize, this paper suggests that corporate participation in government-initiated CSR can improve its corporate reputation, build up its brand image, and help it obtain government subsidies. Accordingly, this paper proposes the following main hypothesis:

H1: corporate participation in government-initiated CSR can improve its own corporate value.

As compared to firm's own corporate social responsibility (CSR) initiatives, participating in government-initiated CSR activities can better enhance corporate value. The reasons are as follows: Firstly, corporate participation in government-initiated CSR, i.e., participating in TPA, can provide them with more intangible resources such as political capital, and access to more government subsidies, tax rebates, and other preferential policies. Secondly, government recognition and commendation brings more market attention to firms actively involved in TPA, contributing to the increase in their corporate value. Since 2016, in an effort to promote corporation participation in TPA, the State Council's Leading Group of Poverty Alleviation has carried out the commendation work of "National Poverty Alleviation Award" annually. Corporations qualifying for this award will be featured on the national broadcasting platform, China Central Television and local TV stations during the award presentation ceremony. There are more ways of giving recognition beyond this, all focusing on publicizing outstanding corporations in the field of TPA. Some scholars have found that market attention to corporations is limited but company visibility is an important reference value for market investors' decisions. Hence, when a company appears on a poverty recognition list and is heavily publicized and reported, its market exposure will increase significantly, and more market attention may broaden the investor base, thus increasing market trading volume and thereby increasing its corporate value (Grullon et al., 2004). As such, this paper proposes the following hypothesis:

H2: Government-initiated CSR activities can increase corporate value more than corporate-initiated CSR activities.

TPA not only includes donations, but also poverty alleviation via industrial development, providing education and employment, as well as improving general social conditions and more. Thus, TPA is an advanced form of integrating social responsibility elements into business procedures to promote the joint development of economic benefits and social welfare. From the

following aspects, it is evident that the participation of listed companies in TPA is a kind of “penetrative poverty alleviation”, where TPA is integrated into a firm’s each business process, thereby improving corporate value. First, from the perspective of TPA policies, the “Ten Thousand Enterprises Help Ten Thousand Villages’ Targeted Poverty Alleviation Action Plan” defines corporate poverty alleviation as the act of focusing on developmental poverty alleviation, helping poor villages to establish a long-term mechanism for poverty alleviation, and striving to achieve mutual benefit and a win-win situation for villages and corporations. Developmental poverty alleviation is a process in which corporations, with the support of the government, use the natural resources of impoverished areas to carry out production and construction, so that poor households can lift themselves out of poverty. In this process, the natural resources in impoverished areas are inevitably integrated into the production and marketing processes of corporations. When corporations use these resources to produce products to help lift the poor out of poverty, they are also accumulating and developing the poor’s own ability to “feed themselves”.

At the same time, corporations can also profit from the special products unique to the impoverished area, which can help to improve their market share. Secondly, from the perspective of the approach to help, industrial development is an important way for poor households to get out of poverty, as it assumes the function of “blood creation” (Liu et al., 2017). Corporate-initiated industrial development can be done by investing in local firms, thereby promoting the economic development of impoverished villages. In the process, corporations will integrate the recruited poor people into their production process, indirectly enhancing the development of the real estate industry or other service industries such as catering and leisure in impoverished areas, thus increasing social benefits. At the same time, the establishment of local firms in poor areas can reduce the price and transportation cost of raw materials, ultimately increasing the added value of locally produced special products. Finally, from the perspective of the benefits of helping poor villages, corporations paired with poor villages can have priority access to government subsidies on poverty alleviation projects, subsidized loans for poverty alleviation, and preferential tax policies for all kinds of investments and donations in the paired villages. For corporations, subsidies, loans, and tax incentives are high-quality sources of capital, which can reduce the financial burden of corporate involvement in poverty alleviation and mitigate the problem of insufficient funds in corporate financing. Therefore, corporations can undertake poverty alleviation by integrating poverty alleviation elements into business procedures, thereby enhancing corporate value. Therefore, we propose a second hypothesis.

Hypothesis 3: “Penetrative poverty alleviation” is more effective in enhancing corporate value than direct donations.

## Research design

**Sample selection and data processing.** This paper takes the proposal of “2016 China Securities Regulatory Commission’s Opinion” as the experimental event. To ensure the consistency of the time interval before and after the experimental event, this paper takes 2013 to 2018 as the sample period. TPA data were collected manually from the annual reports and CSR reports of listed companies. Other data were obtained from the CSMAR database. In this paper, the key continuous variables were Winsorized at the upper and lower 1% level to ensure robustness, and sample companies with the following characteristics were excluded: (1) financial and insurance companies; (2) ST and \* ST

companies. After cleaning the sample, there were 12,325 samples of company years. The treatment group contains 2722 samples and the control group has 9603 samples.

Tables 1 and 2 report the listed companies’ participation in TPA in terms of ways and inputs. Listed companies adopt 9 different ways to participate in TPA, including providing education and promoting industrial development. The participation of listed companies in TPA from 2016 to 2018 shows that about 16% of listed companies help impoverished areas overcome poverty by means of education; followed by industrial development, accounting for about 10%. The number of companies involved in ecological protection and relocation is the least. In 2016, among 3078 listed companies, 16.86% of them made monetary donations and 8% of them donated resources. The average monetary donation was \$10,608,600 and resource donations were \$570,000. The median values for monetary and resource donations were much lower, at \$680,000 and \$51,000, respectively, meaning that a few companies donated significantly more than others. 16.24% of the listed companies participated in either monetary or resource donations, with an average amount of \$11,170,000 and median of \$653,200. In 2016, each listed company helped an average of 654 people out of poverty, indicating that listed companies’ contributions have a tangible effect on poverty reduction. In 2017 and 2018, more listed companies participated in TPA and made more contributions to poverty eradication. The proportion of participating companies increased to 21.17 and 26.4% in 2017 and 2018, respectively. In 2017, the average monetary and resource donation increased to \$22.8 million, with a median of \$1,320,600. In 2018, the average monetary and resource donation amount became \$22.63 million, and the median value is \$2,088,000. In terms of the number of people listed companies helped lift out of poverty, 2017’s average is 768 and median is 130, and both figures increased to 983 and 158 respectively in 2018. Evidently, the TPA strategy has been widely supported by listed companies.

**Model setting and variable definition.** This paper uses the Differences-In-Differences (DID) approach to estimate the impact of corporate participation in government-initiated CSR, i.e., corporation participation in TPA, on its own corporate value. Controlling for other factors, the DID method can test whether there is a significant difference between the treatment group and the control group before and after the “2016 China Securities Regulatory Commission’s Opinion” proposal. Therefore, for the main hypothesis, model (1) is set as follows<sup>1</sup>:

$$Tq_{i,t+1} = \beta_0 + \beta_1 \text{Treatment}_{i,t} \times \text{Post}_{i,t} + \beta_2 \text{Treatment}_{i,t} + \beta_3 \text{Control}_{i,t} \text{Industry}_{i,t} + \text{Year}_{i,t} + \varepsilon_{i,t} \quad (1)$$

In the model, the dependent variable of firm value is measured using Tobin’s Q Ratio (Tq) and Return on Assets (ROA), with reference to the approach of Lu T. & Liu X. In the test for mechanism and further analyses, this paper only presents the main results with Tq as the dependent variable.

The explanatory variable in this paper is “Treatment×Post”. “Treatment” is measured by three indicators: (1) whether the corporation participates in TPA, with a value of 1 if yes and 0 otherwise (Treatment1); (2) whether the corporate participation in TPA is in the form of cash, with a value of 1 if yes and 0 otherwise (Treatment2); (3) whether the corporate participation in TPA is in the form of resources, with a value of 1 if yes and 0 otherwise (Treatment3). As for “Post”, if the year is 2016 or later, it takes the value of 1, and 0 otherwise. In further tests, in the mechanism test and further analysis, this paper only presents the main results of the explanatory variable calculated based on Treatment1.

Table 1 Descriptive statistics of listed companies' different ways of participating in TPA.													
Year	Total number of listed companies	Companies that made monetary donations (%)	Companies that made resource donations (%)	Companies that made either monetary or resource donations (%)	Companies that helped improve education (%)	Companies that helped industrial development (%)	Companies that helped improve healthcare (%)	Companies that helped with ecological protection (%)	Companies that provided employee relocation (%)	Companies that provided social assistance (%)	Companies that helped to relocate the poor (%)	Companies that provided basic living standards (%)	Companies that adopted other ways (%)
2016	3078	16.86	8.00	16.24	12.30	7.23	2.5	1.57	2.67	6.13	0.77	5.2	5.93
2017	3448	21.84	9.72	21.17	16.63	9.92	3.44	2.05	3.68	8.73	0.98	6.15	8.05
2018	3538	27.28	12.04	26.4	19.59	12.81	4.58	2.58	4.11	10.29	1.42	6.58	10.83

In the model, the subscript “i” represents the firm and “t” represents the year. The problem of endogeneity between corporate participation in TPA and corporate value can be mitigated to some extent by examining the effect of a firm’s TPA participation in year “t” on its corporate value in year “t + 1”. The focus of this paper is the “Treatment×Post” coefficient ( $\beta_1$ ), which measures the impact of corporate participation in TPA on corporate value as well as reflecting the change in corporate value in the treatment group relative to the control group after TPA.

Moreover, according to existing literature (Dhaliwal et al., 2011), the control variables (Control) mainly include some important corporate characteristics, such as the independent director ratio (Idr), operating income growth rate (Grow), financial leverage (Lev), equity concentration (Ctr), operating cash flow (Ocf), market-to-book ratio (Mb), firm age (Age), firm size (Size), analyst attention (Analysts), nature of control (State), Big 4 (Big4), year dummy (Year) and industry dummy (Industry). Considering that there may be a substitution relationship between TPA inputs and corporate charitable donations, that is, companies participating in TPA may reduce the number of other types of charitable donations, this paper defines ordinary charitable donations as the natural logarithm (Charity\_In) of the total number of other charitable donations apart from corporate TPA inputs (Chang et al., 2021), and adds them to the control variables. The specific definitions of the variables are shown in Table 3.

This paper sets up model (2) to verify hypothesis H3, which states that government-initiated CSR activities can increase corporate value more than corporate-initiated CSR activities. The variable (Vcsr), measures whether firms voluntarily disclose CSR reports, is used as a proxy measure for corporate-initiated social responsibility. Inputting this variable into model (1) forms model (2).

$$Tq_{i,t+1} = \beta_0 + \beta_1 \text{Treatment}_{i,t} \times \text{Post}_{i,t} + \beta_2 \text{Vcsr}_{i,t} + \beta_3 \text{Treatment}_{i,t} + \beta_4 \text{Control}_{i,t} \text{Industry}_{i,t} + \text{Year}_{i,t} + \varepsilon_{i,t} \quad (2)$$

Vcsr represents corporate-initiated social responsibility. With reference to Flannery and Rangan’s methodology (2006), the coefficients are standardized to avoid any complexities caused by units before comparing  $\beta_1$  and  $\beta_2$ , to verify if it is government-initiated CSR activities or corporate-initiated CSR activities that has a larger impact on corporate value. Apart from Vcsr, other variables are the same as model (1).

To verify hypothesis H3, this paper sets up model (3), in which industrial development and education are used to represent penetrative “integrated poverty alleviation”. This is because corporations integrate various aspects of production, sales, and financing in these two ways of poverty alleviation. Take industrial development for example, corporations, farmers, and the government work together for TPA projects. Under this collaboration, corporations provide targeted benefits for poor households, poor households put land management rights and housing property rights into shares at a discount, and the government provides poverty alleviation funds and various preferential policies for corporations. As for education, since national education funds have been prioritizing poor areas in recent years, TPA corporations can utilize these national education funds. For instance, by using the “integration of industry and education, school-corporation co-education” mode of teaching, not only solves the problem of poverty alleviation through educating poor students, but also trains a group of talents with excellent skills for corporations, who will later participate in

**Table 2 Descriptive statistics of listed companies' inputs in TPA.**

Year	Average of total inputs (ten thousand)	Median of total inputs (ten thousand)	Average monetary donations (ten thousand)	Median of monetary donations (ten thousand)	Average resource donations (ten thousand)	Median of resource donations (ten thousand)	Average number of people lifted out of poverty (hundred)	Median number of people lifted out of poverty (hundred)
2016	1116.536	95.315	1060.860	68	56.764	5.100	654.115	107
2017	2280.495	132.065	2152.208	111.802	131.559	8.280	768.258	130
2018	2262.891	208.800	2038.553	173.270	140.178	11.880	983.547	158

**Table 3 Definition of variables.**

Type of variable	Symbol	Definition
Dependent variable	$Tq$	(Market value of equity + Market value of net debt)/(Total assets at year-end - Net intangible assets - Net goodwill)
	ROA	Net profit as a percentage of average total assets for the year
	Vcsr	Dummy variable, takes the value of 1 if listed companies voluntarily disclose CSR reports, and 0 otherwise.
	$TPA_{1-6}$	1-6 respectively indicates if corporations take part in industrial development, education, employment transfer, healthcare, ecological protection, basic living standards guarantee
Explanatory variable	$Treatment1$	Dummy variable, takes the value of 1 if corporation participates in TPA from 2016 to 2018, and 0 otherwise.
	$Treatment2$	Dummy variable, takes the value of 1 if corporation made monetary donations to TPA from 2016 to 2018, and 0 otherwise.
	$Treatment3$	Dummy variable, takes the value of 1 if corporation made resource donations to TPA from 2016 to 2018, and 0 otherwise.
Control variable	Post	Takes the value of 1 if year is 2016 or later, and 0 otherwise.
	Lev	Total liabilities / Total assets
	Idr	Independent directors / Board of directors
	Ctr	Shareholding ratio of the largest shareholder
	Grow	(Amount of total operating revenues for the current year—amount of total operating revenues for the same period of the previous year) / (amount of total operating revenues for the same period of the previous year)
	Ocf	Operating cash flow/total assets at end of period
	Age	Cumulative years of operation from the year the company was listed to the year of observation
	Size	Logarithm of total corporate assets
	Analysts	Logarithm of analysts' attention
	Big4	Takes the value of 1 if audited by Big 4, and 0 otherwise.
	State	Takes the value of 1 if the ultimate controller is the government, and 0 otherwise.
	Mb	Ratio of book value to market value of the company at the end of the year
	Charity_In	Natural logarithm of the total amount of corporate charitable donations apart from TPA inputs
	Industry	Industry dummy variable, taking the first code of the China Securities Regulatory Commission's 2012 "Industry Classification Guidelines for Listed Companies"
	Year	Annual dummy variable

the production and sales of corporations.

$$Tq_{i,t+1} = \beta_0 + \beta_1 TPA_{i,t} \times Post_{i,t} + \beta_2 Treatment_{i,t} + \beta_3 Control_{i,t} Industry_{i,t} + Year_{i,t} + \varepsilon_{i,t} \quad (3)$$

"TPA  $\times$  Post" is the explanatory variable that put the six dummy variables of whether corporations participate in industrial development, education, employment transfer, healthcare, ecological protection, and the guarantee of basic living standards into a same model at the same time. The coefficient of each dummy variable is then compared to reflect which way is the most effective in promoting corporate value as corporations participate in TPA. Other variables are the same as model (1).

## Empirical results and analysis

**Descriptive statistical analysis.** Table 4 reports the results of descriptive statistics for the key variables in this paper according to control and treatment group. From the table, it can be derived that TPA accounts for 22% of the sample within the sample period, indicating that corporations can still devote more to TPA. From the description of the variables "Size", "Age" and "Ocf", it is evident that corporations in the treatment group are generally

larger, have been listed for a longer period, and have abundant cash flow. Therefore, it is possible that the problem of endogeneity exists in the self-selection mechanism affects whether corporations participate in TPA. Hence, it is necessary to make appropriate matching when selecting the control group. The distribution of the remaining variables is generally consistent with existing literature.

## Differences-in-differences (DID) baseline regression results.

Table 5 presents the baseline regression results, which report the impact of corporate participation in TPA on corporate value. The Tobin's Q ratio (Tq) and Return on Assets (Roa) measure the dependent variable, and the explanatory variable is "Treatment $\times$ Post", where "Treatment" is measured by whether a corporation participates in TPA (Treatment1), whether it makes monetary donations to TPA (Treatment2), and whether it makes resource donations to TPA (Treatment3). In this paper, the DID test is conducted for model (1). The panel DID model is estimated using the fixed effects method, with control effects added in Table 5 to control for both industry effects and period effects, and results are significant at the 1% significance level. The results



**Table 4 Descriptive statistics.**

Variables	Control group					Treatment group				
	N	Mean	sd	Min	Max	N	Mean	sd	Min	Max
Tq	9603	2.661	1.784	0.853	12.706	2722	2.037	1.380	0.853	12.058
Roa	9603	0.029	0.12	-4.946	0.526	2722	0.036	0.079	-2.834	0.344
Lev	9603	0.409	0.207	-0.195	1.094	2722	0.491	0.200	0.010	0.959
ldr	9603	0.375	0.054	0.182	0.667	2722	0.375	0.059	0.231	0.800
Ctr	9603	34.050	14.472	3.39	89.410	2722	37.548	16.431	0.290	89.990
Grow	9603	0.218	0.495	-0.528	3.273	2722	0.165	0.467	-0.528	3.273
Ocf	9603	0.038	0.131	-10.216	0.876	2722	0.054	0.068	-0.446	0.523
Age	9603	10.808	7.039	1	28	2722	13.795	6.388	1	27
Big4	9603	0.045	0.206	0	1	2722	0.118	0.322	0	1
Size	9603	22.014	1.196	15.577	28.520	2722	23.044	1.498	19.436	28.098
Analysts	9603	1.507	1.113	0	4.1740	2722	1.764	1.134	0	4.205
State	9603	0.308	0.462	0	1	2722	0.619	0.486	0	1
Mb	9603	0.545	0.236	0.004	1.430	2722	0.659	0.273	0.056	6.546
Charity_In	9603	2.232	2.173	0	13.598	2722	3.776	2.548	0	14.509

of the baseline regression indicate that corporations involved in TPA, either in the form of monetary or resource donations, have a significant positive impact on their corporate value as compared to corporations which do not participate in TPA. The standard clustering in the above regression is robust to the individual firm level.

### Robustness test

**Propensity score matching (PSM) method.** Propensity score matching (PSM) is performed before differences-in-differences (DID). The purpose of using the PSM + DID method to analyze the impact of corporate participation in TPA on corporate value is to ensure the robustness of the above regression results. To facilitate comparison, all control variables in the DID baseline regression are used to predict the probability of each listed company's participation in TPA (Logit regression), and the Nearest Neighbor Matching Method is used to match the control group to the sample (treatment group) participating in TPA. This is to ensure as far as possible that there is no significant difference between the treatment group and the control group before they participate in TPA, to reduce the endogeneity problem caused by the self-selection bias of corporate participation in TPA. The net impact of corporate participation in TPA on their corporate value can be identified using the DID approach. The regression results are shown in column (1) of Table 6, and the estimated coefficients, signs and significance levels using radius matching are generally consistent with column (1) of Table 5 of the baseline regression results. As such, the significant positive impact of corporate participation in TPA on corporate value studied in this paper is robust.

**Substitution of dependent variables.** The China Securities Regulatory Commission requires listed companies to classify their TPA projects into nine categories: industrial development, employment transfer, relocation, education, healthcare, ecological protection, basic living standards guarantee, social assistance and other projects. To verify the impact of corporate participation in TPA on their corporate value, this paper will focus only on the industrial development category in the robustness test among all TPA projects. The reasons are as follows: First, the business experience of listed companies gives them a greater advantage in industrial development projects. It provides reference for corporations to bring new growth opportunities for their own development. Second, as compared with other poverty alleviation methods, industrial development allows corporations to combine their participation in TPA with their own business development.

This will generate a greater impact on their business development by virtue of their own investment, brand, technology, management, and other capabilities to participate in TPA. In this paper, "Treatment4" measures whether the corporation participated in industrial development. "Treatment4" takes the value of 1 if a corporation has participated in industrial development from 2016 to 2018, and 0 otherwise. Column (2) of Table 6 shows that the coefficient of "Treatment4×Post" is 0.562 and significantly positive, which proves that the main result of this paper is robust in the various categories of poverty alleviation projects.

**Removal of the first-year sample observations.** The previous study of this paper defined 2013 to 2015 as the period before the participation of listed companies in TPA and 2016 to 2018 as the period after the participation in TPA (Post). This is because listed companies started to participate in TPA from 2016. Hence, for robustness considerations, all observations of sample companies in 2016 were removed and regression tests were conducted again. The updated regression results are presented in column (3) of Table 6, and the coefficient of the interaction term "Treatment1×Post" is significantly positive and does not differ much from the baseline regression results.

**Control for geographical factors.** Considering that there may be some geographical differences in the different provinces where corporations engage in TPA, this paper controls for the province where the corporation is located to verify the reliability, and the results are shown in column (4) of Table 6. While the geographical factor has an impact on corporate value, the conclusion of this paper still holds.

**Heckman two-stage model.** In order to overcome the bias due to the self-selection issue of firms' participation in TPA. We chose the Heckman (1977) two-stage regression model, which is described below.

First stage:

$$Pr(\text{Treatment}_{i,t} = 1) = \beta_0 + \beta_1 \text{Tpa\_mean}_{i,t} + \beta_2 \text{Control}_{i,t} + \beta_2 \lambda + \text{Industry}_{i,t} + \text{Year}_{i,t} + \varepsilon_{i,t} \quad (4)$$

Second stage:

$$Tq_{i,t+1} = \beta_0 + \beta_1 \text{Tpa}_{i,t} + \beta_2 \text{Control}_{i,t} + \text{Industry}_{i,t} + \text{Year}_{i,t} + \varepsilon_{i,t} \quad (5)$$

Tpa is the logarithm of the amount invested by listed companies

**Table 5 Baseline regression results.**

Variables	Tq (1)	Tq (2)	Tq (3)	Roa (4)	Roa (5)	Roa (6)
<i>Treatment1</i> × <i>Post</i>	0.488*** (9.872)			0.012*** (3.344)		
<i>Treatment2</i> × <i>Post</i>		0.512*** (10.268)			0.011*** (2.893)	
<i>Treatment3</i> × <i>Post</i>			0.544*** (9.381)			0.013*** (3.679)
<i>Treatment1</i>	−0.187*** (−3.888)			−0.002 (−0.672)		
<i>Treatment2</i>		−0.221*** (−4.963)			−0.001 (−0.639)	
<i>Treatment3</i>			−0.217*** (−3.701)			−0.005* (−1.731)
<i>Lev</i>	−0.371*** (−2.841)	−0.371*** (−2.835)	−0.376*** (−2.884)	−0.075*** (−6.928)	−0.075*** (−6.928)	−0.075*** (−6.923)
<i>ldr</i>	1.092*** (4.035)	1.093*** (4.035)	1.088*** (4.019)	−0.023 (−1.315)	−0.023 (−1.315)	−0.023 (−1.303)
<i>Ctr</i>	0.006*** (5.872)	0.006*** (5.875)	0.006*** (5.900)	0.001*** (7.765)	0.001*** (7.767)	0.001*** (7.773)
<i>Grow</i>	0.172*** (5.639)	0.172*** (5.625)	0.173*** (5.627)	0.004 (0.758)	0.004 (0.755)	0.004 (0.750)
<i>Ocf</i>	0.678*** (3.135)	0.679*** (3.125)	0.679*** (3.106)	0.098 (1.544)	0.098 (1.544)	0.098 (1.543)
<i>Age</i>	−0.000 (−0.087)	−0.000 (−0.078)	0.000 (0.008)	−0.000 (−0.712)	−0.000 (−0.698)	−0.000 (−0.649)
<i>Big4</i>	0.400*** (5.296)	0.399*** (5.292)	0.397*** (5.230)	0.004 (1.157)	0.004 (1.146)	0.004 (1.136)
<i>Size</i>	−0.341*** (−6.326)	−0.339*** (−6.303)	−0.340*** (−6.426)	−0.000 (−0.063)	−0.000 (−0.047)	0.000 (0.021)
<i>Analysts</i>	0.048*** (2.100)	0.048*** (2.107)	0.048*** (2.090)	0.016*** (11.884)	0.016*** (11.881)	0.016*** (11.863)
<i>State</i>	−0.182*** (−4.651)	−0.178*** (−4.620)	−0.180*** (−4.699)	0.007*** (2.647)	0.007*** (2.690)	0.008*** (2.765)
<i>Mb</i>	−3.049*** (−7.471)	−3.051*** (−7.464)	−3.049*** (−7.533)	−0.023** (−2.447)	−0.023** (−2.456)	−0.023** (−2.461)
<i>Charity_In</i>	0.003 (0.392)	0.003 (0.494)	0.005 (0.785)	0.002** (2.261)	0.002** (2.297)	0.002** (2.452)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes
_cons	11.518*** (12.836)	11.494*** (12.811)	11.478*** (12.992)	0.035 (1.075)	0.034 (1.056)	0.031 (0.975)
R <sup>2</sup>	0.536	0.536	0.534	0.097	0.097	0.097
N	12325	12325	12325	12325	12325	12325

\*\*\*, \*\*\*, \*\* indicate significance level of 0.1/0.05/0.01, respectively. Figures in parentheses are the values of standard errors.

**Table 6 Robustness test results.**

Variables	PSM (1) Tq	Substitution of Dependent Variables (2) Tq	Removal of the first-year sample observations (3) Tq	Control for geographical factors (4) Tq
<i>Treatment1</i> × <i>Post</i>	0.488*** (9.872)		0.448*** (8.085)	0.493*** (9.934)
<i>Treatment4</i> × <i>Post</i>		0.562*** (9.764)		
<i>Treatment1</i>	−0.187*** (−3.888)		−0.135*** (−2.862)	−0.196*** (−4.123)
<i>Treatment4</i>		−0.200*** (−3.982)		
<i>Lev</i>	−0.371*** (−2.841)	−0.378*** (−2.898)	−0.382*** (−2.801)	−0.378*** (−2.926)
<i>ldr</i>	1.092*** (4.035)	1.066*** (3.942)	1.180*** (4.224)	1.043*** (3.841)
<i>Ctr</i>	0.006*** (5.872)	0.006*** (5.991)	0.006*** (5.299)	0.006*** (5.906)
<i>Grow</i>	0.172*** (5.639)	0.174*** (5.667)	0.153*** (4.456)	0.174*** (5.653)
<i>Ocf</i>	0.678*** (3.135)	0.681*** (3.110)	0.603*** (3.614)	0.685*** (3.018)
<i>Age</i>	−0.000 (−0.087)	0.000 (0.039)	−0.000 (−0.002)	−0.000 (−0.013)
<i>Big4</i>	0.400*** (5.296)	0.399*** (5.277)	0.409*** (5.478)	0.406*** (5.255)
<i>Size</i>	−0.341*** (−6.326)	−0.342*** (−6.432)	−0.395*** (−6.759)	−0.347*** (−6.386)
<i>Analysts</i>	0.048*** (2.100)	0.050*** (2.173)	0.063*** (2.354)	0.049*** (2.122)
<i>State</i>	−0.182*** (−4.651)	−0.183*** (−4.763)	−0.173*** (−4.273)	−0.195*** (−4.857)
<i>Mb</i>	−3.049*** (−7.471)	−3.050*** (−7.531)	−2.968*** (−6.414)	−3.023*** (−7.371)
<i>Charity_In</i>	0.003 (0.392)	0.005 (0.708)	0.001 (0.162)	0.003 (0.394)
Provincial effect				Yes
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
_cons	11.518*** (12.836)	11.527*** (12.977)	12.625*** (13.180)	11.670*** (12.745)
R <sup>2</sup>	0.536	0.535	0.551	0.539
N	12,325	12,325	9712	12,040

\*\*\*, \*\*\*, \*\* indicate significance level of 0.05/0.01, respectively. Figures in parentheses are the values of standard errors.

in TPA,  $\lambda$  is the Inverse Mills Ratio (IMR) calculated in the first stage. Since the first stage model needs to have “exclusion restrictions” variables, we add the *Tpa\_mean* of other companies in the same industry in the same year in the first stage, which is

the average value of the TPA efforts of other listed companies in the same industry in the same year. This variable is appropriate as an exclusion restrictions variable for two reasons: first, the TPA efforts of other companies in the same industry is an instrumental

**Table 7 Heckman two-stage regression results.**

	First stage Treatment (1)	Second stage Tq <sub>t+1</sub> (2)
Tpa_mean	0.102*** (2.578)	
Tpa		0.038*** (3.187)
Lev	0.307 (1.226)	−0.071 (−0.544)
Ddbl	1.208* (1.834)	0.669** (2.041)
Ctr	−0.007*** (−2.671)	0.006*** (4.401)
Grow	−0.125 (−1.425)	0.074** (1.967)
Ocf	−1.001 (−1.615)	2.031*** (3.352)
Age	−0.001 (−0.173)	−0.004 (−1.236)
Big4	0.042 (0.338)	−0.004 (−0.054)
Size	0.197*** (4.060)	−0.069** (−2.351)
Analysts	−0.078** (−1.978)	0.051** (2.570)
State	0.617*** (6.820)	−0.084 (−1.597)
Mb	−0.364* (−1.677)	−2.591*** (−15.200)
Charity	0.053*** (3.056)	−0.006 (−0.522)
lambda		0.302 (0.509)
_cons	−5.587*** (−5.968)	4.605*** (7.353)
R <sup>2</sup>	0.529	0.598
N	1343	1305

\*\*\*, \*\*, \* indicate significance level of 0.1/0.05/0.01, respectively. Figures in parentheses are the values of standard errors.

variable for the target company's TPA efforts; second, the average of the TPA efforts of other listed companies in the same industry in the same year has no direct impact on the target company's corporate value.

Table 7 Column (1) reports the first stage regression results using the Heckman two-stage model (1979). The exclusion restrictions variable Tpa\_mean is significantly positive at the 1 % level, indicating the selection of this variable meets the conditions of selecting the exclusion restrictions variable.

Table 7 column (2) shows second stage regression results using the Heckman two-stage model (1979). This reveals that the relationship between corporate value and participation in TPA remains significantly positive after controlling for the possible self-selection bias of listed firms' participation in TPA, indicating that the results of the main regression are reliable.

### Heterogeneity test

In order to verify which has a greater impact on corporate value, government-initiated CSR or corporate-initiated CSR, the coefficients are first standardized to avoid any complexities caused by units before comparison, with reference to Flannery and Rangan's methodology (2006). The standardized coefficients are then regressed to produce the results in Table 9 (1), showing that Treatmen3×Post has a larger coefficient than Vcsr, thus verifying hypothesis H2, which states that government-initiated CSR activities can increase corporate value more than corporate-initiated CSR activities.

To further illustrate hypothesis H2, this paper refers to (Du and Yu, 2021) practice of using social responsibility tone (Tone) to indicate the strength of corporate-initiated CSR activities, and draws on Lin and Xie's metric (2017) to first extract the social responsibility reports of listed companies using Python. Then, this paper used Python's Chinese word segmentation module, "Jieba", to count word frequency, with reference to multiple dictionaries including Loughran and McDonald, the Chinese National Knowledge Infrastructure, Tsinghua Li Jun's positive and negative terms in Chinese and Bosen emotional vocabulary. In order to ensure the comprehensiveness of the dictionary, all words are retained and integrated into one dictionary, which is

expressed by Eq. (6):

$$\text{Tone} = \frac{\text{Pospect} - \text{Negpct}}{\text{Pospect} + \text{Negpct}} \quad (6)$$

Tone measures the net positive tone of CSR reports, where Pospect is the ratio of the number of words with positive tone to the total number of words in the text, and Negpct is the ratio of the number of words with negative tone to the total number of words in the text. Corporations genuinely willing to carry out corporate-initiated CSR is indicated by 1 (Tone greater than the mean value of 0.75), while corporations that are more unwilling is indicated by 0 (Tone smaller than the mean value of 0.75)

Results in Table 8 show the impact on corporate value before and after participation in TPA for companies with varying degrees of willingness to initiate CSR. It can be seen that the mean corporate value for corporations with low CSR willingness after participating in TPA is 2.014, higher and more significant than the previous value of 1.601 when they did not participate in TPA. This shows that participating in government-initiated CSR activities has a greater impact on corporate value than participating in corporate-initiated CSR activities.

From the regression results in Table 9 Column (2), it can be concluded that the impact of industrial development and education on corporate value is significant, thus indicating that poverty alleviation via industrial development and education have the greatest impact on corporate value, which validates model (2), that is, penetrative "integrated poverty alleviation" enhances corporate value more than the direct approach of "donative poverty alleviation". It also explains why education and industrial development account for the largest proportion of listed companies' way of involving in TPA. Since companies can combine participation in TPA with their own business development for these two approaches, they have a greater impact on the company's business development and thus on corporate value.

**The mechanisms of corporate participation in TPA impacting corporate value.** TPA has the dual attributes of both market regulation and policy requirements. On the one hand, participating in TPA can help corporations obtain more market resources and fulfill their social responsibility to receive positive social appraisals from stakeholders (including institutional investors), and studies have shown that institutional investors do pay more attention to CSR (Dhaliwal et al., 2011). For example, institutional investors are attracted to corporations with a good record of CSR and have a larger shareholding preference. The 2016 "China Securities Regulatory Commission's Opinion" supports and encourages the participation of institutional investors in TPA. As compared to retail investors, institutional investors have certain advantages in information analysis, and institutional investors may view CSR participation as a sign of a firm's future long-term value and thus increase their shareholding (Nofsinger et al., 2019). Therefore, this paper argues that corporate involvement in TPA will attract the attention of institutional investors and increase their shareholding, institutional investors then monitor companies to fulfill their social responsibility and improve their external reputation, thereby promoting sustainable development and long-term gains. This paper proposes a path to be tested: corporate participation in TPA → attracts institutional investors' attention → increase in corporate value.

On the other hand, corporate participation in TPA can also help corporations obtain more political resources. According to the Resource Dependence Theory, corporate participation in industrial development for TPA provides good opportunities for them to obtain external resources, such as intangible resources like political capital, as well as a higher degree of government

**Table 8 Comparison of corporate value before and after participation in TPA for companies with varying degrees of willingness to initiate CSR.**

	Before TPA		After TPA		Differences	
	No. of obs.	mean	No. of obs.	Mean	Diff	(t-stat)
High CSR willingness	8401	1.845	1645	2.426	0.026	1.19
Low CSR willingness	170	1.601	117	2.014	4.988***	4.29

\*\*\* indicate significance level of 0.01.

**Table 9 Heterogeneity test.**

	T <sub>q,t+1</sub> (1)	T <sub>q,t+1</sub> (2)
Treatment <sub>1</sub> ×Post	0.494*** (9.974)	
Vcsr	−0.102** (−2.264)	
Treatment <sub>3</sub> ×Post		0.480*** (0.085)
Treatment <sub>4</sub> ×Post		0.268*** (0.102)
Treatment <sub>5</sub> ×Post		0.124 (0.239)
Treatment <sub>6</sub> ×Post		−0.047 (0.189)
Treatment <sub>7</sub> ×Post		0.176 (0.140)
Treatment <sub>8</sub> ×Post		0.090 (0.122)
Lev	−0.341*** (−2.602)	0.262 (0.192)
Ddbl	1.077*** (3.987)	1.585*** (0.338)
Ctr	0.006*** (5.796)	0.004*** (0.001)
Grow	0.178*** (5.802)	0.138*** (0.035)
Ocf	0.675*** (3.196)	0.721*** (0.261)
Age	−0.000 (−0.117)	0.005* (0.003)
Big4	0.388*** (5.101)	0.451*** (0.085)
Size	−0.358*** (−6.334)	−0.384*** (0.033)
Analysts	0.048** (2.084)	0.008 (0.017)
State	−0.189*** (−4.819)	−0.267*** (0.046)
Mb	−3.032*** (−7.361)	−3.728*** (0.142)
Charity	0.002 (0.364)	−0.234*** (0.036)
Roa		1.614** (0.653)
Industry Effect	Yes	Yes
Year Effect	Yes	Yes
_cons	0.1996*** (6.56)	12.722*** (0.655)
R <sup>2</sup>	0.5360	0.529
N	12057	12553

\*\*\*, \*\*, \* indicate significance level of 0.1/0.05/0.01, respectively. Figures in parentheses are the values of standard errors.

subsidies, tax rebates and other policy supports. These resources can help to improve the business performance of corporations, as reflected in the industrial development projects implemented by corporations such as China National Nuclear Corporation, Shenzhen Special Economic Zone Construction & Development Group (Shenzhen SEZ C&D Group) and Shenzhen Energy Group. Take the Shenzhen SEZ C&D Group for example, in May 2011, Shenzhen started to guide the transfer of Shenzhen industries to Guang'an, Sichuan, and in August 2014, Guangshen Industrial Park in Guang'an, Sichuan was officially established. According to the idea of "industrial park development, industrial introduction and city construction", Shenzhen C&D Group has been pushing forward the construction of Guangshen Industrial Park. Up to now, the total investment in fixed assets within the 28 square kilometer planning area of Guangshen Industrial Park is about 17.1 billion, with a built-up area of about 5 square kilometers, driving employment of nearly 10,000 people. Guangshen Industrial Park has set out of a new "government-initiated, market-oriented, corporation-operated" path that blends TPA into regional cooperation, and it has been fully affirmed by all parties.

In the process of completing TPA and paired assistance, Shenzhen SEZ C&D Group has also received successive financial subsidies of 100 million from the Shenzhen government, which accelerated the development and growth of the corporation (Yan and Tang, 2020). Given that government subsidies are measurable political resources that firms can directly access, this paper argues that government subsidies may be one of the intrinsic mechanisms through which TPA acts on firm performance. Hence, this paper proposes an alternative path to be tested: corporate participation in TPA → receives government subsidies → increase in corporate value.

According to Reputation Theory, participation in government-initiated CSR is more likely to increase corporate value. Since 2016, the Chinese government has introduced various recognition policies to promote corporate value creation in TPA by giving higher market attention to corporations actively contributing to TPA. At the same time, during the implementation of TPA, the government will organize various awards to recognize enterprises that participate in TPA, such as the "National Poverty Alleviation Award" conducted annually by the State Council's Leading Group for Poverty Alleviation. This paper proposes a third path to be tested: corporate participation in TPA → corporate reputation → increase in corporate value.

Through the Mediating Effect Test (Wen et al., 2004), this paper establishes three models for path a, path b, and path c, respectively, while analyzing shareholding ratio of institutional investors, government subsidies and corporate reputation as mediating factors. Institutional investors' shareholding (Ins) is defined as the ratio of the number of institutional investors' shareholding amount to the total number of shares at the end of the year. Government subsidies (Subsidy) is defined as the ratio of government subsidies to the operating income of the year. The amount of subsidies is collected manually from the notes of corporations' annual reports. This paper measures corporate reputation by constructing a reputation evaluation system (Rep). This system is made up of 12 corporate reputation evaluation criteria, based on the evaluation frameworks and research results of domestic and foreign corporate reputation rankings (Guan & Zhang, 2019), after comprehensively considering the evaluation of corporate reputation by various stakeholders, and adhering to the principles of operability, hierarchy, validity and relative completeness. Then, factor analysis was applied to the 12 criteria to calculate a corporate reputation score<sup>2</sup>. Finally, the corporate reputation scores were divided into ten groups from low to high, and each group was assigned REP values from 1 to 10. The model is as follows:

Path a:

$$Tq_{i,t+1} = \beta_0 + \beta_1 \text{Treatment}_{1,t} \times \text{Post}_{i,t} + \beta_2 \text{Treatment}_{1,t} + \beta_3 \text{Control}_{i,t} + \text{Industry}_{i,t} + \text{Year}_{i,t} + \varepsilon_{i,t} \quad (7)$$



Path b:

$$\begin{aligned} \text{Ins/Subsidy/Rep}_{i,t+1} = & \alpha_0 + \alpha_1 \text{Treatment1}_{i,t} \times \text{Post}_{i,t} + \\ & \alpha_2 \text{Treatment1}_{i,t} + \alpha_3 \text{Control}_{i,t} + \text{Industry}_{i,t} + \text{Year}_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (8)$$

Path c:

$$\begin{aligned} Tq_{i,t+1} = & \varphi_0 + \varphi_1 \text{Treatment1}_{i,t} \times \text{Post}_{i,t} + \varphi_2 \text{Ins/Subsidy}_{i,t} \\ & + \varphi_3 \text{Treatment1}_{i,t} + \varphi_4 \text{Control}_{i,t} + \text{Industry}_{i,t} + \text{Year}_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (9)$$

In this paper, the following procedure is used to determine whether the mediating effect exists. First, if the coefficient ( $\beta_1$ ) of “Treatment1×Post” in path a is valid, we proceed with the second step. Second, if the coefficient ( $\alpha_1$ ) of “Treatment1×Post” in path b is significant, we proceed with the third step. Third, if the coefficient of “Ins/Subsidy” ( $\varphi_2$ ) in path c is significant, then it can be concluded that a mediating effect exists. The final judgment is whether it is a partial or full mediating effect. If the coefficient of “Ins/Subsidy/Rep” ( $\varphi_2$ ) is significant, and the coefficient of “Treatment1×Post” ( $\varphi_1$ ) is also significant, then it is a partial mediation effect. However, if  $\varphi_1$  is not significant, it is a full mediation effect.

In Table 10, columns (1) to (3) show the results of testing institutional shareholding as a mediating variable and columns (4) to (6) show the results of testing government subsidies as a mediating variable. Firstly, for the mediating variable of institutional shareholding, column (1) shows the results of path a, where the coefficient of “Treatment1×Post” ( $\beta_1$ ) is positive and significant at the 1% level, indicating that corporate participation in TPA significantly increases corporate value. Column (2) shows the results for path b, where the coefficient of “Treatment1×Post” ( $\alpha_1$ ) is positive and significant at the 1% level, indicating that corporate participation in TPA significantly increases the shareholding of institutional investors. Column (3) shows the results of path c, in which the coefficient of “institutional investors’ shareholding” ( $\varphi_2$ ) and the coefficient of “Treatment1×Post” ( $\varphi_1$ ) are both positive at the 1% level, and the *p*-value of sober test is less than 0.05, which indicates that institutional investors’ shareholding exist as a partial mediating effect in the relationship between TPA and corporate value. Therefore, this paper verifies the transmission path of “corporate participation in TPA → attracts institutional investors’ attention → increase in corporate value”. Besides, the regression results with government subsidies and corporate reputation as mediating factors are the same as those with institutional shareholding as mediating factors, both of which partially mediate the relationship between the scale of corporate participation in TPA and corporate value. In summary, institutional shareholding, government subsidies and corporate reputation are the factors that mediate the effect of corporate participation in TPA on corporate value.

### Further analysis

*The relationship between corporate participation in TPA and corporate value under different nature of property rights.* TPA has become an important part of the assessment of local governments and the promotion of officials. For example, according to the “Evaluation Method of the Effectiveness of East-West Collaboration on Poverty Alleviation” issued by the State Council Leading Group of Poverty Alleviation and Development in 2019, the State Council’s Poverty Alleviation Office and other departments shall annually evaluate the TPA collaboration and work innovation of provinces and cities in the Eastern, Central and Western regions. The evaluative components for Eastern region

include organizational leadership, talent support and financial support. For the Central and Western regions, evaluation looks at organizational leadership, talent exchange and financial use for TPA. The results of the comprehensive evaluation will be approved and announced by the Chinese Party Central Committee and the State Council before sending to the Organization Department of the Communist Party of China’s Central Committee. Using the Tournament Theory on local government officials, to encourage more corporations to participate in TPA and accomplish the political task of poverty alleviation, local governments need to differentiate between state-owned and non-state-owned enterprises and distinguish the nature of corporate property rights when studying corporate behavior. This is because as compared to non-state-owned enterprises, state-owned enterprises have a closer relationship with the government. As such, state-owned enterprises’ participation in TPA reflects the government’s will. They are also better able to obtain government support, government subsidies, bank credit, tax benefits, and other forms of compensation. Furthermore, state-owned enterprises’ participation in TPA has a more significant effect on promoting corporate value. In this paper, the cross-product term of the nature of property rights (State) and “Treatment1×Post” is constructed and added to model (1). The regression results are presented in column (1) of Table 11, where the coefficient of “Treatment1×Post×State” is 0.281 and is significantly positive. This indicates that the increase in corporate value through participation in TPA on state-owned enterprises is more significant than that of non-state-owned enterprises.

*The relationship between corporate participation in TPA and corporate value under different industry competitive intensity.* Under different industry competitive intensity, the financial value of corporations’ fulfillment of their TPA responsibility differs. Campbell found that when the industry is more competitive, corporations reduce their expenditures through illegal means, such as jerry-building and tax evasion, to achieve the goal of maximizing value (Campbell, 2007). Other scholars argue that the more competitive the industry is, the less excess resources there are, leading to more prudent resource allocation decisions and lesser corporate responsibility. Liu and Jiang proved this point by manually collecting donation data from Juchao.com and conducting a fixed-effect Tobit analysis on a panel of listed companies from 2004 to 2009. Findings reveal that the higher the Herfindahl-Hirschman Index (HHI), the less competitive the industry is, the greater the market power possessed by the company, and the stronger the sense of social responsibility (Liu and Jiang, 2011). Luo et al. divided listed companies into two groups of samples of strong industry competition and weak industry competition. Their results showed that the intensity of industry competition would bind the socially responsible behavior of companies (Luo et al., 2018). Based on the above analysis, the lower the intensity of industry competition, the more companies can increase their corporate value by participating in TPA. From the regression results in column (2) of Table 11, the coefficient of “Treatment1×Post×HHI” is positive and significant. Since the greater the HHI, the lower the degree of product market competition and vice versa, the economic significance of the regression result is that the lesser competition in the product market, the more corporations can increase their value by participating in TPA.

*The relationship between corporate participation in TPA and corporate value in different marketization regions.* As China’s market economy is still in transition, the differences in geographical location, natural conditions and resource status across regions have led to great imbalances in development and large

**Table 10 Mediating effect test for corporate TPA impacting corporate value.**

Variables	Institutional shareholding as mediating factor			Government subsidies as mediating factor			Corporate reputation as mediating factor		
	Tq (1)	Ins (2)	Tq (3)	Tq (4)	Subsidy (5)	Tq (6)	Tq (7)	Rep (8)	Tq (9)
<i>Treatment1</i> × <i>Post</i>	0.488*** (10.323)	0.097*** (9.710)	0.446*** (9.247)	0.488*** (10.323)	0.006*** (3.160)	0.506*** (8.415)	0.488*** (10.323)	0.032** (2.373)	0.177** (2.249)
<i>Ins/Subsidy/Rep</i>			0.369*** (6.477)			0.892*** (2.845)			
<i>Treatment1</i>	−0.187*** (−4.981)	−0.019*** (−2.793)	−0.170*** (−4.503)	−0.187*** (−4.981)	−0.005*** (−2.875)	−0.106*** (−2.714)	−0.187*** (−4.981)	1.125 (0.701)	1.065*** (10.125)
<i>Lev</i>	−0.371*** (−3.477)	0.007 (0.506)	−0.360*** (−3.400)	−0.371*** (−3.477)	0.003 (0.576)	−0.701*** (−5.243)	−0.371*** (−3.477)	0.207*** (10.024)	−1.464*** (−5.540)
<i>Ddbl</i>	1.092*** (5.201)	−0.096** (−2.498)	1.136*** (5.413)	1.092*** (5.201)	0.024** (2.350)	1.241*** (4.723)	1.092*** (5.201)	−0.078*** (−5.902)	0.009*** (8.737)
<i>Ctr</i>	0.006*** (8.012)	0.004*** (21.622)	0.005*** (6.355)	0.006*** (8.012)	−0.000*** (−3.300)	0.007*** (7.808)	0.006*** (8.012)	0.128*** (8.859)	0.269*** (7.870)
<i>Grow</i>	0.172*** (5.666)	0.017*** (3.598)	0.164*** (5.380)	0.172*** (5.666)	−0.001 (−0.655)	0.181*** (5.208)	0.172*** (5.666)	0.076*** (5.724)	0.049 (0.071)
<i>Ocf</i>	0.678*** (3.218)	−0.024 (−0.782)	0.683*** (3.309)	0.678*** (3.218)	−0.004 (−0.625)	0.720*** (2.890)	0.678*** (3.218)	0.018 (0.176)	0.030*** (10.896)
<i>Age</i>	−0.000 (−0.101)	0.003*** (7.976)	−0.001 (−0.373)	−0.000 (−0.101)	0.000 (0.024)	−0.003 (−0.757)	−0.000 (−0.101)	0.245*** (14.092)	−0.088 (−1.148)
<i>Big4</i>	0.400*** (8.197)	0.080*** (7.869)	0.377*** (7.791)	0.400*** (8.197)	0.001 (0.432)	0.446*** (7.672)	0.400*** (8.197)	−0.009 (−0.488)	1.787*** (62.885)
<i>Size</i>	−0.341*** (−6.744)	0.026*** (7.692)	−0.354*** (−6.971)	−0.341*** (−6.744)	−0.002** (−2.152)	−0.382*** (−5.888)	−0.341*** (−6.744)	2.620*** (77.577)	0.441*** (25.677)
<i>Analysts</i>	0.048** (2.282)	0.009*** (3.816)	0.041** (2.010)	0.048** (2.282)	0.000 (0.201)	0.031 (1.202)	0.048** (2.282)	0.465*** (26.809)	−0.158*** (−4.318)
<i>State</i>	−0.182*** (−6.499)	0.042*** (7.888)	−0.199*** (−7.062)	−0.182*** (−6.499)	0.002 (1.156)	−0.193*** (−5.857)	−0.182*** (−6.499)	−0.043*** (−2.739)	−1.181*** (−9.268)
<i>Bm</i>	−3.049*** (−7.568)	−0.041*** (−3.128)	−3.008*** (−7.495)	−3.049*** (−7.568)	−0.008** (−2.248)	−2.746*** (−5.271)	−3.049*** (−7.568)	−0.361*** (−15.450)	0.040*** (5.711)
<i>Charity_In</i>	0.003 (0.506)	−0.001 (−0.780)	0.003 (0.605)	0.003 (0.506)	−0.000 (−0.847)	−0.000 (−0.701***)	0.003 (0.506)	0.106*** (7.057)	1.065*** (10.125)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Period effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
_cons	11.518*** (13.984)	−0.516*** (−8.110)	11.764*** (14.169)	11.518*** (13.984)	0.070*** (4.170)	12.271*** (11.551)	11.518*** (13.984)	7.128*** (33.020)	−34.343*** (−62.890)
R <sup>2</sup>	0.536	0.413	0.538	0.536	0.076	0.541	0.536	0.805	0.749
N	12,325	8926	12,325	12,325	8630	8525	12,325	11,198	12,325

\*\*\*\* indicate significance level of 0.05/0.01, respectively.

differences in regional institutional environments. In view of this, this paper uses the level of marketization to reflect the condition of the institutional environment in which corporations are located when verifying whether there is any impact of corporate participation in TPA on their corporate value. In regions with unfavorable institutional environments, firms are likely to participate in TPA as a response to institutional pressures (Tang et al., 2014). In such instances, corporate participation in TPA may be seen as a free “act of justice” and its corporate value is weakened. On the contrary, in regions with a favorable institutional environment, that is, the institutions are relatively sound, government rarely intervenes in corporate TPA implementation, and corporate TPA decisions are based on market laws instead of simply meeting government requirements. Economic growth is also faster in such favorable institutional environment, providing the local governments with more resources for TPA, which means they have the strength to compensate their local corporations for TPA, weakening the agency conflict on a certain extent. In this paper, the institutional environment is measured by the “total score of marketization by regions” index in the “China Marketization Index-Relative Marketization by Regions” compiled by Fan et al. in 2018 (Wang et al., 2019). To verify whether a higher degree of marketization in

the region where it is located will make the positive impact of corporate participation in TPA on corporate value more significant, this paper uses the degree of marketization in the region where the listed company is located as a moderating variable, and the coefficient of “Treatment1 × Post × MarketScore” is significantly positive at the 1% level as given in column (3) of Table 11. This result indicates that at a higher degree of marketization, the impact on corporate value arising from corporate participation increases.

## Conclusion

Poverty is a long-standing problem in human social development, and how to effectively alleviate and even eliminate poverty is a major concern and policy focus of governments around the world. However, few has researched on the contribution of listed companies to poverty alleviation (Chang et al., 2021). This paper is set in the context of the TPA strategy initiated by China, with data manually obtained from the annual reports and CSR reports of listed companies from 2013–2018. Data show that listed companies donated \$9.1 billion to TPA in three years and helped 200,000 people get out of poverty. Evidently, Chinese listed companies have made great contributions to China’s TPA strategy.

**Table 11 The impact of corporate participation in TPA on corporate value under different nature of property rights, different industry competitive intensity and different degree of marketization.**

Variables	Tq (1)	Tq (2)	Tq (3)
<i>Treatment1</i> × <i>Post</i> × <i>State</i>	0.281*** (3.655)		
<i>Treatment1</i> × <i>Post</i> × <i>HHI</i>		1.152** (2.243)	
<i>Treatment1</i> × <i>Post</i> × <i>Market</i>			0.058*** (3.075)
<i>Treatment1</i> × <i>Post</i>	0.321*** (4.586)	0.405*** (6.520)	0.044 (0.287)
<i>Treatment1</i>	−0.177*** (−3.699)	−0.178*** (−3.603)	−0.203*** (−4.244)
<i>Lev</i>	−0.364*** (−2.783)	−0.477*** (−3.538)	−0.386*** (−2.952)
<i>ldr</i>	1.058*** (3.924)	1.041*** (3.840)	1.089*** (4.017)
<i>Ctr</i>	0.006*** (5.894)	0.007*** (6.466)	0.006*** (5.908)
<i>Grow</i>	0.172*** (5.631)	0.167*** (5.588)	0.172*** (5.601)
<i>Ocf</i>	0.681*** (3.131)	0.747*** (2.728)	0.684*** (3.093)
<i>Age</i>	−0.000 (−0.009)	−0.002 (−0.562)	−0.000 (−0.088)
<i>Big4</i>	0.403*** (5.344)	0.375*** (5.065)	0.411*** (5.422)
<i>Size</i>	−0.341*** (−6.321)	−0.324*** (−6.097)	−0.343*** (−6.330)
<i>Analysts</i>	0.048** (2.082)	0.059** (2.510)	0.050** (2.183)
<i>State</i>	−0.215*** (−5.365)	−0.174*** (−4.293)	−0.187*** (−4.757)
<i>Mb</i>	−3.051*** (−7.468)	−2.920*** (−7.115)	−3.046*** (−7.426)
<i>Charity_In</i>	0.003 (0.398)	0.005	0.003 (0.482)
<i>HHI</i>		−0.477***	
<i>MarketScore</i>		1.947*** (4.594)	
<i>Industry Effect</i>	Yes	Yes	−0.019* (−1.817)
<i>Period Effect</i>	Yes	Yes	Yes
<i>_cons</i>	11.538*** (12.857)	10.931*** (12.435)	11.725*** (12.991)
<i>R<sup>2</sup></i>	0.537	0.544	0.537
<i>N</i>	12325	11585	12040

\*\*\*, \*\*, \* indicate significance level of 0.1/0.05/0.01, respectively. Figures in parentheses are the values of standard errors.

By exploring the relationship between corporate participation in government-initiated CSR and corporate value, this paper confirms that actively participating in TPA can increase institutional investors' shareholding, government subsidies and corporate reputation, thus having a significant effect of enhancing corporate value, more so than engaging in corporate-initiated CSR, and this effect is most significant in "penetrative poverty alleviation". Furthermore, this paper explores the mechanisms between corporate participation in TPA and corporate value. Findings suggest that institutional investors in the market and government subsidies are two intrinsic mechanisms for the impact of TPA on corporate value, and the active implementation of TPA by corporations can increase the shareholding ratio of institutional investors and government subsidies, thus significantly increasing corporate value. Finally, the main findings of this study are more significant in regions with higher marketization and lower industry competition, and in state-owned enterprises. This study enriches the literature related to CSR and corporate value. It also provides a theoretical basis for corporate poverty alleviation work and economic development and has some implications for the formulation of China's upcoming Rural Revitalization Strategy.

TPA is highly valued by the Chinese government as it is a form of CSR with Chinese characteristics. However, the participation of listed companies in TPA can be influenced by either government intervention or a deliberate choice made by corporations after considering the benefits and costs of doing so. Corporations invest a lot of human and material resources in TPA projects, and it is difficult to expect them to actively commit to TPA projects in the long term if their involvement in those projects has negative economic impacts on themselves. The findings of this paper suggest that corporate participation can help them obtain more

support such as government subsidies and tax rebates, subsequently improving their business performance and market value. In other words, TPA brings certain benefits to the business development of corporations and this mutually beneficial relationship will motivate corporations to continue participating in TPA. Therefore, policy makers can further prioritize those corporations which actively involve themselves in TPA when allocating socio-economic resources. This will stimulate capital market forces to implement TPA activities more sustainably to prevent any poverty-returning phenomenon. In fact, only if companies gain enough economic benefits by participating in TPA can Chinese companies be effectively and continuously motivated in joining the socialist poverty alleviation cause. Therefore, policy makers can continue to improve the policy requirements and resource allocation for TPA along the currently established path, which is to give more socio-economic resources to corporations that dare to tackle the "tough nut" of poverty and those which use resources more efficiently, to achieve the original policy intention of having corporations and impoverished areas jointly promoting economic and social development in impoverished areas.

#### Data availability

The data used in this paper were obtained from the China Stock Market & Accounting Research Database (CSMAR), the website is available on <https://www.gtarsc.com/>. However, access to these data is subject to restrictions and requires a license. Interested parties can obtain the data with the permission of CSMAR.

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## Notes

- 1 Excluding the post term in the model is because this paper uses the DID model estimated with the fixed effects method, and the time fixed effect in the formula broke down the samples more detailedly as compared to the time grouping (post). (Wang et al., 2019).
- 2 These indicators specifically include: ranking of corporate assets, revenue, net profit and value in the industry from both the consumer and societal perspective; gearing ratio, current ratio, long-term debt ratio from the creditor perspective; earnings per share, dividend per share, and whether audited by a Big 4 international accounting firm from the shareholder perspective; and sustainable growth rate and independent director ratio from the corporate perspective.

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## Author contributions

JJ: conceptualization, resources, data curation, writing—original draft preparation. JW: methodology, supervision, project administration. ZH: writing—review and editing.

## Competing interests

The authors declare no competing interests.

## Ethical approval

This article does not contain any studies with human participants performed by any of the authors.

## Informed consent

This article does not contain any studies with human participants performed by any of the authors.

## Additional information

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