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Does Venture Capital Improve Corporate Social Responsibility Performance?

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In recent years, market agents have paid more attention to firm-level sustainable developments, but the economic effects of venture capital on corporate social responsibility (CSR) performance are not clear. We empirically investigated this issue using data from Chinese nonfinancial A-share listed firms between 2010 and 2019. We found that venture capital participation may reduce the CSR performance of portfolio companies (e.g., SMEs), and high-quality internal control would moderate the relationship between venture capital and CSR performance. We suggest that the Chinese regulatory agencies should further direct institutional investors to establish socially responsible investments (SRI), optimise the information disclosure of CSR and enhance the listed companies' internal control system.

Keywords: venture capital, corporate social responsibility (CSR), socially responsible investments (SRI), internal control quality

1. Introduction

Achieving more efficient, equitable, and sustainable development has recently become a hot topic. The degree to which firms contribute to social welfare has attracted more attention (Gillian et al., 2021), which can be measured by the increasing amount of corporate social responsibility (CSR) (Johnson and Schaltegger, 2016). As an influential channel for funding (Tan et al., 2013), venture capital is a crucial approach to socially responsible investments (SRIs), which consider both financial and nonfinancial performance (Moneva-Abadía et al., 2019) when selecting potential investees. Since CSR performance is a significant criterion for measuring firms' sustainable development, we aim to answer the following questions: **(1) Does venture capital affect portfolio companies' CSR performance? and (2) Through which channels does venture capital affect portfolio companies' CSR performance?**

Due to the limited data disclosure in China's venture capital industry (Hou and Li, 2019) and different accounting rules (Moore et al., 2015), China-based venture capital-relevant studies are still limited, and further academic investigations are required (Chen et al., 2017). The extant studies are more focused on how venture capital affects portfolio companies' operations management and the derived economic consequences (Li and Song, 2017; Wen and Feng, 2018) rather than discussing the relationships between venture capital and portfolio companies' CSR performance or other nonfinancial consequences. Furthermore, there are still limited papers that discuss how venture capital uses internal control mechanisms to influence corporate performance in different aspects (Tan et al., 2008).

Although scholars argue that institutional investors are interested in and capable of affecting corporate-level decision-making, discussions on the impacts of institutional investors' activities on portfolio companies' CSR performance have developed only recently (Dyck et al., 2019). Despite existing relevant studies highlighting that institutional investors would affect portfolio companies' decision-making through backroom negotiations and proxy voting (Becht et al., 2017; Krueger et al., 2020), they discussed all types of institutional investors in general. Namely, current studies failed to analyse the impacts of different types of institutional investors on

portfolio companies' CSR performance (Dyck et al., 2019). Furthermore, extant studies rarely discuss the relationship between venture capital and portfolio companies' CSR (Lerner and Nanda, 2020), especially the relevant underlying mechanisms.

By selecting Chinese nonfinancial A-share listed firms between 2010 and 2019 as the sample, we empirically explored the relationships between venture capital and portfolio companies' CSR performance in sustainable development-driven contexts. We empirically found that venture capital negatively affects portfolio companies' CSR performance, especially private small and medium-sized enterprises. Furthermore, we also found that high-quality internal control moderates the relationships between venture capital and portfolio companies' CSR performance. Hence, we suggest that regulatory departments further guide institutional investors to establish the perceptions of SRI, optimise the information disclosure of CSR and enhance the listed companies' internal control system.

To guarantee the validity of the empirical findings, we test and confirm the robustness of the results in several ways. First, we substitute the OLS regressions with different modelling approaches, including censored regression (Tobit) and weighted least squares (WLS). We find that the *VC* coefficient in both research approaches is significantly negative in the predicted direction. Importantly, the results remain unchanged when we use the introduction of direct high-speed rail between venture capital and portfolio companies as shocks to venture capital monitoring intensity (Bernstein et al., 2016; Yang et al., 2019) and subsequently establish a multiperiod difference-in-difference model (DID) to investigate changes in CSR performance and venture capital for a paired sample of firms. We also implement Heckman's two-stage procedure with an instrument variable (i.e., *GRI*, which is set to 1 if a firm discloses a CSR report adopting the GRI guidelines and 0 otherwise) (Li et al., 2021), mitigating potential endogeneity concerns and increasing confidence in the directionality of our result.

Our findings contribute to both theoretical and practical knowledge. First, unlike previous studies that mainly focus on operations, withdrawals (e.g., IPOs and acquisitions), and the financial performance of venture capital, we explore the impacts of venture capital on portfolio companies' CSR performance—a type of nonfinancial performance. Namely, we expand a new branch to discuss the relationship between venture capital and portfolio companies. Second, we treat venture capital as an independent individual to analyse its impacts on CSR rather than generally exploring the nexus between institutional investors and CSR, as in previous studies, which enriches the extant CSR-relevant literature. Third, different from most companies that highlight the negative impacts of venture capital on portfolio companies, our result helps to better understand the restrictions of venture capital in the practical context. For instance, investment organisations' short-term speculative and opportunistic activities would sacrifice stakeholders' interests and damage the corporate value of the portfolio companies.

Following this introduction, we synthesise the relevant literature and develop hypotheses. In the third section, we describe the research methodology, such as data collection, variable setting, and modelling design. The empirical findings are shown in Section Four. In the fifth section, we further discuss the mechanisms of how venture capital affects CSR performance by conducting a subsample analysis. Finally, we conclude our empirical findings and make suggestions for regulatory departments to guide venture capital and portfolio companies to achieve sustainable developments.

2. Literature Review and Hypothesis Development

2.1 Venture Capital and CSR

2.1.1 The Impact of Venture Capital on Corporate Performance

The relationship between venture capital and corporate performance in different dimensions (e.g., employment, innovations, and return on assets) is still a hot topic (Bertoni et al., 2010). However, there are limited studies on the subject, especially in emerging or transitional markets such as China (Tan et al., 2013). Currently, relevant studies mainly focus on venture capital's impacts on firms' performance in the late stage, which has generated three assumptions: (1) value-adding services (Hochberg, 2012; Bellavitis et al., 2019); (2) exploitation behaviours (White et al., 2005; Wen and Feng, 2018); and (3) certification effects (Cho and Lee, 2013; Wang and Wan, 2013).

Value-adding Services. Venture capital could be seen as value-adding investors of 'smart money', as they provide both financial resources and other value-adding services such as monitoring the process of their portfolio companies. Giving investee firms access to the network of contacts (e.g., technology experts, suppliers, and intellectual property consultants) (Cumming and Johan, 2010) would be seen as another value-adding service. Bertoni et al. (2010) emphasised that venture capital stimulates innovation outputs by loosening financial constraints, increasing portfolio companies' R&D inputs and achieving better performance than their competitors who are not supported by venture capital. Furthermore, venture capital often monitors portfolio companies (Bellavitis et al., 2019) to deal with the agency problem since uncertainties and information asymmetry are the characteristics of early-stage or technology-intensive firms, such as by investing in portfolio companies in the early stage, syndicating investments with other investment organisations, and filling board seats. More importantly, venture capital is involved in portfolio companies' productions, operations, and management, optimising the governance of portfolio companies by accelerating their accounting information transparency (Hochberg, 2012). However, there are still limited studies discussing the mechanisms of the value-adding services of venture capital.

Exploitation Behaviours. Current studies (Gompers and Lerner, 1996; Wen and Feng, 2018) have found negative impacts of venture capital on corporate performance. The limited corporate life of venture capital makes them speculative and opportunistic—they attempt to obtain high returns within the short term, which may negatively affect portfolio companies' developments and corporate value (White et al., 2005; Bebcuk and Tallarita, 2020). Wen and Feng (2018) indicated that venture capital would restrict the portfolio company's innovation in the early stage since the propriety knowledge may be exposed to competitors who are also supported by the venture capital—because investment organisations are also under pressure to return capital to their partners over a short investment period. Additionally, young investment organisations are more likely to push their portfolio companies to be listed with a higher degree of underpricing (Gompers and Lerner, 1996), which damages the portfolio companies' interests and corporate value.

Certification Effects. Investment organisations can use their reputations as guarantees and send positive signals that the portfolio companies are reliable, and therefore, the reputable investment organisations' certification effects are stronger (Cho and Lee, 2013). Additionally, supported by reputable investment organisations, portfolio companies often have higher stock prices than nonventure capital-backed companies (Nahata, 2008). Wang and Wan (2013), based on signalling theory, proposed that venture capital-backed firms are more likely to be subscribed without underpricing because the certification effects cut portfolio companies' costs of being listed and increase the net profits of the issuing firm. Furthermore, when a reputable

investment organisation invests in a company, this company is more likely to attract other external investors (Memba, 2011) and catalyse the generation of an alliance that includes multiple investors, which can further add value for investees (Hoehn-Weiss and Karim, 2014). Brau et al. (2004) also found that the certification role provided by venture capital contributes to mitigating information asymmetries by facilitating access to capital markets.

Since China's accounting rules differ from international accounting standards, venture capital in China makes it difficult to obtain data about its portfolio companies' assets (Moore et al., 2015). Additionally, managers may not always reveal the actions within firms (Chen et al., 2017; Hou and Li, 2019), which also restricts the data sources for academic purposes. Consequently, China-based venture capital-relevant studies are still limited. Although extant studies have proven that venture capital impacts investees' performance through different approaches, there are still limited studies discussing the relationships between venture capital and CSR or other nonfinancial profits from the stakeholder perspective (Li et al., 2021). Moreover, the impacts of venture capital on corporate performance are still uncertain. It is worth mentioning that venture capital does not entail a random investment in companies but rather a cautious selection of potential investees with particular characteristics (e.g., the potential for innovations). Therefore, scholars should still determine whether investment organisations are good at selecting investees with good potential or applying their specialists to add value for their investees (not sure if they are relevant).

2.1.2 Institutional Investors and CSR Performance

As professional investors with deep pockets, institutional investors often hold large amounts of stocks in their portfolio companies to have a say in long-term management and impact portfolio companies' decision-making (Rong et al., 2017). As Salzmann (2013) noted, institutional investors would help build CSR since they always treat investments with long-term horizons (Dyck et al., 2019)—the more stock they hold, the greater the portfolio companies would like to adopt CSR (Chen et al., 2020). More importantly, Krueger et al. (2020) empirically found that institutional investors' preferences in CSR influence portfolio companies' CSR performance by reaching agreements with the board of directors directly or affecting firm-level decision-making during the annual general meeting by voting (Becht et al., 2017). However, from the corporate decision-making perspective, there are limited studies that analyse the impacts of institutional investors on CSR performance.

However, other scholars (Zhang and Li, 2017; Quan et al., 2018; Erhemjamts and Huang, 2019) found that institutional investors' perceptions of CSR would have no effect, or even a negative effect, on listed companies' CSR performance. Quan et al. (2018) found no significant relationships between institutional investors' proportions of shareholding and portfolio companies' CSR performance. On the other hand, scholars (e.g., Zhang and Li, 2017; Erhemjamts and Huang, 2019) have emphasised that institutional investors with short-term investment purposes reduce portfolio companies' CSR performance. For instance, institutional investors simply attempt to maximise short-term financial performance, which causes intertemporal loss of profit, and stakeholders' rights are damaged by renegeing on implicit contracts (Erhemjamts and Huang, 2019). Furthermore, Xiang et al. (2021) argued that institutional investors' inaction negatively affects portfolio companies' CSR performance, especially those with more agency problems.

The extant studies also found that different institutional investors manage their resources, networks, and investment strategies differently and vary in value-added potential (Park et al., 2019). As indicated by Li et al. (2021), qualified foreign institutional investors (QFIIs) from

countries with a good sense of social responsibility enhance portfolio companies' CSR performance. Monberg and Zetterberg (2011) argued that pensions would intervene in shareholding companies' CSR performance by proactively communicating with managerial levels or impacting shareholders' voting. However, in contrast to the above studies, Gao et al. (2011) did not find significant effects of fund/insurance companies' activities on corporate information disclosure. On the other hand, Liang and Renneboog (2020) proposed that sovereign wealth funds (SWFs) would enhance companies' CSR performance because they are possibly considering stakeholders' opinions in their investment goals rather than only focusing on financial profits.

In conclusion, the number of studies exploring the impacts of institutional investors' activities on portfolio companies' CSR performance has increased only recently (Dyck et al., 2019), although scholars widely accept that institutional investors are willing and capable of changing corporations' decision-making. However, extant studies are more willing to discuss institutional investors in general rather than categorising them more specifically. More importantly, few studies focus on venture capital's impacts on portfolio companies' CSR performance (Cheng et al., 2022), and they (e.g., Alakent et al., 2020) still lack in-depth mechanism-relevant discussions.

2.2 Hypothesis Development

2.2.1 Venture Capital and CSR Performance

China has a booming but unexplored capital market (Tan et al., 2013), and the venture capital investments that occur are more speculative and driven by short-term profits. For instance, scholars (e.g., Tan et al., 2008) have indicated that local investment organisations prefer to invest in the growth or pre-IPO stage. Hence, the current venture capital conducted by Chinese corporate-backed incubators overemphasises short-term financial performance, which forces portfolio companies to enhance short-term performance at the expense of long-term developments (White et al., 2005). Similarly, Jia and Li (2011) found that China's venture capital is eager for quick success and profits, such as pushing portfolio companies to be listed in a rush, which negatively affects portfolio companies' long-term developments. According to neoclassical economics, CSR would increase production costs and distract firm managers (Alakent et al., 2020). Therefore, companies may put themselves in an unfavourable competitive position (Brammer and Millington, 2008) and negatively influence corporate values (Bebchuk and Tallarita, 2020). Furthermore, Nejati et al. (2017) noted that social responsibility cannot immediately generate returns, which does not fit the expectations of venture capital. Consequently, venture capital would intervene or restrict the frequencies and degree of portfolio companies' CSR-relevant events.

Managers' CSR decision-making is based on their personal values, which creates a strategic role for undertaking CSR-relevant activities (Nejati et al., 2017). However, venture capital is characterised by high risks, such as agency problems (Tan et al., 2008). For instance, an investment organisation's CEOs and independent directors are more willing to donate or invest in their affiliated institutions (e.g., their universities), which reflects their personal interests rather than the firm's selections for donations or investments (Cai et al., 2021). Research (e.g., Alakent et al., 2020) has found that top managers' self-serving activities (Hou and Li, 2019) damage the profits of the firm's stakeholders. However, the senior management of investment organisations is less motivated by protecting stakeholders' rights as it is in directing the firm, while ordinary stakeholders are less powerful (Bebchuk and Tallarita, 2020). Hence, to maximise their own interests, top managers of investment organisations may sacrifice ordinary

stakeholders' interests to invest their funds, which reduces both their portfolio companies' and their own CSR performance.

As an innovative approach to financing and risk-sharing, venture capital satisfies SMEs' needs for innovation funding, which involves investment organisations in portfolio companies' operations management (Li and Song, 2017). Consequently, this leads to access to monitoring portfolio companies' resource consumption (e.g., CSR-relevant practices). Based on imprinting effects (Alakent et al., 2020), powerful investment organisations' value and management approaches can have an imprint on portfolio companies' development from the early stage by directing portfolio companies' operations. More importantly, the imprinting effects brought by investment organisations often align with their interests, which affect portfolio companies' future CSR practices (Alakent et al., 2020) through several approaches. For instance, the performance-driven culture and norms of investment organisations during the founding years would persist even after the contract with portfolio companies has expired. Additionally, the legitimacy concerns and institutionalisation of the operating logic make the portfolio companies maintain the operating modes of the investment organisations.

To conclude, venture capital cannot sufficiently guarantee stakeholders' interests, which is contrary to CSR perceptions. Therefore, potential investees may be cautious about upcoming venture capital protecting their stakeholders, and we derive the following hypothesis:

H1: Venture capital restricts the enhancement of CSR performance.

2.2.2 Venture Capital, Internal Control, and CSR Performance

Principal-agent relationships connect investment organisations and portfolio companies. As agents, portfolio companies operate and manage the capital invested and create value. However, principal-agent relationships characterised by high information asymmetries generate adverse selections and moral hazards (Hou and Li, 2019), reflecting the agency problem (Bellavitis et al., 2019). Li and Yan (2019) indicated that internal control is significant for maintaining long-term partnerships and exchanges since it balances the relationships between investment organisations and portfolio companies (e.g., by protecting stakeholders' rights). Similarly, Li et al. (2011) noted that internal control mitigates conflicts between shareholders and the firm's managers and guarantees the transparency of information and commitments from the board of directors. Furthermore, from the agency perspective, Brammer and Millington (2008) emphasised that CSR practices confer significant managerial benefits rather than financial benefits. In this case, investment organisations are eager to build a high-quality internal control system to safely inject money and depart after receiving high returns.

Investment organisations are often proactively involved in building the portfolio companies' internal control system through different approaches, such as filling board seats, changing CEOs, or monitoring portfolio companies' managers (Li and Song, 2017). Jia (2019) argued that venture capital effectively improves a company's internal control quality by monitoring its operations and reducing the degree of information asymmetry between internal and external investors (Bernstein et al., 2016). Moreover, venture capital improves the listed company's resource allocation efficiency in different aspects, such as the efficiency of investments, financing, and R&D inputs. Additionally, portfolio companies that accept venture capital are more likely to attract opportunities for syndication when their investors have better reputations (Dimov and Milanov, 2010), strengthening internal control monitoring.

Although government regulations are crucial for companies to adopt CSR, the applications of CSR are still determined by a firm's governance, which should be based on the developments

of the internal control system. After all, a well-structured internal control system creates a sound environment for companies to adopt CSR, such as meeting stakeholders' expectations (Liu, 2018). Moreover, one of the components of the internal control framework is the control environment, which avoids incidents of omitting CSR (Liu, 2018). Krueger et al. (2020) found that institutional investors' ESG preferences and their impacts on portfolio companies' performance are significantly impacted by internal control (e.g., by being the operators behind or proxy voting).

To summarise, research has found that high-quality internal control moderates the relationships between venture capital and CSR performance (weak); thus, we postulate the following hypothesis:

H2: Venture capital strengthens internal control quality to reduce CSR activities at portfolio companies.

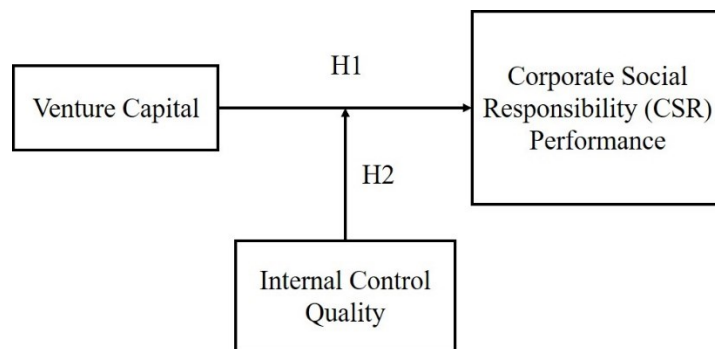


Figure 1 Hypotheses

3. Data and Research Design

3.1 Data Sources and Sample Construction

3.1.1 Data Sources

Our sample includes all A-share listed firms publicly traded on either the Shanghai Stock Exchange or the Shenzhen Stock Exchange between 2010 and 2019. Our sample consists of venture capital data from the CV Source database, CSR data from Hexun.com, and the internal control index from the Dibo database. The railway data from the Chinese Research Data Services (CNRDS) and financial and accounting data from the China Stock Market & Accounting Research Database (CSMAR). To ensure the reliability of the empirical results, we have removed financial firms, specially treated stocks (ST, * ST or PT), and data with missing key values. All continuous variables are winsorised at the 1st and 99th percentiles of their respective distribution to remove the influence of outliers. Our final sample comprises 11,815 firm-year observations with 2,460 listed firms.

3.1.2 Propensity Score Matching (PSM)

Venture capital does not randomly choose firms for capital injection but is determined by firms' characteristics. Thus, following the research of Meng et al. (2019), we adopted the PSM method to ensure no systematic difference between the treatment and control groups. Given that the sample size of the experimental group is not very large, we applied the PSM technique with the 'one-to-one, with replacement and allowing juxtaposition' strategy to retain more samples to make the results more credible.

Table 1 Propensity Score Matching Results

Variable	Unmatched			Matched		
	Treated	Control	%bias	Treated	Control	%bias
<i>Growth</i>	-0.330	0.222	-11.3	-0.330	-0.206	-2.5
<i>R&D</i>	5.133	4.722	9.1	5.133	5.046	1.9
<i>Roa</i>	0.085	0.081	7.0	0.085	0.086	-1.2
<i>Lev</i>	0.359	0.354	2.7	0.359	0.348	6.1
<i>Shrcr</i>	62.425	62.140	2.1	62.425	61.629	5.9
<i>Size</i>	3.770	3.490	24.7	3.770	3.759	1.0

First, we used the LOGIT model to estimate the propensity score and then matched the treatment group with the control group based on various firm characteristics (*R&D*, *growth*, *roa*, *lev*, *size*, *shrcr*). Finally, we identified the average treatment effect on the treated (ATT), in which the 'treatment' represents *VC*. After matching, we finally obtained 851 firm-year observations of 677 firms consisting of 430 firm-year samples of 355 firms in the treatment group and 421 firm-year samples of 380 firms in the control group. After matching, a balancing test was carried out to examine whether the mean of each covariate significantly differed between the treatment and control groups (the results are presented in Table 1). The standardised deviations (%bias) of all variables after matching were less than 7%, while the standardised deviations (%bias) of variables *growth* and *size* before matching were both greater

than 10%. This result indicates that the sample is well balanced, as the firm characteristics of the control group are not significantly different from those of the treatment group in all panels.

3.2 Key Variables

Following Cheng et al. (2020), we adopt the CSR rating data from Hexun.com to evaluate the CSR performance regarded as the dependent variable. *CSR* represents the aggregate score for all subcomponents, with higher values corresponding to a better quality of social conduct. Shareholders' responsibility score (*SR*), employees' responsibility score (*ER*), suppliers', customers' and consumers' responsibility score (*SCCR*), environmental responsibility score (*EVR*), and government responsibility score (*GR*) are proxies for the five subcomponents. The independent variable, *VC*, is a dummy variable that takes a value of 1 to indicate that the firm is invested in by venture capital and 0 otherwise.

Table 2 Definition of Key Variables

Dependent variables	Definitions
<i>CSR</i>	The aggregate CSR score
<i>SR</i>	Responsibility towards shareholder score
<i>ER</i>	Responsibility towards employee score
<i>SCCR</i>	Responsibility towards supplier, consumer and customer score
<i>EVR</i>	Responsibility towards the environment score
<i>GR</i>	Responsibility towards government score
Independent variable	Definition
<i>VC</i>	A dummy variable that takes 1 to indicate the firm is invested in by venture capital; otherwise, 0
Control variables	Definitions
<i>R&D</i>	Research and development (R&D) expenditures are scaled by total assets.
<i>Growth</i>	Net profit in the current period is scaled by Net profit in the previous period.
<i>Roa</i>	Earnings before interests and taxes (EBIT) are scaled by the book value of total assets.
<i>Lev</i>	Book value of total liabilities scaled by the book value of total assets
<i>Size</i>	Natural logarithm of the book value of total assets
<i>Shrcr</i>	The ownership concentration of the Top Ten shareholders (measured as the Herfindahl index).

We have eight types of control variables affecting CSR performance. The literature supports that CSR can help improve the financial performance of firms. Financial performance is measured by three commonly used indicators: return on assets (*roa*), leverage ratio (*lev*) and net profit growth rate (*growth*). We adopted ownership concentration (*shrcr*) to measure the company's governance and the protection of shareholders' rights, which was positive for firms participating in corporate CSR activities (Nofsinger et al., 2019). McGuinness et al. (2017) found that an enterprise's size is related to CSR performance. Yang and Xie (2019) pointed out that the more inputs in corporate *R&D there are*, the better the CSR performance. In addition, we controlled for the industry and city effects using industry and city dummies. The variable construction is shown in Table 2.

3.3 Model Specification

To investigate the relationship between venture capital and CSR performance, we specify the following regression model with fixed effects following Dyck et al. (2019):

$$CSR_{it} = \alpha + \beta_1 VC_{it-1} + \sum \beta_k control_{it-1} + city_i + industry_i + \varepsilon_{it-1} \quad (1)$$

where CSR performance (*CSR*, *SR*, *ER*, *SCCR*, *EVR*, *GR*) is a dependent variable; *VC* is an independent variable; and control is a vector of variables that may potentially affect CSR performance. Specifically, the variables used to control for the effects of firm-level characteristics are R&D investment ratio (*R&D*), net profit growth rate (*Growth*), return on assets (*Roa*), leverage ratio (*Lev*), firm size (*Size*) and ownership concentration (*Shrcr*). City and industry are city and industry dummy variables to control for unobserved heterogeneity across cities and industries, respectively. To alleviate the possible serial correlation problem, we cluster standard errors at the city level, given that the role of venture capital is time-lagged and all right-hand-side variables are lagged by one year. We focus on regression coefficients β_1 . If β_1 is significantly less than 0, Hypothesis 1 is supported.

4. Empirical Findings and Analysis

4.1 Summary Statistics

Table 3 shows the summary statistics. It shows that the overall CSR performance ratings vary considerably, ranging from -2.900 to 73.69, with a mean value of 23.38 and a standard deviation of 13.01. This indicates that the CSR performances among the firms are quite different. The five dimensions of CSR, *SR*, *ER*, *SCCR*, *EVR* and *GR*, have similar characteristics. In addition, the mean value for *VC* is 0.510, which means that almost half of the firms have venture capital during the sample period. The distributions of other control variables are all within a reasonable range and will not be repeated here.

Table 3 Summary Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum Value
<i>CSR</i>	858	23.38	13.01	-2.900	73.69
<i>SR</i>	858	15.17	6.270	-10.69	26.91
<i>ER</i>	858	2.280	2.600	0	15
<i>SCCR</i>	858	0.890	3.520	0	20
<i>EVR</i>	858	0.880	3.700	0	23
<i>GR</i>	858	4.160	3.510	-15	20.73
<i>VC</i>	858	0.510	0.500	0	1
<i>Lev</i>	858	0.350	0.190	0.0400	0.830
<i>Growth</i>	858	-0.260	4.650	-29.07	24.06
<i>Shrcr</i>	858	62.05	13.63	25.74	90.31
<i>Roa</i>	858	0.0900	0.0600	-0.160	0.280
<i>Size</i>	858	3.760	1.180	1.730	7.600

R&D 858 5.110 4.830 0.0400 25.30

Notes: This table reports summary statistics of all variables (variable definitions are presented in Table 2). All variables are winsorised at the 1st and 99th percentiles.

Table 4 presents the differences in the CSR performance of listed firms with and without venture capital support. The results of the univariate analysis showed that firms without venture capital support not only had higher mean social responsibility scores in all dimensions but also had significant differences in the aggregate score (*CSR*) and majority subscores (*ER*, *SCCR*, and *EVR*). This suggests that firms with venture capital experience a reduction in CSR performance relative to those without venture capital, which provides preliminary support for Hypothesis 1.

Table 4 Results of Univariate Analysis

Variable	(1) VC=0		(2) VC=1		(3) DIFFERENCE = (1)-(2)	
	Observations	Mean	Observations	Mean	Difference Value	P Value
<i>CSR</i>	424	24.45	434	22.33	2.120	0.02**
<i>SR</i>	424	15.26	434	15.07	0.190	0.660
<i>ER</i>	424	2.450	434	2.110	0.330	0.06*
<i>SCCR</i>	424	1.240	434	0.550	0.690	0.00***
<i>EVR</i>	424	1.200	434	0.560	0.640	0.01**
<i>GR</i>	424	4.300	434	4.010	0.290	0.230

Notes: This table reports the results of the univariate analysis. *, **, *** are significant at the 10%, 5%, and 1% levels, respectively. The rest of the table is the same.

4.2 Empirical Results and Analysis

4.2.1 Main Regression Results and Robustness Test

To explore the impact of venture capital on CSR performance, we estimated Equation (1) and reported the results in Table 5. We present the estimation results both with and without the control variables to mitigate the concern that some of these control variables may be endogenous. In Models 1 and 2, the coefficient estimates on VC are negative and statistically significant, which implies a strong effect linking venture capital with the firm’s CSR performance, supporting Hypothesis 1. This indicates that venture capital has a strong profit-seeking motivation and little desire to practice socially responsible investment.

Table 5 The Impact of Venture Capital on CSR Performance

	Model 1	Model 2	Model 3	Model 4
	<i>CSR</i>	<i>CSR</i>	<i>CSR</i>	<i>CSR</i>
<i>VC</i>	-3.123*** (0.055)	-2.894*** (0.878)	-2.894*** (0.843)	-1.164*** (0.176)
<i>Lev</i>		-9.919 (6.060)	-9.919* (5.821)	-11.274*** (0.739)
<i>Growth</i>		-0.099 (0.168)	-0.099 (0.161)	0.006 (0.028)
<i>Shrcr</i>		0.099*** (0.036)	0.099*** (0.035)	0.055*** (0.008)
<i>Roa</i>		63.010*** (9.809)	63.010*** (9.422)	63.475*** (3.052)
<i>Size</i>		1.559** (0.715)	1.559** (0.687)	1.514*** (0.139)
<i>R&D</i>		-0.090 (0.202)	-0.090 (0.194)	-0.112*** (0.025)
<i>_cons</i>			7.892 (5.767)	7.251*** (0.875)
<i>N</i>	782	782	858	855
<i>city</i>	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes

Notes: This table reports the results of the impact of venture capital on firms' CSR performance. The dependent variable is overall CSR performance (*CSR*); the independent variable is venture capital (*VC*); and control is a vector of variables that may have potential effects on CSR performance (*lev*, *growth*, *shrcr*, *roa*, *size*, *R&D*, respectively). Variable definitions can be found in Table 2. All regressions control for industry and city fixed effects. All variables are winsorised at the 1st and 99th percentiles. All right-hand-side variables are lagged by one year. Standard errors, clustered at the city level, are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

We perform several robustness tests to examine the validity of our main finding by employing a set of alternative research approaches. The dependent variable, *CSR*, is within a certain range. Therefore, we use censored regression (Tobit) to maximise the efficiency of our parameter estimation. The results are shown in Model 3 of Table 6. Our sample, an unbalanced panel dataset, is unevenly distributed across years. We thus introduce the weighted least squares (WLS) as an alternative robustness check, presented in Model 4 of Table 6. The *VC* coefficient is negative and highly significant in both models, suggesting that firms with *VC* exhibit lower CSR scores, further confirming Hypothesis 1.

Table 6 The Impacts of Venture Capital on the Subdimensions of CSR

	Model 1	Model 2	Model 3	Model 4	Model 5
	<i>SR</i>	<i>ER</i>	<i>SCCR</i>	<i>EVR</i>	<i>GR</i>
<i>VC</i>	0.078 (0.420)	-0.511*** (0.178)	-0.965*** (0.268)	-0.948*** (0.286)	-0.575** (0.246)
<i>Lev</i>	-4.610 (3.075)	-0.695 (0.963)	-1.021 (1.013)	-0.139 (1.289)	-3.174 (1.985)
<i>Growth</i>	-0.024 (0.102)	-0.037 (0.033)	-0.041* (0.023)	-0.042 (0.026)	0.037 (0.079)
<i>Shrcr</i>	0.041* (0.024)	0.017*** (0.006)	0.010 (0.007)	0.014 (0.008)	0.020 (0.012)
<i>Roa</i>	50.917*** (4.452)	3.685* (1.954)	2.040 (1.722)	2.311 (2.165)	4.944 (3.818)
<i>Size</i>	-0.110 (0.347)	0.478*** (0.141)	0.440*** (0.160)	0.438** (0.174)	0.337* (0.196)
<i>R&D</i>	-0.037 (0.080)	0.080 (0.049)	0.046 (0.047)	0.018 (0.042)	-0.194*** (0.070)
N	782	782	782	782	782
<i>city</i>	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results of OLS regressions of the impact of venture capital on firms' CSR performance. The dependent variables are components of CSR performance (*SR*, *ER*, *SCCR*, *EVR*, *GR*); the independent variable is venture capital (*VC*); control is a vector of variables that may have potential effects on CSR performance (*lev*, *growth*, *shrcr*, *roa*, *size*, *R&D*, respectively). Variable definitions can be found in Table 2. All regressions control for industry and city fixed effects. All variables are winsorised at the 1st and 99th percentiles. All right-hand-side variables are lagged by one year. Standard errors, clustered at the city level, are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Then, we adopt the CSR subscore as the dependent variable regression in Equation (1) to further explore the impact of venture capital on CSR performance. The *VC* coefficients in Models 2 to 5 are all significantly negative, indicating that venture capital has played an important role in reducing *ER*, *SCCR*, *EVR* and *GR*. However, the *VC* coefficient in Model 1 is positive and not significant, indicating that venture capital is positively related to *SR*. The results suggest that venture capital may pressure the portfolio firm to maximise the interests of shareholders, reducing the firm's enthusiasm for participating in social affairs and sacrificing the interests of other stakeholders, the environment and society. Hypothesis 1 is empirically supported.

4.2.2 Endogeneity Tests

Wang and Chen (2017) found that institutional investors in China are more inclined to invest in firms that perform better in the CSR dimension, indicating that there may be a reverse causality problem. That is, venture capital may affect the social responsibility performance of portfolio companies; conversely, firms with good CSR may also be more likely to receive venture capital. On the other hand, not all firms disclose their CSR information or sustainability

reports, which may potentially introduce sample selection bias because hexun.com evaluates the CSR performance of listed firms based on the information in CSR reports and annual reports. To alleviate such concerns, we employ Heckman's two-stage procedure and a multiperiod DID model to check whether our result is robust. Considering that the industry and city fixed-effects approach has been used to regress unobservable firm characteristics, we no longer consider the problem of missing variables.

The Global Reporting Initiative (GRI) guideline is a common global framework for sustainability reporting. Therefore, Hexun's CSR data may differ depending on whether the firm-issued CSR report complies with the GRI standards. To alleviate the sample selection bias, we carry out Heckman's two-stage procedure. We employ the probit model in the first stage, as shown in Equation (2), to obtain the inverse Mills ratio (IMR). In the second stage, we insert IMR in the firm and city fixed-effect model adjusted by the city cluster as shown in Equation (3):

$$VC_{it-1} = \alpha + \beta_1 * GRI_{it-1} + \sum \beta_k control_{it-1} + city_i + industry_i + \varepsilon_{it-1} \quad (2)$$

$$CSR_{it} = \alpha + \beta_1 VC_{it-1} + \sum \beta_k control_{it-1} + \alpha_1 IMR + city_i + industry_i + \varepsilon_{it-1} \quad (3)$$

where GRI is an indicator variable equal to 1 if a firm discloses a CSR report adopting the GRI guidelines and 0 otherwise. According to prior research, firms that followed the GRI standards had higher social responsibility performance (Li et al., 2021), but the GRI guidelines have nothing to do with venture capital's investment choice. Control is the same set of control variables included in Equation (1) that are known to have a potential impact on CSR. All right-hand-side variables are lagged by one year.

Table 7 Heckman's Two-stage Estimator

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>CSR</i>	<i>SR</i>	<i>ER</i>	<i>SCCR</i>	<i>EVR</i>	<i>GR</i>
<i>VC</i>	-2.933*** (0.872)	0.052 (0.422)	-0.519*** (0.178)	-0.972*** (0.268)	-0.951*** (0.287)	-0.570** (0.244)
<i>Lev</i>	18.569 (18.721)	13.491 (8.416)	4.651 (4.558)	2.469 (4.048)	0.605 (5.275)	-2.268 (8.465)
<i>Growth</i>	0.547 (0.534)	0.389 (0.281)	0.085 (0.110)	0.039 (0.094)	-0.025 (0.118)	0.052 (0.233)
<i>Shrcr</i>	0.021 (0.068)	-0.008 (0.038)	0.003 (0.013)	0.000 (0.014)	0.012 (0.017)	0.018 (0.025)
<i>Roa</i>	42.917** (18.350)	37.443*** (8.848)	-0.197 (4.493)	-0.465 (3.949)	1.809 (5.000)	5.144 (7.409)
<i>Size</i>	-8.229 (7.257)	-6.348* (3.599)	-1.362 (1.502)	-0.762 (1.398)	0.183 (1.773)	0.053 (3.011)
<i>R&D</i>	-1.133 (0.855)	-0.703* (0.415)	-0.116 (0.173)	-0.082 (0.154)	-0.009 (0.196)	-0.225 (0.322)
<i>IMR</i>	-64.548 (46.838)	-41.100* (23.157)	-12.166 (9.901)	-7.951 (9.174)	-1.697 (11.441)	-1.853 (20.227)
<i>N</i>	776	776	776	776	776	749
<i>city</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table presents the results based on Heckman's two-step regressions. In the first stage, a probit model is adopted to estimate the inverse Mills ratio (IMR), where a dummy variable GRI is set to 1 if a firm discloses a CSR report adopting the GRI guidelines and 0 otherwise. In the second stage, IMR is included as an additional independent variable in Equation (3). The dependent variable is CSR performance (*CSR*, *SR*, *ER*, *SCCR*, *EVR*, *GR*); the independent variable is *VC*; and control is a vector of variables that may have potential effects on CSR performance (*lev*, *growth*, *shrcr*, *roa*, *size*, *R&D*, respectively). Variable definitions can be found in Table 2. All variables are winsorised at the 1st and 99th percentiles. All right-hand-side variables are lagged by one year. Standard errors, clustered at the city level, are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The result in Model 1 of Table 7 is qualitatively consistent with that in Table 5. The results in Models 2 to 6 of Table 7 are also similar to those in Table 6. The evidence indicates that venture capital has a negative effect on CSR, and the relationship is causal.

The introduction of direct high-speed rail service can alleviate information asymmetry between venture capital and their portfolio companies (Bernstein et al., 2016; Yang et al., 2019). Although the decision of addresses for firms and venture capital may be related to the local tax policy, industrial policy and legal environment (Zhao et al., 2018), site selection, construction progress and route planning for high-speed rails have nothing to do with listed firms and venture capital. They are determined by the country based on economic development needs. Therefore, we use the introduction of direct high-speed rail service between venture capital and portfolio companies as shocks to venture capital monitoring intensity and establish a multiperiod difference-in-difference model to study the causal relationship between venture capital and CSR performance. The specific model is as follows:

$$CSR_{it} = \alpha + \beta_1 VC_{it-1} * HSR_{it-1} + \sum \beta_k control_{it-1} + city_i + industry_i + \varepsilon_{it-1} \quad (4)$$

where HSR is defined as a dummy variable equal to 1 if there is direct HSR service between the venture capital and the portfolio firm and 0 otherwise. *HSR* equals 0 for firms without venture capital. The coefficient estimate of *VC*HSR* shows the effect of venture capital on CSR performance after the introduction of direct high-speed rail.

Table 8 High-Speed Rail Service as A Shock to *VC* Monitoring

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>CSR</i>	<i>SR</i>	<i>ER</i>	<i>SCCR</i>	<i>EVR</i>	<i>GR</i>
<i>VC*HSR</i>	-2.506*** (0.958)	0.082 (0.529)	-0.439** (0.180)	-0.892*** (0.254)	-0.852*** (0.269)	-0.428 (0.263)
<i>Lev</i>	-9.943 (6.078)	-4.610 (3.075)	-0.700 (0.962)	-1.029 (1.010)	-0.147 (1.285)	-3.178 (1.988)
<i>Growth</i>	-0.101 (0.168)	-0.024 (0.102)	-0.038 (0.033)	-0.041* (0.023)	-0.043 (0.026)	0.037 (0.079)
<i>Shrcr</i>	0.097*** (0.037)	0.041* (0.024)	0.017*** (0.006)	0.009 (0.007)	0.013 (0.008)	0.020 (0.012)
<i>Roa</i>	63.199*** (9.794)	50.912*** (4.464)	3.719* (1.960)	2.101 (1.725)	2.372 (2.169)	4.985 (3.817)
<i>Size</i>	1.571** (0.715)	-0.110 (0.346)	0.481*** (0.141)	0.444*** (0.159)	0.441** (0.173)	0.340* (0.196)
<i>R&D</i>	-0.091 (0.203)	-0.037 (0.080)	0.080 (0.049)	0.046 (0.047)	0.018 (0.042)	-0.194*** (0.070)
<i>N</i>	858	782	782	782	782	782
<i>city</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table presents the difference-in-difference analysis of the exogenous shock from *HSR*. *HSR* is defined as a dummy variable equal to 1 if there is direct HSR service between the venture capital and the portfolio firm and 0 otherwise. *HSR* equals 0 for firms without venture capital. The coefficient estimate of *VC*HSR* shows the effect of venture capital on CSR performance after the introduction of direct high-speed rail service. The dependent variable is CSR performance (*CSR*, *SR*, *ER*, *SCCR*, *EVR*, *GR*); and *control* is a vector of variables that may potentially affect CSR performance (*lev*, *growth*, *shrcr*, *roa*, *size*, *R&D*, respectively). Variable definitions can be found in Table 2. All regressions control for industry and city fixed effects. All variables are winsorised at the 1st and 99th percentiles. All right-hand-side variables are lagged by one year. Standard errors, clustered at the city level, are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

All *VC* coefficients in Table 8 are significantly negative except for the *SR*. The results of the DID analysis presented in Table 8 are consistent with the main regression findings reported in Tables 5 and 6, suggesting *VC* monitoring leads to poor CSR performance, and the effect is likely to be causal.

5. Further Analysis

5.1 The Mechanisms of Venture Capital Used to Push for Poor CSR Performance

The interests of many stakeholders in a firm are not always aligned, but internal controls could balance relationships between different groups (Allen et al., 2015). Perfect internal control helps firms to fulfil their social responsibilities. Thus, we empirically examined whether venture capital utilises internal control quality to push for CSR performance. Following Chang et al. (2019), we generate a dummy variable, IC, to measure the internal control quality. High (Low) Quality Internal Control is the internal control index above (below) the median. We predict that internal control quality enhances the negative relationship between venture capital and CSR performance.

Table 9 The Mechanisms Venture Capital Uses to Push for CSR Changes

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>CSR</i>	<i>SR</i>	<i>ER</i>	<i>SCCR</i>	<i>EVR</i>	<i>GR</i>
Panel A: High-Quality Internal Control						
<i>VC</i>	-3.026 ** (1.496)	0.504 (0.409)	-0.766 ** (0.295)	-1.384 *** (0.412)	-1.048 ** (0.400)	-0.365 (0.507)
N	373	373	373	373	373	373
<i>control</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>city</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Low-Quality Internal Control						
<i>VC</i>	-0.996 (2.309)	0.640 (1.213)	-0.078 (0.408)	-0.187 (0.499)	-0.180 (0.516)	-1.125 *** (0.380)
N	372	372	372	372	372	372
<i>control</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>city</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the mechanisms venture capital uses to push for poor CSR performance. The dependent variable is CSR performance (*CSR*, *SR*, *ER*, *SCCR*, *EVR*, *GR*); the independent variable is venture capital (*VC*); and *control* is a vector of variables that may have potential effects on CSR performance (*lev*, *growth*, *shrcr*, *roa*, *size*, *R&D*, respectively). High (Low) Quality Internal Control is the internal control index above (below) the median. Variable definitions can be found in Table 2. Due to space limitations, this table does not display the control variables. All regressions control for industry and city fixed effects. All variables are winsorised at the 1st and 99th percentiles. All right-hand-side variables are lagged by one year. Standard errors, clustered at the city level, are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The results are displayed in Table 9. In Panel A, most coefficients of *VC* are significantly negative except when the dependent variable is *SR*, while those in Panel B are not statistically significant, and the corresponding magnitude is much smaller. We find that firms mainly drive the negative coefficients for venture capital with high-quality internal control in Panel A. Our evidence supports that internal control quality aggravates the impact of venture capital on CSR performance at portfolio companies, confirming Hypothesis 2.

5.2 The Incremental Effect of CSR Driven by the Presence of Venture Capital

To empirically investigate whether firms with venture capital can increase firm innovation by reducing CSR performance, we specifically focus on the interplay between venture capital and CSR performance with the following specification:

$$innovation_{it} = \alpha + \alpha_1 VC_{it-1} + \alpha_2 CSR_{it} + \alpha_3 VC_{it-1} * CSR_{it} + \sum \alpha_k control_{it-1} + \varepsilon_{it-1} \quad (5)$$

where innovation stands for firm innovation, measured as the number of patent applications. *CSR*, *SR*, *ER*, *SCCR*, *EVR*, and *GR* are proxies for CSR performance. The incremental effect of CSR performance through the presence of venture capital on firm innovation is captured by the interaction term between *VC* and CSR performance, which is our main interest. We expect this effect to be negative. That is, a decline in CSR driven by the presence of venture capital may have an incremental effect on firm innovation.

Table 10 The Incremental Effect of CSR Performance on Firm Innovation

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>innovation</i>	<i>innovation</i>	<i>innovation</i>	<i>innovation</i>	<i>innovation</i>	<i>innovation</i>
<i>CSR</i>	0.016*** (0.006)					
<i>VC</i>	0.579** (0.284)	0.255 (0.417)	0.226 (0.175)	0.148 (0.149)	0.147 (0.147)	0.344 (0.292)
<i>VC*CSR</i>	-0.021** (0.010)					
<i>SR</i>		0.034 (0.021)				
<i>VC*SR</i>		-0.014 (0.026)				
<i>ER</i>			0.066** (0.030)			
<i>VC*ER</i>			-0.063 (0.043)			
<i>SCCR</i>				0.045** (0.019)		
<i>VC*SCCR</i>				-0.067** (0.031)		
<i>EVR</i>					0.047** (0.019)	
<i>VC*EVR</i>					-0.064** (0.028)	

<i>GR</i>						0.027 (0.031)
<i>VC*GR</i>						-0.077 (0.059)
<i>_cons</i>	1.519** (0.700)	1.576** (0.712)	1.804** (0.698)	1.863*** (0.711)	1.866*** (0.709)	1.963*** (0.732)
N	457	457	457	457	457	457
<i>control</i>	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the incremental effect of CSR performance through the presence of venture capital on firm innovation. The interaction term between *VC* and CSR performance is our main interest. The dependent variable is innovation performance (innovation), and the independent variable is *VC* and CSR performance (*CSR*, *SR*, *ER*, *SCCR*, *EVR*, *GR*); and control is a vector of variables that may have potential effects on CSR performance (*lev*, *growth*, *shrcr*, *roa*, *size*, *R&D*, respectively). Variable definitions can be found in Table 2. All variables are winsorised at the 1st and 99th percentiles. Due to space limitations, this table does not display the control variables. All right-hand-side variables are lagged by one year. Standard errors, clustered at the city level, are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The results of Model 1 in Table 10 indicate that the *VC*CSR* coefficient is negative and, importantly, is statistically significant; in Models 2 to 6, the interplay coefficients between each sub-CSR performance and venture capital are negative but differ in significance. This implies that, on average, firms with venture capital have better CSR performance than firms without venture capital, consequently driving firm innovation lower. Interestingly, all CSR performance coefficients are positive, and most of them are significant, indicating that CSR performance enhances firm innovation. The *VC* coefficients are all significantly positive, which means that venture capital is also willing to promote firm innovation. This reflects that the reduced CSR performance driven by venture capital is most likely because traditional venture capital misunderstands social SRI.

5.3 Subsample Analysis based on Ultimate Control

Firms with different ultimate control rights have different social resources, and venture capital may also have different impacts. To test whether our results differ because of different ultimate control rights, we partition our sample based on whether a firm is state-owned and then rerun Equation (1), and the results are reported in Table 11. We define a state-owned firm as a firm whose ultimate controlling owner is the government.

Table 11 *VC* and CSR Performance: Subsample Analysis based on Ultimate Control

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>CSR</i>	<i>SR</i>	<i>ER</i>	<i>SCCR</i>	<i>EVR</i>	<i>GR</i>
Panel A: State-owned Firm						
<i>VC</i>	-5.855 (3.991)	0.369 (1.877)	-1.232* (0.687)	-1.388 (1.151)	-1.739 (1.614)	-1.865* (0.946)
N	131	131	131	131	131	131
<i>control</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>city</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Private Firm						
<i>VC</i>	-2.404** (1.128)	-0.238 (0.662)	-0.399*** (0.150)	-0.865*** (0.206)	-0.939*** (0.277)	0.036 (0.297)
N	615	615	615	615	615	615
<i>control</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>city</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results of venture capital on CSR performance according to subsample analysis for firms with different ultimate controls. The dependent variable is CSR performance (*CSR*, *SR*, *ER*, *SCCR*, *EVR*, and *GR*); the independent variable is *VC*; and control is a vector of variables that may have potential effects on CSR performance (*lev*, *growth*, *shrcr*, *roa*, *size*, *R&D*, respectively). Variable definitions can be found in Table 2. Due to space limitations, this table does not display the control variables. All regressions control for industry and city fixed effects. All variables are winsorised at the 1st and 99th percentiles. All right-hand-side variables are lagged by one year. Standard errors, clustered at the city level, are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

We find that the negative coefficients for venture capital are mainly driven by private firms in Panel A, which could be explained by the following reasons. First, private firms face stronger financing constraints and have a greater need to obtain external capital, so they are more subject to venture capital. Second, state-owned firms are affected by many government regulations, and the corporate system clearly requires them to perform and disclose CSR.

5.4 Subsample Analysis based on Firm Size

Large-scale firms are more likely to be noticed by analysts, the media and so on, and firm size may have something to do with how venture capital regards CSR activities. We employ the book value of total assets to measure firm size. A large (small) scale firm is a firm whose total assets are above (below) the median. To test this premise, we re-estimate Equation (1), and the results are shown in Table 12.

Table 12 Venture Capital and CSR Performance: Subsample Analysis based on Firm Size

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>CSR</i>	<i>SR</i>	<i>ER</i>	<i>SCCR</i>	<i>EVR</i>	<i>GR</i>
Panel A: large scale firm						
<i>VC</i>	-4.763 *** (1.603)	-0.462 (0.793)	-0.821 *** (0.270)	-1.496 *** (0.402)	-1.720 *** (0.434)	-0.278 (0.521)
N	456	456	456	456	456	456
<i>control</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>city</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Small Scale firm						
<i>VC</i>	-0.207 (1.626)	0.764 (1.056)	-0.150 (0.386)	-0.464 (0.419)	-0.313 (0.348)	-0.184 (0.429)
N	285	285	285	285	285	285
<i>control</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>city</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>industry</i>	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the results of venture capital on CSR performance according to subsample analysis for firms with different sizes. A large (small) scale firm is a firm whose total assets are above (below) the median. The dependent variable is CSR performance (*CSR*, *SR*, *ER*, *SCCR*, *EVR*, *GR*); the independent variable is venture capital (*VC*); and *control* is a vector of variables that may have potential effects on CSR performance (*lev*, *growth*, *shrcr*, *roa*, *size*, *R&D*, respectively). Variable definitions can be found in Table 2. Due to space limitations, this table does not display the control variables. All regressions control for industry and city fixed effects. All variables are winsorised at the 1st and 99th percentiles. All right-hand-side variables are lagged by one year. Standard errors, clustered at the city level, are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

We find that the negative coefficients for *VC* are mainly driven by firms with a large scale in Panel A, which could be explained by the following reasons. Compared with large-scale firms, small-scale firms have less social attention and more extreme information asymmetry, so it is more difficult for them to gain external investors. In addition, small-scale firms' sustainable development relies more on external governance and supervision.

6. Conclusion

In this study, we investigate the impact of venture capital on corporate social responsibility performance. Using data on A-share listed firms in China's nonfinancial sector from 2010 to 2019, we provide reliable evidence that venture capital pushes firms towards poor corporate social responsibility performance, suggesting that most venture capital currently has a strong profit-seeking appeal. In addition, we find that venture capital strengthens internal control quality to reduce CSR activities at portfolio companies. Furthermore, our result reveals that such a negative effect is more pronounced in small-scale and private firms than in large-scale and state-owned firms. Our extended analysis shows that the reduction in corporate social responsibility performance associated with the presence of venture capital results in greater firm innovation. Our finding is robust to several additional approaches, including censored regression and weighted least squares. Importantly, our finding holds after endogeneity concerns are carefully addressed based on alternative research designs, such as the multiperiod DID model and the Heckman two-stage selection analysis.

Our findings also have several policy implications for firms and policy-makers. Our finding suggests that internal control quality strengthens the negative effect of venture capital on corporate social responsibility performance at portfolio companies, especially for small-scale private firms. Therefore, portfolio firms should integrate social responsibility into all aspects of internal control. The government should try to improve the CSR information disclosure system and the socially responsible investment model of venture capital.

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