Political corruption and venture capital investment decisions

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Abstract

Exploiting the local political corruption environment, we reveal that political corruption negatively affects venture capitalists' (VC) investment strategy. Our findings provide evidence that VCs are less involved with entrepreneurial companies when the local corrupt environment deteriorates. Specifically, political corruption is negatively related to VCs' funding amount, the syndicate size, and the investment frequency, suggesting that VCs become more conservative when making investment decisions in a politically corrupt environment. We further document start-ups that are highly dependent on the government spending contract are subject to a larger corruption effect on the VCs' investment. On the contrary, start-ups with longer tracking histories and operating in a state with more rigorous anti-takeover regulations mitigate the impediment effect of corruption on the VCs' investments. Overall, our results support the idea that political corruption causes a risky business investment environment, thereby hampering venture capital investments in financial markets.

Key words: Venture capital, Political corruption, Investment decisions

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1. Introduction

Venture capitalists (VCs) takes an important position in entrepreneurship, technological innovation and economic growth as they function as financial intermediaries that provide financial and management support for start-up companies by combining technological competence with financial skills (Chircop et al. 2020; Gorman and Sahlman 1989; Manigart et al. 2006; Sahlman 1990; Sapienza et al. 1996; Wright and Lockett 2003). With its significant role in reallocating resources, the VC industry has experienced dramatic growth over the past decades. For instance, VC-funded companies occupy 41% of total market capitalization and 62% of public companies' R&D spending in the US in 2020[2].

However, alongside its huge expansions, venture capital investments have been tightly associated with the attribute of high risk. The majority return of VC comes from a small portion of their investment, indicating vast of their input is inconclusive and non-profitable (Chircop et al. 2020). An explanation of the inefficient investment input is the agency issue raising from the information asymmetry between the VC and the entrepreneurial company. VCs may have restricted and insufficient information about the company they have invested in, hence VCs experience difficulties to observe a broad picture and misjudge the growth potential of the company. The difficulty in obtaining complete information places them in a disadvantaged position which increases the complexity of prospecting future performance and more importantly, the investment risk and adverse selection risk (Berger and Udell 1998; Neus and Walz 2005; Hain et al. 2016).

The theory presents the rationale in investors are cautious and they hold back their investments when the risks increase (Bloom et al. 2007). Thus, venture capital faces the issue as the attribute of high-risk of its investment. In practice, VCs have multiple methods to mitigate the risk arising from the information asymmetry, including adopting staged financing (Tian 2011), enhancing geographical

[2] Gornall, W. and Strebulaev, I.A., 2021. The economic impact of venture capital: Evidence from public companies. *Available at SSRN 2681841*.

proximity with start-ups (Hain et al. 2016), and proactively participating in the management of entrepreneurial companies (Baker and Gompers 2003; Krishnan et al. 2011; Kaplan and Schoar 2005), which improve the VCs' investment performance. Further, Kaplan and Schoar (2005) document the attribute of persistence in VC performance, which is different from other asset classes such as mutual funds. Hence, to mitigate the risk, allocate investment sufficiently and consistently produce top-performing investments, VCs manage to develop a set of inspection criteria, which is unique and largely time-invariant (e.g., religious condition, see (Chircop et al. 2020)), to mitigate the investment risk and select the appropriate projects.

In this study, we examine whether political corruption affects VC investment behaviours. We hypothesise that the state-level corrupt environment adversely affects venture capital's investment propensity in financial markets. A corrupted state is likely to be associated with a less developed regulation system and more irregularities in the judicial process, thereby causing uncertainties in running the business in the area For instance, companies located in corrupt areas are more likely to shrink investment in internal monitoring and increase the opacity of financial reports (Stulz 2005). Although operating in the corrupted regions does not necessarily apply to an unethical strategy, it projects a higher tolerance of risky behaviour in local norms (Parsons et al. 2018), which can drive VCs' concerns about compliance with corporate actions. In turn, this further hampers information flow between start-ups and VCs, causing more risks for VCs to make investments. Jha et al. (2020) provide evidence that auditors would charge higher fees when the company is located in a more corrupt region. Thus, the restricted access to financial information and the more expensive and more time-consuming process of gathering data to overcome the information deficits are likely to motivate the venture capital to stay out of the companies operating in corrupt areas.

We collect entrepreneurial companies' and VC firms' information from the VentureXpert database. To measure the political corrupt environment, we follow previous literature (Jha et al. 2020; Butler et al.

2009; Campante and Do 2014; Smith 2016). Specifically, we collect data on the number of political corruption convictions of public officials in each of the states in the US from the US Department of Justice (DOJ). We then scale the conviction count by the population to obtain per capita convictions. A larger value of per capita convictions refers to a higher level of the corrupt environment in the state. We match the headquarter location of each entrepreneurial company with the state-level corruption data.

We find a significant negative association between corruption and VCs' propensity to invest in start-up companies. Specifically, our findings provide evidence that entrepreneurial companies experience a reduction in terms of total VC investment amount, average investment amount across VCs, the number of VCs involved in the investment and the likelihood of VCs to invest. Additionally, we apply the alternative Tobit regression model to ensure the robustness of our main findings considering the left-censoring in our measure of VCs' investment propensity (i.e., entrepreneurial companies do not receive VC investments for the majority time of the sample period).

We face the challenge of identifying the causal effect of corruption. First, we realise that in addition to the firm-level and macro-level controls we have included in the baseline analysis, our study is likely to be subject to omitted variables concerns, as the corruption would be correlated with other unobserved regional variables that can affect the VC investment. In order to eliminate the concern, we follow Smith (2016), to conduct a number of additional tests which include several controls that are likely to affect both corruption and VC firm investment simultaneously. In detail, we include the population of the region, educational attainment, the unemployment rate, the income per capita, and the number of government employees. Our results remain unchanged. Further, we notice that the unobserved and time-varying heterogeneity across regions can affect corruption and venture capital investment at the same time. Hence, we further implement fixed effects analysis to mitigate the concerns caused by the state, time, and industry unobservable variants. The findings remain robust in each measure of the venture capital investment propensity.

Additionally, to ensure our main proxy of the focal independent variable is a reliable proxy for the cross-sectional variation in underlying corruption, we conduct further robustness tests exploiting two alternative measures of political corruption. First, we accommodate the effect of government size by replacing the state-level population with the number of state government employees. Second, We measure the corrupt environment starting from the start-ups' founding year to capture a more specific firm exposure to political corruption. Our results hold that we obtain significantly negative estimates on both of the alternative corruption measures under all of our venture capital investment propensity proxies.

In additional tests, we explore factors that may affect VCs' investment decisions in a corrupt environment. First, inspired by Colak et al. (2017a) who raises the importance of government connection in affecting the company IPO activity, we examine whether entrepreneurial companies with a larger dependence on the government spending contract are subject to a larger negative impact of the regional corruption. VCs likely raise concerns about start-ups that are with a stronger connection with the government, as those companies are more sensitive to illegal transaction activities and are exposed to the negative effect of corruption to a larger degree, hence underpinning more risk into VCs' investment. Then, we explore whether firm age and state regulatory strength mitigate the negative effect of corruption on VCs' investment decisions. Firms with a longer operational history likely transfer more information to the market, thereby reducing information asymmetry issues. Further, we investigate whether the anti-takeover regulation facilitates VCs' investments in a corrupt environment. Our results provide evidence that a higher level of dependence on the government spending contract deteriorates the negative impact of corruption on VCs' investment propensity, while a longer company operating history and more rigorous anti-takeover regulatory environment in the state mitigate VCs' concerns in making investment under political corruption.

Our study contributes to the literature in twofold. First, we contribute to the literature on how political corruption affects investment decision-making. In addition to the studies which focus on

emerging markets (Goloberman and Shapiro 2003; Mauro 1995), we add incremental evidence to the literature that corruption imposes a significant impact on VC financing in a developed economy. Further, by differentiating from previous literature which focuses on studying corruption in the context of macroeconomic and public choice variables, our study adds to a growing literature examining the corruption's effects on the firm and firm policies. Specifically, Fan et al. (2012) explore the relationship between corruption and financial policies across countries. Mironov (2015) reveals firms in corrupt countries can benefit from hiring corrupt managers with political connections. Borisov et al. (2016) and Brown et al. (2021) find that corruption affects company valuation. Our paper adds to this category of literature by showing that regional corruption negatively affects venture capital investment propensity.

Second, our study contributes to the literature examining venture capital investment behaviours. This strand of literature mainly focuses on exploring the characteristics that influence the VCs' investment and outcomes. However, the extant literature relies on the venture capital levels attributes, such as VCs' monitoring intensity, reputation, expertise, and network. There are few studies that pay attention to the local external environment. Although previous studies provide evidence that the local environment can affect VCs' investment decision makings such as religiosity (Hilary and Hui 2009; Shu et al. 2012), there is a lack of evidence on how local political corruption affects the VC's investment decisions. Our study fills the void by documenting that the VC's investment propensity and decision making is also subject to political corruption.

The rest of this study proceeds as follows. Section 2 provides the data and sample selection procedure; section 3 presents the empirical analysis results; section 4 displays our robustness tests; we conduct several additional tests exploring whether company-level attribute affects the impact of corruption on VC investment decisions in section 5. Section 6 summarises the study.

2. Data and variables

2.1 Sample selection and venture capital investments

We obtain the venture capital investment data from the VentureXpert database. The database provides detailed information on each investment, including the date, amount, number of investment rounds, eventual outcome on investees (e.g., IPO, M&A); as well as the portfolio company's information, including industry (e.g., SIC), age of the VC firm at each round of investment, and headquarter location (e.g., zip codes). We exclude investments with essential information missing, such as the investment amount. In addition, we collect other information regarding the characteristics of entrepreneurial firms, including the founding year and headquarters locations. Our VC investment sample covers the years from 1978 to 2019.

To capture the venture capitals' investment propensity from multiple perspectives to ensure the robustness of our results, we employ four different measures of the VCs' investment behaviours. Specifically, for each entrepreneurial company and each year, we measure the VCs' investment propensity by 1) the total investment amount of all the VCs; 2) the average annual investment amount across VCs; 3) the total number of VCs who make the investment; 4) whether any VCs make investments.

2.2 Measure political corruption

We obtain political corruption data at the state level using the annual number of corruption convictions of public officials in each state. The data is retrieved from the report to Congress in the Activities and Operations of Public Integrity Section (PIN) from the Department of Justice of the US. The report contains the most contentious and complex public corruption cases convicted by officials at all levels of government across the US since 1977. The data is directly collected from the government or in partnership with the local U.S. Attorney's office, which is reliable and comparable across different areas and periods. The rationale for using the number of corruption convictions to capture the underlying corrupt activity is the federal judicial system is equally vigilant in identifying and prosecuting corruption cases

across states, thus an area with a higher frequency of corruption convictions indicates more underlying corrupt practices (Ellis et al. 2019; Huang and Yuan 2021). Previous studies use this measure wildly to investigate the effect of corruption in the U.S. on the economy and finance (Huang and Yuan 2021; Jha et al. 2020; Nguyen et al. 2020; Smith 2016).

However, previous literature documents the assumption is more reasonable for a longer period, thus we follow the idea of Ellis et al. (2019) to smooth the corruption measure by using the average value of the trailing sum of corruption convictions starting from the earliest data year (i.e., 1972). We construct our measure of regional corruption by using the average corruption convictions scaled by the state-level population in millions. Further, to capture each entrepreneurial company's exposure to regional corruption, we merge the existing regional corruption data with the headquarters location of the company.

2.3 Control variables

Since many VC-invested start-ups are private firms in our sample, we follow Gompers (1995) to use the financial data of public firms in the start-up industry to measure the average effect of financial performance. Specifically, we utilise Compustat to collect the annual financial data for the start-up industry using a 3-digit SIC code. We control for the mean industry Tobin's Q, market-to-book ratio, sales growth, cash flow, tangible assets ratio, R&D-sale ratio, and R&D-assets ratio. In detail, Tobin's Q is measured as the book value of total assets plus the market value of common equity minus the book value of common equity, scaled by the book value of total assets. The market-to-book is the ratio calculated as the book assets minus common equity plus the market value of equity to book assets. Sales growth is the annual sales growth rate. Cash flow is computed as the operating cash flow scaled by the total assets. The tangible assets ratio is the tangible assets divided by the equity value.R&D-sale and R&D-assets ratio is the proportion of research and development investment over the sale and assets of the company respectively. One potential concern is that some macroeconomic conditions cause changes in VC investment. To address this concern, we include state-level GDP growth to capture macroeconomic

conditions. Our final sample contains 136,224 start-up year observations.

2.4 Descriptive statistics

Table 1 provides descriptive statistics for variables used in our analysis. Panel A shows our VC investment behaviour measures. On average, VCs invest $5.675 million in total per year with $4.920 million per VC annually. 1.17 VCs are deciding to make investments per year. During the sample period, start-ups receive funding from VCs on average half the time (53.2%). In Panel B, the mean start-up age at the year of having at least a VC to invest is 8.91. Tobin's Q and Market-to-book ratio at the industry level suggests that companies receiving VC funding infusion are overvalued in the market. But those companies achieve positive sales growth and operating cash flow. This may imply the effort made by VCs on start-ups. In Table 2, we divided the sample into low and high-corrupt states by the local corrupt environment. A state is defined as a low corrupt area if the corruption measure is below the median value, otherwise, it is a highly corrupt area. We observe that, in total, VCs invest more in start-ups located in low-corrupt states than start-ups in high-corrupt states per year ($6.684 million *vs.* $4.694 million). The annual average investment amount per VC also exhibits a similar trend. Most VCs prefer to make investments in low-corrupt areas and the percentage of years that start-ups receive VC funding is also high in low-corrupt areas. The differences are significant at the 1% level. The univariate evidence suggests that VCs tend to avoid making investments when the level of political corruption is higher where the start-up locates. This is consistent with our hypothesis. Nevertheless, we will further explore this question by adopting multilinear regressions in the following sections.

3. Empirical results

3.1 Political corruption and Venture capital investment propensity

Our first step is to examine how political corruption affects VCs' investment decisions. We utilise a sample of 136,224 start-up company-year observations from 1978 to 2019 to conduct the analysis. Specifically, we estimate the following model:

$$VCs' investment\ decision = \alpha + \beta * Corruption + Controls + Year\ FE + Industry\ FE + \varepsilon$$

Where $Corruption$ is our main variable of interest and is the corruption exposure for a specific corporate measured by state-level corruption convictions scaled by the state population. The $VCs' investment\ decision$ is the main dependent variable, which is comprised of four measures: 1) the total VC investment amount an entrepreneurial firm received in a given year; 2) the average investment amount across VCs an entrepreneurial firm received in a given year; 3) the number of VCs investing in the entrepreneurial firm in a given year; 4) whether an entrepreneurial firm receives VC investment in a given year. The fourth measure is a dummy variable which takes the value of one of the entrepreneurial firm receives VC investment in that year. And for all of our VC investment measures, if there is no single VC invested in a year, we denote it as zero. We take the natural logarithm of one plus these three variables to minimize the impact of skewness on our results. We include a set of industry-level control variables including Tobin's Q, market-to-book ratio, sales growth, cashflow, tangible assets ratio, R&D-sale ratio, R&D-assets ratio and a state-level control variable, the GDP growth. We add $Year\ FE$ and $Industry\ FE$ term, which refers to a set of fixed effects to control for constant that is unrelated to corruption but may bias our results. Specifically, we apply the industry fixed effect to control for the differences in VC investments across the industry and use the time fixed effects to remove the time trend.

Table 3 presents the regression results in examining the association between corruption and venture capital investment. The first three columns of Panel A report the results using OLS regression, and the dependent variables are the total VC investment amount a company receives in a year, the average investment amount across VCs that a company receives in a year, and the number of VCs investing in a company in the year, respectively. Column 4 applies the logit regression model as the dependent variable is the VC investment dummy variable, which takes the value of 1 if there is any venture capital to invest in the entrepreneurial company in the year and 0 otherwise. Focus on Panel A, we find that the coefficient estimates on the regional corruption variable are negative and statistically significant in all the columns,

indicating a greater regional corruption is associated with a greater reduction in the total VC investment, average VC investment, VC participation, and a lower likelihood of a VC investment for an entrepreneurial company. Specifically, in Column 1, with the dependent variable as the total investment amount, the estimate -0.042 shows one standard deviation increase in corruption is associated with a 4.2% reduction in the total VC investment amount an entrepreneurial company can receive. Our results hold in the following columns when we use different measures of the VC investment and different regression models. Further, we notice that entrepreneurial companies do not receive VC investment frequently, and our dependent variable remains a lot of zero values in the dataset. Hence, we apply the Tobit model to ensure the robustness of our results. We exclude the last measure of the VC investment, as the dummy variable is applicable for Tobit regression. We continue to observe the significantly negative estimates regarding the corruption variable, suggesting our results hold using the alternative model.

Regarding the control variables, we find that younger companies are more likely to receive venture capital investment. The estimates on the industry market-to-book and cashflow are significantly positive but since they are very close to zero thus there is no economic significant effect on them. Further, the coefficients on the sales growth and tangible assets ratio are significantly positive, suggesting a higher sales growth and more tangible assets are positively associated with the VC investment propensity.

[Please insert Table 3 here]

Generally, our baseline results suggest that regional corruption has a significant and negative effect on the VCs' propensity to invest in entrepreneurial companies.

3.2 Addressing omitted variable concerns

Despite the industry and state-level control variables we have included in the baseline tests, we realise that our results could be spurious for it may suffer the bias from the omitted variable, which drives the association between corruption and VC investments. Smith (2016) suggests it is likely that corruption penetrates certain regions which do not segment according to the boundaries of districts. Thus, we turn to

address the potential endogeneity concerns by applying for several additional covariates.

Table 4 presents our results of applying for the additional control variables. Specifically, inspired by Smith (2016), we consider the population, the educational attainment (i.e., measured as the proportion of the population with a bachelor's and higher degree), the unemployment rate, the GDP per capita, and the government size as the covariates which could affect both the regional corruption and the venture capital investment simultaneously. We obtain this data from several different sources, including US Bureau of Economic Analysis, the US Census Bureau, US Bureau of Labor Statistics. We employ the natural logarithm of the state population and GDP per capita. Further, the unemployment rate is available at the county level and educational attainment is at the state level. We include all the control variables from our previous analysis, but we do not report them for brevity. Due to the missing value of the additional control variables, our sample size reduces to 122,748 company-year observations.

[Please insert Table 4 here]

Focus on the first three columns of Panel A, when we apply the OLS regression models. Consistent with our previous results, our estimates on the corruption variables are negative and remain statistically significant at the 1% level. In Column 4, the coefficient stays negative and is significant at the 5% level. The inclusion of the covariates slightly reduces the magnitude of the coefficients regarding corruption. The results in Panel A suggest that our baseline findings hold when we include additional control variables which capture the regional characteristics which correlated to both the corruption and the VC investments. Further, in Panel B, consistent with our results in Table 2, we continue to observe significantly negative estimates of corruption when employing the Tobit model.

Additionally, we notice that corruption is likely to be correlated with an unobserved geographic characteristic which can also affect the venture capital investment. Further, because our measure of corruption is based on the judicial district level, and to control for some unobserved and time-varying heterogeneity across states that may affect corruption and the venture capital investment simultaneously

and continue to mitigate the omitted variable concern, we apply for the state fixed effect models follow the method of Huang and Yuan (2021) and Ellis et al. (2019). By including the state fixed effects, which focus on comparing the entrepreneurial companies located within the same state but different judicial regions, it provides us with the identification from multi-district states. Specifically, we exclude the original industry and year fixed effects in our baseline analysis and attempt to include year-industry, state, state-year, and state-year-industry fixed effects in our additional fixed effects analysis. We retain all the control variables in our baseline analysis throughout the additional analysis.

Table 5 displays our results regarding the inclusion of additional sets of fixed effects. The dependent variable is our first measure of VC investment, the total investment amount. Consistent with our findings, we observe significantly negative estimates regarding corruption throughout all the specifications, suggesting our results that entrepreneurial companies receive less venture capital investment when the corruption increases hold under different sets of fixed effects. Specifically, we apply for the industry-state-year fixed effects in Column 4, and the result indicates that when comparing firms in the same industry, state, and year but different judicial districts, our findings remain unchanged. We obtain similar outcomes in Panel B and C when we replace the dependent variable with the average VC investment amount and the number of VCs. Thus, we further eliminate the concern that our results rely on the unobserved state-level factors by including the state-level fixed effects.

[Please insert Table 5 here]

Generally, by including several additional control variables correlated with the corruption and VC investments mentioned in previous literature, and including additional fixed effects, we mitigate the omitted variable concern. Our baseline findings remain robust that regional corruption impedes the VC investment that entrepreneurial companies can receive.

4. Alternative measures of corruption

Our main measure of corruption throughout the analysis is the number of corruption convictions,

as it is an objective measure that can easily identify the rampant severity of the corruption than the survey-based measures. Additionally, due to the federal judicial system being equally vigilant in identifying and prosecuting corruption cases across states, we can mitigate the concern of the bias raising from the local political environment that results in different conviction rates. However, likely, the measure is still subject to some limitations. For instance, although we smooth the conviction number by calculating the mean value through the recording start year of DOJ, it is rational that entrepreneurial companies with different operating periods are exposed to corruption at different levels. Further, although the corruption convictions are prosecuted by the DOJ, there might be some regions which exist corrupt practices that are unobserved and imperceptible with a lower corruption level. Therefore, we apply the alternative measures of corruption to assess whether our original proxy is reliable for the cross-sectional variation of corruption.

Table 6 presents the results of applying the alternative corruption measures. Firstly, in Panel A, we adopt the method of Huang and Yuan (2021) to adjust for the impact of government size by scaling the number of government employees rather than the regional population. Consistent with our baseline analysis, we obtain significantly negative estimates of the government employee-adjusted corruption in all the specifications. Then, when we smooth the corruption convictions throughout the period, we apply for the year 1972 as the beginning year, as the DOJ starts to record the corruption conviction at year. However, entrepreneurial companies located in the same region with different ages are likely to be subject to different regional corruption exposure. For instance, a newborn company is likely to be less affected by the corruption environment. Hence, we adjust the measure by applying for alternative smoothing method. Specifically, we replace the recording start year of 1972 with the founding year of the entrepreneurial company. It enables us to have a more specific company-level exposure to regional corruption extent. In Panel B, we present results regarding the alternative measure of corruption using the founding year of the company. Again, the coefficients on the corruption variables are all significantly negative under the three measures of venture capital investment, suggesting that our main findings are not driven by the potential

errors in our proxies of regional corruption.

[Please insert Table 6 here]

Taken together, our additional test results are robust to the alternative corruption measures, indicating that the measurement errors are unlikely to bias our results significantly.

5. Mechanism of corruption effects

After observing the decline in VCs' investment in entrepreneurial companies follows the increase of corruption, a natural focus is on what underpins the reduction in the investment propensity of venture capitalists. We realise that some company-level and macro-level attributes would enhance or mitigate the negative effects of corruption on the VCs' investment. Thus, we conduct further analysis on exploring what affects the negative effects of corruption from three perspectives, the dependence on the government spending contract, the company age, and the regulatory environment.

5.1 Dependence on government spending contract

Previous literature documents that company-level government contract dependence significantly affects the company's IPO activity (Colak et al. 2017b). It suggests that company-level sensitivity to the government contract affects its financial policy. Higher dependence on the government spending contract likely leads to greater exposure to the risk of government corruption, which enhances the negative effects of corruption on VC investment. Therefore, if the dependence on the government contract is a channel through which corruption affects VC investment, we expect companies with a tighter connection with the government to be more likely to receive less VC investment. To examine our conjecture, we collect data regarding the entrepreneurial company's major customers from Compustat-Segments. Then, we create a variable *Gov. spending* measured as the total amount of the entrepreneurial company receiving a government spending contract. We run the following model with our variable of interest as the interaction term between the Gov. spending and the corruption variable. We expect a significantly negative estimate on the interaction term.

$$VCs' investment\ decision$$

$$= \alpha + \beta_1 * Gov.spending * corruption + \beta_2 * corruption + \beta_3 * Gov.spending$$

$$+ Controls + Year\ FE + Industry\ FE + \varepsilon$$

Table 7 presents the results of exploring whether having a stronger government connection enhances the negative impact of corruption. Complying with our conjecture, we observe significantly negative estimates regarding the interaction term throughout all the specifications, suggesting that venture companies that have a higher dependence on the government spending contract shall be subject to a higher reduction in the venture capital investment they can receive. Our results remain robust under different measures of venture capital investment.

[Please insert Table 7 here]

5.2 Company age

As we argued earlier, the age of entrepreneurial companies may differentiate companies' exposure to regional corruption. Older age may indicate the company complies with a more standardised daily operation. Hence, it is likely that their information environment would be more transparent, which helps mitigate the information asymmetry issue between entrepreneurial companies and venture capitalists. We conjecture that the company age will mitigate the negative effects of corruption on venture capital investment. In the following equation, $Company\ age * corruption$ is our variable of interest, which is the interaction term between the company age and the political corruption measure. If the company age mitigates the negative effects of corruption, we expect to have positive coefficients on the interaction term. We run the following OLS regression model.

$$VCs' investment\ decision$$

$$= \alpha + \beta_1 * Company\ age * corruption + \beta_2 * corruption + \beta_3 * Company\ age$$

$$+ Controls + Year\ FE + Industry\ FE + \varepsilon$$

Table 8 presents our results regarding whether the company age mitigates the negative impacts of

regional political corruption. We continue to obtain significantly negative coefficients on the corruption variables. More importantly, consistent with our conjecture, we observe significantly positive coefficients on the interaction term, indicating the company age helps alleviate the corruption's impact on the venture capital's investment decision. The finding is robust to all three measures of venture capital investments.

[Please insert Table 8 here]

5.3 Anti-takeover regulation environment

As the political ecology is strongly determined by legislation and regulation, a stricter regulatory environment is highly likely leads to a more compliant and rule of law society. And we can rationally assume that there are relatively fewer corruption convictions in regions with stronger regulation. Specifically, we focus on the strength of anti-takeover regulation as a proxy of corporate governance for the state. A stricter takeover regulation indicates fewer opportunities for the venture capital to exit, hence VCs are likely to be more careful in investing the companies located in states with Hence, we conjecture that stricter anti-takeover regulations which represent a more transparent political environment should help mitigate the negative impact of the corruption. We collect the data regarding the anti-takeover regulation from (which database), and create a variable Anti-takeover, which is the number of anti-takeover regulations in the state. Our variable of interest is the interaction term between the corruption and the anti-takeover variables. According to our hypothesis, we expect to obtain significant positive estimates regarding the interaction term.

Table 9 presents our results regarding examining whether the regulation environment alleviates the effects of corruption on venture capital investment decisions. As we expected, we obtain statistically significant positive estimates regarding the interaction term, suggesting a stronger regulation context mitigates the concern of venture capital in making investment decisions regarding the impediment effects of governmental corruption.

[Please insert Table 9 here]

Taken together, our additional tests examine characteristics which affect venture capital investment decisions through interacting with the state level corruption document that entrepreneurial companies relying on government spending contracts heighten the VCs' concern regarding corruption, hence enhancing its impediment effects. Further, we find that a longer operation period and stricter regulatory environment which represents a better corporate governance environment helps build a more transparent relation and mitigate the negative association between VC investment and corruption.

6. Conclusion

Previous literature provides evidence on theories regarding how political corruption negatively affects the company's financial policy, investment, and benefits. We expand the literature by focusing on venture capital investment and test the theory empirically by exploring the effect of governmental corruption on the venture capital's investment propensity on entrepreneurial companies. Our results indicate that regional corruption is negatively associated with the investment decision of venture capitalists. Specifically, the increase in political corruption shall reduce the total investment amount, the average investment, the venture capital participation, and the likelihood of receiving venture capital investment for an entrepreneurial company. Our results remain robust when we include additional control variables which might be correlated with both the venture capital investment and the corruption and several different sets of fixed effects. In addition, our results stay the same when we apply different measures of corruption. Further, we document the potential underlying mechanism of corruption. We find that higher dependence on the government spending contract deteriorates the negative impact of corruption, and entrepreneurial companies receive less investment when they have stronger government connections. In addition, we find that firm age and stricter regulation environment, which is the proxy for better corporate governance and beneficial to eliminating the information asymmetry between the venture capital and the entrepreneurial companies, mitigates VC's concern regarding the company's exposure to political corruption.

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Table 1 Descriptive statistics

The table provides descriptive statistics. Panel A includes VC investment decision measures. Panel B shows controls variable. Variable definitions are provided in Appendix A.

Panel A VC investment decision measures				
	N	Mean	Median	Std. Dev
VC investment measures				
Total Invt. amount	136205	5.675	0.000	36.169
Invt. amount per VC	136205	4.920	0.000	30.368
No. of VCs	136205	1.170	0.000	1.950
VC funding dummy	136205	0.527	1.000	0.499
Panel B Control variables				
Company age	136205	8.910	5.000	12.651
Ind. Tobin's Q	136205	36.474	8.721	73.658
Ind. Market-to-Book	136205	127.741	2.338	626.428
Ind. Sale growth	136205	1.958	0.676	4.047
Ind. Operating cashflow	136205	173.510	111.367	211.062
Ind. Tangible assets ratio	136205	0.833	0.844	0.095
Ind. R&D-sale ratio	136205	3.290	0.679	8.168
Ind. R&D-assets ratio	136205	0.249	0.180	0.273
GDP growth	136205	1.402	0.055	5.137

Table 2 VC investment decisions in low and high corrupt states

The table provides descriptive statistics on VC investment decisions in low and high corrupt states. The table provides descriptive statistics on VC investment decisions in low and high corrupt states. A state is a low corrupt area if the corruption measure if below the median value, otherwise it is a high corrupt area. Variable definitions are provided in Appendix A.

	Low corrupt states			High corrupt states			Diff. in means (p-value)
	N	Mean	Std. Dev	N	Mean	Std. Dev	
Total invt. amount	67177	6.684	38.177	69028	4.694	34.072	0.000
Invt. amount per VC	67177	5.819	31.968	69028	4.406	28.701	0.000
No. of VCs	67177	1.257	1.999	69028	1.085	1.897	0.000
VC funding dummy	67177	0.532	0.499	69028	0.523	0.499	0.001

Table 3 Political corruption and VC investment decisions

The table presents the results on how political corruption affects VCs' investment decisions. The sample ranges from 1977 to 2019 The observation is at company-year level. The dependent variables are total funding amount that a company receives per year from VCs, the average funding amount that a company receives from each VC per year, the number of VCs invest in a company per year, and whether a company receives any VC funding in a year. We take nature logarithm value of *Total invt. amount*, *Invt. amount per VC*, and *No. of VCs*. Columns (1) to (3) pf Panel A use Ordinary Least Square regressions; column (4) uses a logit regression. Penal B applies Tobit regressions. One, two and three asterisks denote statistical significance at the 10%, 5% and 1% level. The heteroscedasticity robust standard errors are included in the parentheses and clustered by start-up companies. All variables are defined in Appendix A.

Panel A: OLS and logit results

	(1) Total invt. amount	(2) Invt. amount per VC	(3) No. of VCs	(4) VC funding dummy
Corruption	-0.042***	-0.027***	-0.059***	-0.018***
	(0.003)	(0.002)	(0.005)	(0.005)
Company age	-0.437***	-0.259***	-0.590***	-0.964***
	(0.006)	(0.004)	(0.010)	(0.012)
Ind. Tobin's Q	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.004***	0.004***	0.006***	0.003
	(0.001)	(0.001)	(0.002)	(0.002)
Ind. Operating cashflow	0.000*	0.000**	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.634***	0.252***	1.559***	0.803***
	(0.134)	(0.092)	(0.207)	(0.199)
Ind. R&D-sale ratio	0.007***	0.001	0.007***	0.006***
	(0.001)	(0.001)	(0.002)	(0.001)
Ind. R&D-assets ratio	0.012	0.027	0.005	0.086**
	(0.030)	(0.021)	(0.045)	(0.039)
GDP growth	0.006***	0.005***	-0.000	-0.002
	(0.002)	(0.002)	(0.003)	(0.004)
Intercept	1.625***	1.056***	1.593***	-0.482
	(0.111)	(0.077)	(0.173)	(0.579)
Obs. (Company-year)	136224	136224	136224	136224
Adj R^2/Pseudo R^2	0.091	0.090	0.081	0.120
Year control	Yes	Yes	Yes	Yes
Industry control	Yes	Yes	Yes	Yes

Panel B Tobit results

	(1) Total invt. amount	(2) Invt. amount per VC	(3) No. of VCs
Corruption	-0.069***	-0.055***	-0.095***
	(0.007)	(0.006)	(0.011)
Company age	-1.093***	-0.788***	-1.584***
	(0.015)	(0.012)	(0.024)
Ind. Tobin's Q	-0.000	0.000*	-0.000
	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.007***	0.008***	0.011***
	(0.002)	(0.002)	(0.004)
Ind. Operating cashflow	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	1.303***	0.896***	2.738***
	(0.278)	(0.234)	(0.420)
Ind. R&D-sale ratio	0.011***	0.000	0.014***
	(0.002)	(0.002)	(0.003)
Ind. R&D-assets ratio	0.094	0.093*	0.139
	(0.058)	(0.048)	(0.085)
GDP growth	0.008	0.009**	-0.001
	(0.005)	(0.004)	(0.007)
Intercept	-2.589***	-2.075***	-4.284***
	(0.932)	(0.749)	(1.135)
Obs. (Company-year)	136224	136224	136224
Pseudo R^2	0.041	0.046	0.036
Year control	Yes	Yes	Yes
Industry control	Yes	Yes	Yes

Table 4 Omitted variable concern

The table presents the results on how political corruption affects VCs' investment decisions by considering omitted variables. The sample ranges from 1977 to 2019 The observation is at company-year level. The dependent variables are total funding amount that a company receives per year from VCs, the average funding amount that a company receives from each VC per year, the number of VCs invest in a company per year, and whether a company receives any VC funding in a year. We take nature logarithm value of *Total invt. amount*, *Invt. amount per VC*, and *No. of VCs*. Columns (1) to (3) pf Panel A use Ordinary Least Square regressions; column (4) uses a logit regression. Penal B applies Tobit regressions. One, two and three asterisks denote statistical significance at the 10%, 5% and 1% level. The heteroscedasticity robust standard errors are included in the parentheses and clustered by start-up companies. All variables are defined in Appendix A.

Panel A OLS and logit results

	(1) Total invt. amount	(2) Invt. amount per VC	(3) No. of VCs	(4) VC funding dummy
Corruption	-0.028***	-0.019***	-0.035***	-0.013**
	(0.004)	(0.002)	(0.005)	(0.005)
Ln (Pop)	-0.111**	-0.078**	0.007	0.079
	(0.044)	(0.031)	(0.066)	(0.064)
Education	0.026***	0.012***	0.040***	0.009*
	(0.003)	(0.002)	(0.005)	(0.005)
Unemployment	0.031***	0.017***	0.056***	0.028***
	(0.007)	(0.005)	(0.010)	(0.010)
Ln (Per capita)	0.283***	0.294***	-0.017	0.195
	(0.104)	(0.073)	(0.152)	(0.149)
Ln (GOV. employees)	0.330***	0.237***	0.172**	-0.079
	(0.052)	(0.037)	(0.076)	(0.074)
Intercept	-2.222**	-2.479***	-0.706	-2.404*
	(0.971)	(0.683)	(1.389)	(1.414)
Obs. (Company-year)	122748	122748	122748	122744
Adj R^2/Pseudo R^2	0.100	0.095	0.074	0.120
Control variables	Yes	Yes	Yes	Yes
Year control	Yes	Yes	Yes	Yes
Industry control	Yes	Yes	Yes	Yes

Panel B Tobit results

	(1) Total invt. amount	(2) Invt. amount per VC	(3) No. of VCs
Corruption	-0.047***	-0.041***	-0.059***
	(0.008)	(0.007)	(0.011)
Ln (Pop)	-0.117	-0.055	0.024
	(0.091)	(0.080)	(0.131)
Education	0.042***	0.031***	0.058***
	(0.007)	(0.006)	(0.010)
Unemployment	0.056***	0.041***	0.094***
	(0.014)	(0.012)	(0.019)
Ln (Per capita)	0.506**	0.412**	0.294
	(0.212)	(0.182)	(0.303)
Ln (GOV. employees)	0.414***	0.310***	0.218
	(0.108)	(0.094)	(0.153)
Intercept	-7.021***	-6.655***	-6.925**
	(2.079)	(1.756)	(2.833)
Obs. (Company-year)	122748	122748	122748
Pseudo R^2	0.043	0.049	0.036
Control variables	Yes	Yes	Yes
Year control	Yes	Yes	Yes
Industry control	Yes	Yes	Yes

Table 5 Fixed affects

The table presents the results on how political corruption affects VCs' investment decisions using ordinary least square (OLS) regressions by considering different fixed effects. The sample ranges from 1977 to 2019. The observation is at company-year level. The dependent variables are total funding amount that a company receives per year from VCs, the average funding amount that a company receives from each VC per year, the number of VCs invest in a company per year, and whether a company receives any VC funding in a year. We take nature logarithm value of *Total invt. amount*, *Invt. amount per VC*, and *No. of VCs*. The heteroscedasticity robust standard errors are included in the parentheses and clustered by start-up companies. All variables are defined in Appendix A.

Panel A: Total invt. amount

	(1) Year-industry	(2) State	(3) State-year	(4) State-year-industry
Corruption (District)	-0.029***	-0.010***	-0.009***	-0.007**
	(0.002)	(0.002)	(0.003)	(0.003)
Company age	-0.425***	-0.421***	-0.416***	-0.404***
	(0.006)	(0.006)	(0.006)	(0.007)
Ind. Tobin's Q	-0.000***	-0.001***	-0.000**	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000	0.000***	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Sale growth	-0.001	0.009***	0.004***	-0.000
	(0.002)	(0.001)	(0.001)	(0.002)
Ind. Operating cashflow	0.000	0.000***	0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.806***	-0.588***	0.477***	0.780***
	(0.169)	(0.071)	(0.114)	(0.175)
Ind. R&D-sale ratio	0.000	0.006***	0.004***	0.002
	(0.002)	(0.001)	(0.001)	(0.002)
Ind. R&D-assets ratio	0.103**	0.137***	0.103***	0.112**
	(0.050)	(0.023)	(0.029)	(0.046)
GDP growth	0.005**	-0.004***	0.084	0.010
	(0.002)	(0.001)	(0.085)	(0.006)
Intercept	1.450***	2.500***	1.513***	1.371***
	(0.140)	(0.064)	(0.151)	(0.146)
Obs. (Company-year)	134118	134118	133524	133524
Adj R^2	0.092	0.088	0.102	0.075
Year control	No	No	No	No
Industry control	No	No	No	No
Year-industry control	Yes	No	No	No
State control	No	Yes	No	No
State-year control	No	No	Yes	No
State-year-industry control	No	No	No	Yes

Panel B Invt. amount per VC

	(1) Year-industry	(2) State	(3) State-year	(4) State-year-industry
Corruption (District)	-0.021***	-0.012***	-0.011***	-0.007***
	(0.001)	(0.001)	(0.002)	(0.002)
Company age	-0.250***	-0.241***	-0.241***	-0.236***
	(0.004)	(0.004)	(0.004)	(0.005)
Ind. Tobin's Q	-0.000	-0.000***	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000**	0.000***	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.004**	0.007***	0.004***	0.003*
	(0.002)	(0.001)	(0.001)	(0.002)
Ind. Operating cashflow	0.000***	0.000***	0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.269**	-1.105***	0.170**	0.256**
	(0.117)	(0.050)	(0.080)	(0.122)
Ind. R&D-sale ratio	-0.004**	-0.001	-0.004***	-0.002**
	(0.002)	(0.001)	(0.001)	(0.001)
Ind. R&D-assets ratio	0.094***	0.111***	0.057***	0.095***
	(0.035)	(0.016)	(0.020)	(0.032)
GDP growth	0.004**	-0.002***	0.066	0.004
	(0.002)	(0.001)	(0.078)	(0.004)
Intercept	1.008***	2.094***	0.986***	0.968***
	(0.097)	(0.045)	(0.126)	(0.101)
Obs. (Company-year)	134118	134118	133524	133524
R-squared	0.102	0.083	0.114	0.178
Adj R^2	0.090	0.082	0.101	0.072
Year control	No	No	No	No
Industry control	No	No	No	No
Year-industry control	Yes	No	No	No
State control	No	Yes	No	No
State-year control	No	No	Yes	No
State-year-industry control	No	No	No	Yes

Panel C No. of VCs

	(1) Year-industry	(2) State	(3) State-year	(4) State-year-industry
Corruption (District)	-0.010***	-0.001	-0.003*	-0.002
	(0.001)	(0.001)	(0.002)	(0.002)
Company age	-0.244***	-0.247***	-0.243***	-0.238***
	(0.003)	(0.003)	(0.003)	(0.003)
Ind. Tobin's Q	-0.000*	-0.000***	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000	0.000***	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.001	0.001***	0.002***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Ind. Operating cashflow	0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.381***	0.360***	0.197***	0.350***
	(0.075)	(0.034)	(0.050)	(0.076)
Ind. R&D-sale ratio	-0.000	0.000	0.000	-0.001
	(0.001)	(0.000)	(0.000)	(0.001)
Ind. R&D-assets ratio	0.066***	0.033***	0.075***	0.078***
	(0.021)	(0.010)	(0.012)	(0.019)
GDP growth	-0.001	-0.000	0.027	0.004
	(0.001)	(0.000)	(0.027)	(0.003)
Intercept	0.818***	0.829***	0.905***	0.806***
	(0.063)	(0.030)	(0.057)	(0.064)
Obs. (Company-year)	134118	134118	133524	133524
R-squared	0.137	0.112	0.139	0.213
Adj R^2	0.125	0.111	0.126	0.111
Year control	No	No	No	No
Industry control	No	No	No	No
Year-industry control	Yes	No	No	No
State control	No	Yes	No	No
State-year control	No	No	Yes	No
State-year-industry control	No	No	No	Yes

Table 6 Robustness tests

The table presents the results on how political corruption affects VCs' investment decisions using alternative corruption measures. The sample ranges from 1977 to 2019. The observation is at company-year level. The dependent variables are total funding amount that a company receives per year from VCs, the average funding amount that a company receives from each VC per year, the number of VCs invest in a company per year, and whether a company receives any VC funding in a year. We take nature logarithm value of *Total invt. amount*, *Invt. amount per VC*, and *No. of VCs*. The heteroscedasticity robust standard errors are included in the parentheses and clustered by start-up companies. All variables are defined in Appendix A.

Panel A: corruption measured by government employees

	(1) Total invt. amount	(2) Invt. amount per VC	(3) No. of VCs
Corruption (Gov. employee)	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
Company age	-0.442***	-0.272***	-0.244***
	(0.007)	(0.005)	(0.003)
Ind. Tobin's Q	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.004***	0.004***	0.002***
	(0.001)	(0.001)	(0.001)
Ind. Operating cashflow	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.634***	0.276***	0.351***
	(0.139)	(0.097)	(0.061)
Ind. R&D-sale ratio	0.006***	0.002**	0.002***
	(0.001)	(0.001)	(0.000)
Ind. R&D-assets ratio	0.004	0.026	0.012
	(0.031)	(0.022)	(0.013)
GDP growth	0.006***	0.005***	-0.001
	(0.002)	(0.002)	(0.001)
Intercept	1.642***	1.081***	0.831***
	(0.114)	(0.080)	(0.050)
Obs. (Company-year)	122748	122748	122748
Adj R^2	0.087	0.082	0.115
Control variables	Yes	Yes	Yes
Year control	Yes	Yes	Yes
Industry control	Yes	Yes	Yes

Panel B: corruption measured from company founding year

	(1) Total invt. amount	(2) Invt. amount per VC	(3) No. of VCs
Corruption (from founding year)	-0.078***	-0.055***	-0.026***
	(0.005)	(0.003)	(0.002)
Company age	-0.438***	-0.260***	-0.248***
	(0.006)	(0.004)	(0.003)
Ind. Tobin's Q	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.004***	0.004***	0.002***
	(0.001)	(0.001)	(0.001)
Ind. Operating cashflow	0.000*	0.000**	0.000*
	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.634***	0.253***	0.403***
	(0.133)	(0.092)	(0.060)
Ind. R&D-sale ratio	0.007***	0.001	0.002***
	(0.001)	(0.001)	(0.000)
Ind. R&D-assets ratio	0.013	0.027	0.012
	(0.030)	(0.021)	(0.013)
GDP growth	0.004*	0.004**	-0.001
	(0.002)	(0.002)	(0.001)
Intercept	1.722***	1.132***	0.848***
	(0.111)	(0.077)	(0.051)
Obs. (Company-year)	136205	136205	136205
Adj R^2	0.093	0.092	0.126
Control variables	Yes	Yes	Yes
Year control	Yes	Yes	Yes
Industry control	Yes	Yes	Yes

Table 7 Interact with government spending

The table presents the results on how government spending contract affect the relationship between political corruption and VCs' investment decisions. The sample ranges from 1977 to 2019. The observation is at company-year level. The dependent variables are total funding amount that a company receives per year from VCs, the average funding amount that a company receives from each VC per year, the number of VCs invest in a company per year, and whether a company receives any VC funding in a year. We take nature logarithm value of *Total invt. amount*, *Invt. amount per VC*, and *No. of VCs*. The heteroscedasticity robust standard errors are included in the parentheses and clustered by start-up companies. All variables are defined in Appendix A.

	(1)	(2)	(3)
	Total invt. amount	Invt. amount per VC	No. of VCs
Corruption	-0.032***	-0.018***	-0.013***
	(0.005)	(0.003)	(0.002)
Corruption*Gov. spending	-0.050***	-0.044***	-0.009
	(0.018)	(0.013)	(0.008)
Gov. spending	0.015	-0.004	0.009
	(0.075)	(0.054)	(0.033)
Company age	-0.437***	-0.259***	-0.247***
	(0.006)	(0.004)	(0.003)
Ind. Tobin's Q	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.004***	0.004***	0.002***
	(0.001)	(0.001)	(0.001)
Ind. Operating cashflow	0.000	0.000*	0.000*
	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.688***	0.307***	0.409***
	(0.135)	(0.093)	(0.061)
Ind. R&D-sale ratio	0.007***	0.001	0.002***
	(0.001)	(0.001)	(0.000)
Ind. R&D-assets ratio	0.006	0.021	0.011
	(0.030)	(0.021)	(0.013)
GDP growth	0.006***	0.005***	-0.000
	(0.002)	(0.002)	(0.001)
Intercept	1.581***	1.016***	0.812***
	(0.112)	(0.077)	(0.051)
Obs. (Company-year)	136224	136224	136224
Adj R^2	0.091	0.090	0.125
Control variables	Yes	Yes	Yes
Year control	Yes	Yes	Yes
Industry control	Yes	Yes	Yes

Table 8 Interact with company age

The table presents the results on how start-up company age affects the relationship between political corruption and VCs' investment decisions. The sample ranges from 1977 to 2019. The observation is at company-year level. The dependent variables are total funding amount that a company receives per year from VCs, the average funding amount that a company receives from each VC per year, the number of VCs invest in a company per year, and whether a company receives any VC funding in a year. We take nature logarithm value of *Total invt. amount*, *Invt. amount per VC*, and *No. of VCs*. The heteroscedasticity robust standard errors are included in the parentheses and clustered by start-up companies. All variables are defined in Appendix A.

	(1)	(2)	(3)
	Total invt. amount	Invt. amount per VC	No. of VCs
Corruption	-0.073***	-0.053***	-0.030***
	(0.007)	(0.005)	(0.003)
Corruption*Company age	0.016***	0.013***	0.007***
	(0.003)	(0.002)	(0.001)
Company age	-0.480***	-0.295***	-0.267***
	(0.010)	(0.007)	(0.005)
Ind. Tobin's Q	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.004***	0.004***	0.002***
	(0.001)	(0.001)	(0.001)
Ind. Operating cashflow	0.000*	0.000**	0.000*
	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.645***	0.262***	0.407***
	(0.134)	(0.092)	(0.060)
Ind. R&D-sale ratio	0.007***	0.001	0.002***
	(0.001)	(0.001)	(0.000)
Ind. R&D-assets ratio	0.012	0.027	0.012
	(0.030)	(0.021)	(0.013)
GDP growth	0.006***	0.005***	-0.001
	(0.002)	(0.002)	(0.001)
Intercept	1.698***	1.118***	0.853***
	(0.112)	(0.077)	(0.051)
Obs. (Company-year)	136224	136224	136224
Adj R^2	0.091	0.090	0.125
Control variables	Yes	Yes	Yes
Year control	Yes	Yes	Yes
Industry control	Yes	Yes	Yes

Table 9 Interact with state anti-takeover environment

The table presents the results on how state anti-takeover environment affects the relationship between political corruption and VCs' investment decisions. The sample ranges from 1977 to 2019. The observation is at company-year level. The dependent variables are total funding amount that a company receives per year from VCs, the average funding amount that a company receives from each VC per year, the number of VCs invest in a company per year, and whether a company receives any VC funding in a year. We take nature logarithm value of *Total invt. amount*, *Invt. amount per VC*, and *No. of VCs*. The heteroscedasticity robust standard errors are included in the parentheses and clustered by start-up companies. All variables are defined in Appendix A.

	(1)	(2)	(3)
	Total invt. amount	Invt. amount per VC	No. of VCs
Corruption	-0.035***	-0.023***	-0.011***
	(0.006)	(0.004)	(0.003)
Corruption*Anti-Takeover	0.008***	0.006***	0.001*
	(0.002)	(0.001)	(0.001)
Anti-Takeover	-0.418***	-0.245***	-0.242***
	(0.006)	(0.004)	(0.003)
Company age	-0.097***	-0.070***	-0.024***
	(0.006)	(0.004)	(0.002)
Ind. Tobin's Q	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Ind. Market-to-Book	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Ind. Sale growth	0.004***	0.004***	0.002***
	(0.001)	(0.001)	(0.001)
Ind. Operating cashflow	0.000*	0.000**	0.000*
	(0.000)	(0.000)	(0.000)
Ind. Tangible assets ratio	0.587***	0.219**	0.389***
	(0.133)	(0.091)	(0.060)
Ind. R&D-sale ratio	0.007***	0.001*	0.002***
	(0.001)	(0.001)	(0.000)
Ind. R&D-assets ratio	0.010	0.025	0.011
	(0.030)	(0.021)	(0.013)
GDP growth	-0.002	-0.000	-0.003**
	(0.002)	(0.002)	(0.001)
Intercept	1.784***	1.173***	0.856***
	(0.111)	(0.076)	(0.051)
Obs. (Company-year)	136224	136224	136224
Adj R^2	0.098	0.098	0.127
Control variables	Yes	Yes	Yes
Year control	Yes	Yes	Yes
Industry control	Yes	Yes	Yes

Appendix A Variable definitions

Variables	Definition
Total invt. amount	Nature logarithm value of total funding amount that a company receives per year from VCs
Invt. amount per VC	Nature logarithm value of the average funding amount that a company receives from each VC per year
No. of VCs	Nature logarithm value of the number of VCs invest in a company per year
VC funding dummy	Dummy variable taking value of one if a company receives any VC funding in a year, otherwise is zero.
Corruption	The average corruption convictions scaled by the state_level_population_in_millions.
Company age	Start-up company age at the year of receiving VCs' funding.
Ind. Tobin's Q	The mean Tobin's Q in start-up company's 3-digit SIC industry. Tobin's Q is measured as the book value of total assets plus the market value of common equity minus the book value of common equity, scaled by the book value of total assets.
Ind. Market-to-Book	The mean market-to-book ratio in start-up company's 3-digit SIC industry. The market-to-book is the ratio calculated as the book assets minus common equity plus market value of equity to book assets.
Ind. Sale growth	The mean sales growth in start-up company's 3-digit SIC industry. Sales growth is the annually sales growth rate.
Ind. Operating cashflow	The mean cashflow in start-up company's 3-digit SIC industry. Cashflow is computed as the operating cashflow scaled by the total assets.
Ind. Tangible assets ratio	The mean Tangible assets ratio in start-up company's 3-digit SIC industry. Tangible assets ratio is the tangible assets divided by the equity value.
Ind. R&D-sale ratio	The mean R&D to sales ratio in start-up company's 3-digit SIC industry. R&D-sale is the proportion of research and development investment over total sales.
Ind. R&D-assets ratio	The mean R&D to assets ratio in start-up company's 3-digit SIC industry. R&D-sale and R&D-assets ratio is the proportion of research and development investment over total assets.
GDP growth	GDP growth rate for each state.
Gov. spending	The total amount of the entrepreneurial company receiving government spending contract.
Anti-Takeover	The number of anti-takeover regulations in the state.