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Full Length Article

Cultural proximity, venture capital and firm performance

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Abstract

Cultural distance is an important factor for the success of venture capital (VC) investments. Using a large sample of Chinese VC events, this study examines how cultural proximity between VC investors and portfolio firms, as measured by a unique indicator using Chinese dialects, affects the performance of venture capitalists while exiting portfolio firms. We find that VC investors with cultural proximate portfolio firms are more likely to exit successfully. Our study further indicates that VC investors with less cultural proximity are more likely to obtained improved financial returns when they successfully exit from the investment.

JEL classification: G24; G32; G11

Keywords: Venture capital; Cultural proximity; Firm performance; Cultural distance

1. Introduction

As a vital part of the modern financial system, venture capital (VC)[1] significantly contributes in enterprise innovation and economic development. VC's catalytic effect on business innovation and its ability to drive the development of innovative economies has been extensively discussed in extant literature (Dushnitsky & Lenox, 2005; Engel & Keilbach, 2007; Faria & Barbosa, 2014; Kortum & Lerner, 2000; Tian et al., 2020). The coordination between VC investors and VC-financed enterprises is significant for the development of entrepreneurial firms because such investors offer more than mere funds (Chen et al., 2010). VC investors are actively involved in the governance of portfolio enterprises through recruiting management, board membership, and resources sharing (Chen et al., 2010; Tian et al., 2020; Xue et al., 2019). Such investors add value to portfolio companies by providing coaching, mentoring, and facilitating their access to further investors, suppliers, customers, public institutions, industry associations, and strategic alliance partners (Brinster & Tykvová, 2021; Gorman & Sahlman, 1989; Sahlman, 1990).

The investment process of VC can be roughly divided into three stages. First, venture capitalists enter promising start-up firms. Second, VC investors incubate the portfolio firms and monitor enterprises' development by involving themselves in the companies' governance. The last stage is VC investors' exit, which means that the investment process is successfully completed and the value of the investment is realized. Earning exit returns from portfolio enterprises is important for VC investors. VC investors achieve a financial return on their investments in companies when their shares are sold through mergers and acquisitions or initial public offerings (IPO). Successful exit from invested companies is a way for VC investors to enhance their competitive advantage and promote the effective circulation of the investment value chain. Venture capitalists deploy successful exit as an extremely important criterion in deciding whether to invest in enterprises (Black &

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[1] Abbreviations: venture capital (VC); initial public offerings (IPO).

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Gilson, 1998). Such investors rely on their local networks to screen investment proposals (Bertoni et al., 2019).

Considering principal-agent theory, a principal-agent relationship exists between VC investors and portfolio enterprises. The information asymmetries between these two sides lead to moral hazards and adverse selection issues. As the geographic distance between VC investors and portfolio firms increases, supervision and management of enterprises by venture capitalists decreases, and accordingly, the risks for such investors increase. Information asymmetries between venture capital investors and portfolio firms are more acute before the first round of financing, as the investors have not previously worked with the firms, and the level of familiarity between them and target firms is low (Kolympiris et al., 2018). Hence, venture capitalists may prefer investing in enterprises that are geographically close to them (Belderbos et al., 2018; Tian et al., 2020). More importantly, geographic proximity promotes information exchange between VC institutions and enterprises, and reduces investment activities' transaction and oversight costs (Cumming & Dai, 2010). Numerous studies investigate the effects of geographic distance on venture capitalists' investment decisions and portfolio firms' performance (Belderbos et al., 2018; Bengtsson & Ravid, 2015; Chen et al., 2011; Cumming & Dai, 2010; Dushnitsky & Lenox, 2005; Hochberg et al., 2015; bib_IW_2005Ivković & Weisbenner, 2005; Keil et al., 2008; Kolympiris et al., 2018; Tian, 2011; Zahra & Hayton, 2008).

With the rapid development of information technology, the barriers of geographic distance have broken down and the influence of geographical distance on firm performance has gradually weakened (Zhang & Gu, 2021). Technological advancements—including rapidly-developing transportation infrastructure and communication technology—lead to the change of spatial accessibility (Beugelsdijk et al., 2018; Zhang & Gu, 2021). The disadvantages of geographic distance can be mitigated with the rise of technological advancement, which facilitates knowledge-sharing and relationship-building with partners in remote cities (Bernstein et al., 2016; Forman & van Zeebroeck, 2019; Lutz et al., 2013).

Except for the geographical distance between cities, the influence of soft information, such as cultural proximity, has gradually increased because people in different regions have different lifestyles and ways of thinking. Cultural difference is an important factor affecting coordination between VC investors and companies. The lack of awareness of portfolio firms' local culture and social practices amplify the substantial principal-agency problems due to the presence of information asymmetries between the insider managers of such firms and venture capitalists (Nahata et al., 2014). VC investments are invariably risky, especially when venture capitalists invest in regions with a cultural environment that differs from their own. Thus, cultural disparities severely affect the level of trust, financial contracting, and portfolio firms' performance. Considering cultural differences, cultural proximity might increase the likelihood of success due to VC investors' familiarity with portfolio firms' soft information. However, higher cultural differences between venture capitalists and portfolio firms may lead to more rigorous screening and monitoring by venture capitalists. Therefore, screening and monitoring increase VC investments' likelihood.

In the literature on international business, strategy management, and global VC investing, the cultural distance between home and host countries is a crucial factor (Dai et al., 2012; López-Duarte & Vidal-Suárez, 2013; Meuleman & Wright, 2011; Nahata et al., 2014). For instance, Chakrabarti et al. (2009) analyze the impact of cultural differences on cross-border acquisitions using the Hofstede measure of cultural distance. Chui et al. (2010) examine how cultural differences influence the returns of momentum strategies. Nahata et al. (2014) investigate cultural differences' impact on success in global VC investing and find that cultural distance between the countries of investee companies and their lead VC investors positively affects VC success.

Our study contributes to the literature as follows: First, we provide new evidence on the nexus between cultural distance and performance of venture capitalists while exiting portfolio firms—with regard to VC events in China. Most studies use cross-border VC investments to examine the effects of cultural distance on VC success. To the best of our knowledge, our study is the first to explore the effects of domestic (within-country) cultural differences on VC investments. Second, our research constructs a unique variable to measure cultural distance using dialect data from the *Atlas of Chinese Language*. As defined by Hofstede (2001), culture is a set of "collective mental programs" shared by a group of people and distinguishes one group from another. Linguistic is a crucial indicator of culture, which manifests in people's economic behavior (Chen, 2013). Third, this study extends the literature on examining the effects of cultural proximity on portfolio firms' financial performance. Furthermore, we provide novel evidence on the heterogeneities of how cultural difference affects venture capital's exit performance.

The remainder of our paper is organized as follows. Section 2 introduces the institutional background of VC in China. Section 3 presents the data and empirical methodology. Section 4 provides the empirical results along with a series of extension analysis. Section 5 concludes the paper.

2. Background on VC in China

Over the past thirty years, China's VC industry has developed rapidly. The number of VC institutions as well as the number of VC has skyrocketed, and equity investment events have gradually increased. The development of China's equity investment market has progressed through three stages: the nascent period, start-up period, and development period (Zero2IPO Research, 2021).

In the late twentieth century and early twenty-first century, China's VC market was in its infancy and dominated by U.S. dollar-denominated funds. In the twenty-first century, since the establishment of the growth enterprise market and reform of the equity division, the Chinese financial market gradually became more standardized and experienced a rapid development phase in the early twenty-first century. At the beginning of the

twenty-first century, the number of institutions involved in VC increased rapidly in China (see, Fig. 1). The annual growth rate of VC institutions reached approximately 30% in 2016, when the number of VC institutions involved in investment was the highest. Further, the number of portfolio companies grew at an annual rate of approximately 30% (Zero2IPO database).

After 2016, China's VC industry advanced toward a period of consolidation, exhibiting a significant decline in the number of VC institutions. This caused a gradual slowdown in the number of venture capital-backed start-ups.

The distribution of VC events in China exhibits a clear geographic clustering pattern, which is in line with the United States (Chen et al., 2010; Kang et al., 2022). China's VC events are concentrated in Beijing, Shanghai, and the country's more developed coastal provinces. For example, VC investments in Beijing, Tianjin, and Yangtze River Delta account for more than 65% of all VC investments in China. The development of VC in China tends to be agglomerative. Most Chinese VC institutions are located in coastal and developed areas, such as Shanghai, Beijing, Guangdong, and Zhejiang. Similarly, portfolio companies are concentrated in coastal cities in addition to some first-tier cities.

The VC industry in China developed tepidly before 2009. Since the establishment of the growth enterprise market in 2009, the Chinese VC market experienced rapid growth because the growth enterprise market provides an alternative exit outlet for venture capitalists. As a result, the number of venture capital exits increased abruptly, growing by 99% from 2009 to 2017.

After 2016, the growth in VC exits gradually entered a phase of adjustment due to macro policies and economic volatility. As the Chinese and global economy have slowed down, the Chinese authorities have adopted a series of policy measures to deal with the country's debt issue since 2016. China has also conducted a series of regulation and supervision on the private equity and VC industry.

3. Data and empirical methodology

In this section, we first describe the dataset used in our study, followed by the empirical model for analyzing the effects of cultural distance on venture capital-backed enterprises' performance.

3.1. Data

We compile an unbalanced panel dataset including VC investors and portfolio firms over the 2000–2019 period. Most study data are collected from Zero2IPO database (www.pedata.cn)—the largest VC data vendor in China. The unique feature of our dataset is that the variable measuring the cultural distance is hand-collected. The dataset is unbalanced panel data with a sample size of 151,367. Table 1 reports the descriptive statistics of observations.

In our analysis, *exit* is a dependent variable, which equals 1 if VC investors exit from portfolio firms, and 0 otherwise. In our sample, venture capitalists exit from their investments in four ways: (1) IPO, (2) acquisition, (3) equity transfer, (4) repurchase and (5) backdoor listing.

diadist_mean is the variable of interest, which measures cultural proximity between portfolio firms and VC investors. The cultural distance variable, *diadist_mean,* is constructed by dialect distance between VC investors and portfolio firms using the dialect data from the *Atlas of Chinese Language*. In China, there are various dialects across the country. According to the *Atlas of Chinese Language*, Chinese dialects are classified into

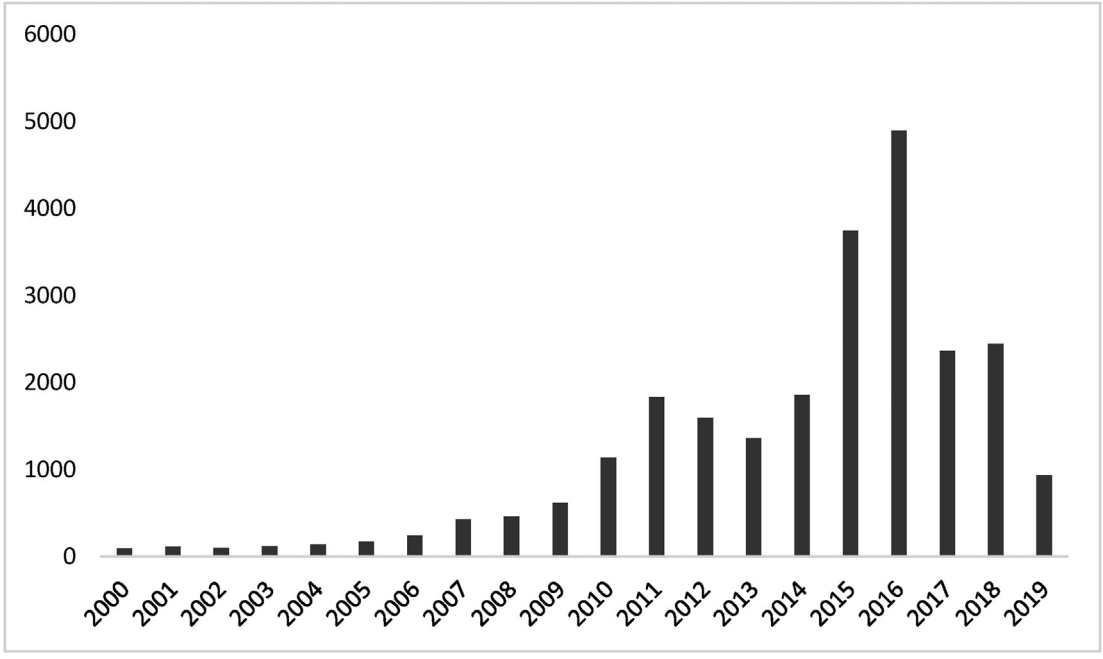

Fig. 1. Number of VC institutions in China (2000–2019). Data source: Zero2IPO, https://www.pedata.cn/.

Table 1
Descriptive statistics.

Variable	Level	Obs.	Mean	Min.	Max.	SD
exit	Firm	151,367	0.0726	0	1	0.2595
diadist_mean	Firm	151,367	3.2927	1.6	4	0.6867
diadist_wmean	Firm	55,014	2.8074	0.0023	4	1.5021
pgdp	City	151,367	183,353	1876.03	548,538	120,716
pop	City	151,367	977.203	19	3410	504.8227
pinc	City	151,367	47,136.96	2318	73,849	15672.95
nfirm	City	151,367	4915.016	3	18,792	3042.76
stage	Firm	151,367	2.5114	1	4	1.0293

Notes: Variables *pgdp* and *pinc* are adjusted for inflation using the consumer price index, with 2000 as the base year.

two types: mandarin (Guanhua) and non-mandarin. Mandarin dialects include eight groups: Dongbei mandarin, Beijing mandarin, Jilu mandarin, Jiaoliao mandarin, Zhongyuan mandarin, Lanyin mandarin, Jianghuai mandarin, and Xinan mandarin. Non-mandarin comprises nine groups: Jin, Wu, Min, Kejia (Hakka), Yue (Cantonese), Xiang, Gan, Hui, and Ping & Tu. Each language group contains a large number of subgroups and every subgroup comprises different dialect branches.

China is a huge country with varied geographical conditions. Different dialects are spoken in China across various regions. Multiple dialects reflect different cultural backgrounds and lifestyles. Hence, dialect distance is a suitable measure for cultural proximity between VC institutions and portfolio firms. In this study, we define dialect distance as follows: dialect distance equals 0 if cities of the VC investor and portfolio firm have different types of dialect, equals 1 if they have the same type of dialect, equals 2 if they have the same group of dialect, equals 3 if they are from the same subgroup dialect, and equals 4 if they are from the same branch dialect. Variable *diadist_mean* is the mean value of dialect distances between a portfolio firm and its VC investors. Further, as a robustness check, we construct the variable *diadist_wmean*, which is weighted by VC investors' share of a portfolio firm, as an alternative measure of cultural proximity.

Additionally, our study includes a set of economic and demographic variables. We include per capita GDP (*pgdp*), population (*pop*), per capita income (*pinc*), and number of firms (*nfirm*) of a portfolio firm's location city. Further, we include industry fixed effects, stage fixed effects, and year fixed effects to capture unobserved heterogeneities across industries, stages, and years. Our sample includes four stages of VC investments: seed, start-up, expansion, and maturity Most VC investments' exit events occur in the maturity stage.

3.2. Empirical model

To examine whether cultural proximity between VC investors and portfolio firms affects the exit outcome, we specify the following empirical model:

$$exit^{*}_{it} = \alpha_0 + \alpha_1 diadist\_mean_{it} + \boldsymbol{X_{it}}\beta + \eta_b + \eta_s + \eta_t + \varepsilon_{it,} \quad (1)$$

where i and t denote index firm and year, respectively. $exit^{*}_{it}$ is the propensity of a venture capitalist's performance while exiting a portfolio firm. In reality, we cannot observe the latent variable, $exit^{*}_{it}$, but we can only observe the exit outcome from a firm, $exit_{it}$. Specifically, $exit_{it}$ is an indicator that takes the value of 1 if VC investors exit from an investment successfully and equals 0 otherwise. We use logit specification for the empirical model, which implies the following:

$$exit_{it} = \frac{exp(\alpha_0 + \alpha_1 diadist\_mean_{it} + \boldsymbol{X_{it}}\beta + \eta_b + \eta_s + \eta_t + \varepsilon_{it})}{1 + exp(\alpha_0 + \alpha_1 diadist\_mean_{it} + \boldsymbol{X_{it}}\beta + \eta_b + \eta_s + \eta_t + \varepsilon_{it})} \quad (2)$$

$diadist\_mean_{it}$ is the variable of interest, which measures cultural proximity between VC investors and portfolio firms. $\boldsymbol{X_{it}}$ is a vector of control variables, which are discussed in the previous section. Further, our model includes industry fixed effects η_b, financing stage fixed effects η_s, and year fixed effects η_t.

4. Empirical results

In this section, we first report baseline results for the effects of cultural proximity on venture capitalists' performance while exiting portfolio firms, along with several robustness checks. Thereafter, our study explores cultural proximity's heterogeneous effects on firms' performance.

4.1. Baseline results

This sub-section discusses cultural proximity's effects on venture capitalists' performance while exiting portfolio firms in Tables 2 and 3. Table 2 reports the results with the full sample, while Table 3 presents the results using only observations in the mature stage. Thereafter, we discuss the average marginal effects presented in columns (4)–(6) of Tables 2 and 3. The coefficients of *diadist_mean* in all columns are negative and significant at the 1% level in Table 2. The interpretation of the coefficient −0.0046 (in column 4 of Table 2) is that, on average, one standard deviation increase in dialect distance decreases the probability of a successful exit from a portfolio firm by approximately 32 basis points (0.6867 × 0.0046 = 0.00316). Columns (5) and (6) show similar results. In Table 3, we report the results using only observations in the mature stage. Coefficients of *diadist_mean* in all columns are negative and significant at the 1% level. On average, one standard deviation increase in dialect distance translates into a 2.2% (0.6867 × 0.0321 = 0.022) decrease in the likelihood of a successful exit from a portfolio firm.

Most portfolio firms go public through IPO or mergers and acquisitions in the mature stage. The dataset used in our analysis are unbalanced panel data, and observations in other stages might affect the empirical model's identification. Hence, using mature stage observations is more suitable in this study. Hereafter, we only use observations in the mature stage.

Table 2
Baseline results: cultural proximity on firm performance.

	Dependent variable = exit (Full sample observations)					
	(1)	(2)	(3)	(4)	(5)	(6)
	Logit coefficients			Average marginal effects		
diadist_mean	−0.0857***	−0.0732***	−0.0598***	−0.0046***	−0.0037***	−0.003***
	(0.0160)	(0.0161)	(0.0162)	(0.0008)	(0.0008)	(0.0008)
lnpgdp	−0.212***	−0.150***	−0.256***	−0.0114***	−0.0076***	−0.0128***
	(0.0235)	(0.0240)	(0.0263)	(0.00126)	(0.0012)	(0.0013)
lnpop	−0.427***	−0.323***	−0.358***	−0.0229***	−0.0163***	−0.018***
	(0.0199)	(0.0206)	(0.0208)	(0.001)	(0.001)	(0.001)
lnpinc	−0.0153	−0.00612	0.484***	−0.0008	−0.0003	0.0243***
	(0.0413)	(0.0419)	(0.0798)	(0.0022)	(0.002)	(0.004)
lnnfirm	0.297***	0.250***	0.234***	0.01598***	0.0126***	0.0117***
	(0.0175)	(0.0179)	(0.0195)	(0.0009)	(0.0009)	(.0009)
Constant	−0.409	−1.124**	−4.694***			
	(0.310)	(0.466)	(0.782)			
Stage FE	✓	✓	✓	✓	✓	✓
Industry FE		✓	✓		✓	✓
Year FE			✓			✓
Observations	151,367	151,367	151,367	151,367	151,367	151,367

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3
Baseline results: cultural proximity on firm performance.

	Dependent variable = exit (Observations in the mature stage)					
	(1)	(2)	(3)	(4)	(5)	(6)
	Logit coefficients			Average marginal effects		
diadist_mean	−0.288***	−0.293***	−0.292***	−0.0321***	−0.031***	−0.0303***
	(0.0280)	(0.0284)	(0.0288)	(0.0031)	(0.0029)	(0.0029)
lnpgdp	−0.176***	−0.120***	−0.194***	−0.0196***	−0.0127***	−0.0202***
	(0.0376)	(0.0388)	(0.0424)	(0.0042)	(0.0041)	(0.0044)
lnpop	−0.437***	−0.361***	−0.391***	−0.0488***	−0.0381***	−0.0406***
	(0.0334)	(0.0348)	(0.0353)	(0.0036)	(0.0036)	(0.0036)
lnpinc	0.0804	0.0603	0.311**	0.0089	0.0064	0.0323**
	(0.0714)	(0.0730)	(0.130)	(0.0079)	(0.0077)	(0.0135)
lnnfirm	0.334***	0.279***	0.287***	0.0373***	0.0295***	0.0298***
	(0.0292)	(0.0302)	(0.0331)	(0.0032)	(0.0032)	(0.0034)
Constant	0.449	0.622	−0.729			
	(0.554)	(0.677)	(1.478)			
Industry FE		✓	✓		✓	✓
Year FE			✓			✓
Observations	30,222	30,014	30,014	30,222	30,014	30,014

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

4.2. Robustness checks

4.2.1. Alternative measure of cultural proximity

In this subsection, we conduct a robustness test for our baseline results using *diadist_wmean*, an alternative measure of cultural proximity. Variable *diadist_wmean* is constructed as follows:

$$diadist\_mean_{it} = \sum_{j=1}^{n} diadist_{ij} \times share_{ij}$$

where $share_{ij}$ is VC investor *j*'s share of a portfolio firm. Table 4 reports robustness results, which are consistent with baseline results in Table 3.

4.2.2. Robustness check: alternative measure of exit performance

In baseline models, we use exit as exit performance, which includes five outlets for portfolio firms: (1) IPO, (2) acquisition, (3) equity transfer, (4) repurchase and (5) backdoor listing. In this subsection, we deploy an alternative measure of exit performance, *IPO&Acquisition*, which equals 1 if the portfolio firm goes public through an IPO or is acquired, and equals 0 otherwise. Table 5 presents robustness results, which are in line with the baseline results of Table 3.

4.2.3. Endogeneity

Although we consider unobserved industry heterogeneity to estimate VC investors' exit, potential observed factors affect

Table 4
Robustness check: alternative measure of cultural proximity.

	Dependent variable = exit (Observations in the mature stage)					
	(1)	(2)	(3)	(4)	(5)	(6)
	Logit coefficients			Average marginal effects		
diadist_wmean	−0.126***	−0.120***	−0.120***	−0.0181***	−0.0168***	−0.0165***
	(0.0128)	(0.0129)	(0.0130)	(0.0018)	(0.0017)	(0.0017)
lnpgdp	−0.143***	−0.104**	−0.216***	−0.0206***	−0.0146**	−0.0298***
	(0.0419)	(0.0432)	(0.0474)	(0.006)	(0.006)	(0.0065)
lnpop	−0.429***	−0.376***	−0.401***	−0.0616***	−0.0525***	−0.0554***
	(0.0373)	(0.0388)	(0.0393)	(0.0053)	(0.0054)	(0.0054)
lnpinc	−0.161*	−0.201**	0.318**	−0.0231*	−0.0281**	0.0439**
	(0.0823)	(0.0841)	(0.144)	(0.0118)	(0.0117)	(0.0199)
lnnfirm	0.472***	0.413***	0.384***	0.0678***	0.0577***	0.0529***
	(0.0333)	(0.0345)	(0.0374)	(0.0047)	(0.0047)	(0.0051)
Constant	1.185*	0.519	−2.450*			
	(0.608)	(0.655)	(1.474)			
Industry FE			✓		✓	✓
Year FE		✓	✓			✓
Observations	18,565	18,393	18,393	18,565	18,393	18,393

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5
Robustness check: alternative measure of exit performance.

	Dependent variable = IPO & Acquisition (Observations in the mature stage)					
	(1)	(2)	(3)	(4)	(5)	(6)
	Logit coefficients			Average marginal effects		
diadist_mean	−0.327***	−0.333***	−0.332***	−0.0328***	−0.0314***	−0.0307***
	(0.0294)	(0.0298)	(0.0302)	(0.0029)	(0.0028)	(0.0027)
lnpgdp	−0.226***	−0.173***	−0.254***	−0.0226***	−0.0163***	−0.0235***
	(0.0392)	(0.0404)	(0.0443)	(0.0039)	(0.0038)	(0.004)
lnpop	−0.452***	−0.375***	−0.408***	−0.0453***	−0.0354***	−0.0377***
	(0.0350)	(0.0364)	(0.0370)	(0.0034)	(0.0034)	(0.0034)
lnpinc	0.0882	0.0705	0.337**	0.0088	0.0066	0.0311**
	(0.0745)	(0.0761)	(0.137)	(0.0074)	(0.0071)	(0.0126)
lnnfirm	0.390***	0.338***	0.348***	0.0391***	0.0319***	0.0322***
	(0.0309)	(0.0319)	(0.0351)	(0.0031)	(0.0029)	(0.003)
Constant	0.594	0.893	−0.385			
	(0.582)	(0.702)	(1.510)			
Industry FE			✓		✓	✓
Year FE		✓	✓			✓
Observations	30,222	30,014	30,014	30,222	30,014	30,014

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

the probability of portfolio firms being treated. To address potential endogeneity issues, we use a 2SLS instrumental variable (IV) approach for the following regression:

$$exit_{it} = \alpha_0 + \alpha_1 \widehat{diadist\_mean}_{it} + \boldsymbol{X_{it}}\beta + \eta_b + \eta_s + \eta_t + \varepsilon_{it} \quad (2a)$$

To estimate the above equation, we replace $diadist\_mean_{it}$ with its fitted value, $\widehat{diadist\_mean}_{it}$. In the first stage, we employ *lndist_mean*, the logarithm of mean value of geographical distances between a portfolio firm and its VC investors, as an IV. The results of IV estimation are presented in Table 6. Column (4) reports the first stage estimation results and IV tests. The null hypotheses of under-identification and weak identification tests are rejected, verifying the validity of the IV. The coefficients of $\widehat{diadist\_mean}$ in columns (1)–(3) exhibit consistent signs as those in Table 6.

Numerous start-up firms tend to locate themselves in areas that are near VC investors. The baseline results may have biased effects due to investments' uneven geographical distribution.[2] To clarify the effects of cultural distance, we conduct a series of regressions by different geographical distance groups. Using these sub-samples, we can capture the effects of cultural distance in cross-region VC investments. Table 7 reports the

[2] We are thankful to an anonymous reviewer for their helpful suggestions in this regard. We conduct regressions to clarify the effects of cultural distance.

Table 6
Robustness check: IV estimation.

	(1)	(2)	(3)	(4)
	Exit	exit	exit	diadist_mean
diadist_mean	−0.0107**	−0.0125**	−0.0127**	
	(0.00494)	(0.00493)	(0.00502)	
lndist_mean				0.1483***
				(0.001)
lnpgdp	−0.0174***	−0.0107**	−0.0213***	−0.001
	(0.00448)	(0.00452)	(0.00493)	(0.0068)
lnpop	−0.0476***	−0.0386***	−0.0419***	−0.0847***
	(0.00390)	(0.00399)	(0.00401)	(0.0054)
lnpinc	0.0128	0.0105	0.0496***	−0.4183***
	(0.00834)	(0.00831)	(0.0146)	(0.0195)
lnnfirm	0.0397***	0.0326***	0.0323***	0.0135***
	(0.00329)	(0.00333)	(0.00355)	(0.0048)
constant	0.228***	0.254***	0.0370	7.4155***
	(0.0688)	(0.0834)	(0.172)	(0.2247)
Under-identification (p-values)				0.000
Weak-identification (F-stat)				21,098
10% maximal IV size				16.38
Industry FE			✓	✓
Year FE		✓	✓	✓
Observations	30,199	30,199	30,199	30,199

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

results of different distance groups. Columns (1)–(5) of panel A show the sub-samples in which geographical distances (*dist_mean*) between VC investors are greater than 0 km, 100 km, 200 km, 500 km, and 1000 km, respectively. In Panel B, the sample is divided into five groups in terms of the distance between VC investors: 100–200 km, 200–300 km, 300–500 km, 500–1000 km, and 1000–3000 km respectively. The sub-sample results are in line with baseline results and confirm the significant effects of cultural distance on cross-region VC investments.

4.3. Extension analysis

In this section, we conduct a series of extension analyses on how cultural proximity affects venture capitalists' exit performance. First, we explore the effect of cultural proximity on financial performance. Second, this study investigates a series of heterogeneities of the nexus between cultural proximity and exit performance.

4.3.1. Nexus between cultural proximity and financial performance

To explore cultural proximity's effect on portfolio firms' financial performance, we use *return*—the VC investment's return—as the dependent variable. *return* is the ratio of VC investors' earnings from successful exit of portfolio firms to their investment. Table 8 presents the empirical results, which indicate that the greater the cultural distance, the greater the investment return. For example, in Column (3) of Table 8, one standard deviation increase in dialect distance raises the return by 65% ($0.6867 \times 0.948 = 0.6501$)—possibly because venture capitalists ask for a risk premium for their investments if the cultural proximity is low. Moreover, venture capitalists screen portfolio firms more prudently if such firms are not culturally proximate (Chen et al., 2010). Cultural distance is a double-edged sword with costs as well as benefits (Reus et al., 2009). For long-distance projects, experienced venture capitalists conduct more stringent screening. This helps them overcome information asymmetry in investment decisions to obtain better investment returns.

Venture capitalists are aware of challenges and risks related to cultural differences and conduct greater screening and monitoring of portfolio firms (Chakrabarti et al., 2009; Nahata et al., 2014). To explore the mechanism of cultural distance's influence on portfolio firms' financial performance, we also conduct mechanism tests to investigate monitoring effects in VC investments.[3] Table 9 shows the results of the mechanism analysis. Specifically, variable *dia_duration* is the interaction term between *diadist_mean* and *duration*; *duration* is the time that venture capitalists take to make an exit from investments. Variable *dia_board* is the interaction term between *diadist_mean* and *board_vc*, in which *board_vc* is venture capitalists' presence on portfolio firms' board. In our model, *board_vc* equals 1 if venture capitalists are present in the board of portfolio firms, and 0 otherwise. Panels A and B of Table 9 show the effects of time to exit and venture capitalists' board representation, respectively. The coefficients of *dia_duration* and *dia_board* are significantly positive in all columns, indicating that monitoring effects exist in VC investments.

[3] We are thankful to an anonymous reviewer for their helpful suggestions in this regard. We add mechanism tests to investigate monitoring effects in VC investments.

Table 7
Robustness check: distance groups' results.

	(1)	(2)	(3)	(4)	(5)
			Exit		
Panel A					
dist_mean	>0 km	>100 km	>200 km	>500 km	>1000 km
diadist_mean	−0.382***	−0.445***	−0.420***	−0.347***	−0.180**
	(0.0340)	(0.0357)	(0.0374)	(0.0438)	(0.0828)
Observations	24,319	23,182	21,472	18,617	10,810
Panel B					
dist_mean	100–200 km	200–300 km	300–500 km	500–1000 km	1000–3000 km
	−1.087***	−1.105***	−0.251**	−0.484***	−0.208**
	(0.174)	(0.175)	(0.113)	(0.0661)	(0.0828)
Observations	1496	840	1701	7450	10,673
Industry FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8
Nexus between cultural proximity and financial performance.

	Dependent variable = return		
	(1)	(2)	(3)
diadist_mean	0.944***	0.990***	0.948***
	(0.221)	(0.224)	(0.226)
lnpgdp	0.811***	1.037***	1.283***
	(0.295)	(0.304)	(0.323)
lnpop	0.340	0.567**	0.605**
	(0.259)	(0.272)	(0.274)
lnpinc	−3.747***	−3.611***	−5.027***
	(0.578)	(0.585)	(0.996)
lnnfirm	0.445*	0.335	0.506*
	(0.227)	(0.236)	(0.262)
Constant	24.77***	18.22***	31.10***
	(4.722)	(5.387)	(10.74)
Industry FE			✓
Year FE		✓	✓
Observations	3452	3452	3452

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 9
Mechanism analysis.

	Dependent variable = return		
	(1)	(2)	(3)
Panel A			
diadist_mean	−0.169	−0.110	−0.220*
	(0.118)	(0.124)	(0.126)
dia_duration	1.184***	1.102***	1.312***
	(0.379)	(0.401)	(0.403)
Observations	3393	3393	3393
Panel B			
diadist_mean	−0.763*	−1.020**	−1.112**
	(0.459)	(0.467)	(0.468)
dia_board	0.446***	0.534***	0.545***
	(0.0998)	(0.102)	(0.101)
Observations	874	874	874
Control variables	✓	✓	✓
Industry FE		✓	✓
Year FE			✓

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

4.3.2. Heterogeneities

In this subsection, this study examines the heterogeneity effects of cultural proximity on exit performance. To do so, we develop a specification to explore heterogeneous effects as follows:

$$exit_{it}^{*} = \alpha_0 + \alpha_1 diadist\_mean_{it} + \alpha_2 diadist\_mean_{it} \times hetero_{it} + \alpha_3 hetero_{it} + \boldsymbol{X_{it}}\beta + \eta_b + \eta_s + \eta_t + \varepsilon_{it}, \quad (3)$$

where $diadist\_mean_{it} \times hetero_{it}$ is the interaction term between *diadist_mean* and the heterogeneity variable. The coefficient of interest is α_2, which indicates how the variable hetero affects cultural proximity's effects on exit performance.

First, we set *hetero* = *vcnum* (number of VC investors) to investigate how the number of VC investors affects cultural proximity's effects on exit performance. Panel A of Table 10 shows that the coefficients of *dia_vcnum* ($diadist\_mean_{it} \times vcnum_{it}$) are all statistically insignificant, indicating that the number of VC investors cannot affect cultural proximity's effects on exit performance.

Second, we set *hetero* = *STAR*, which equals 1 if the firm belongs to the sci-tech innovation industry, and 0 otherwise. This specification can examine how cultural proximity affects exit performance depending on industry characteristics. Panel B of Table 10 shows that coefficients of *dia_STAR* ($diadist\_mean_{it} \times STAR_{it}$) are all insignificant, suggesting that industry characteristics do not affect cultural proximity's effects on exit performance.

Finally, we set *hetero* = *gov*. *gov* equals 1 if VC investors have a government background and equals 0 otherwise. In this subsection, we investigate the effects of a government background on venture capitalists' performance while exiting portfolio firms. Panel C of Table 10 presents the empirical

Table 10
Extension analysis: heterogeneities.

	Dependent variable = exit		
	(1)	(2)	(3)
Panel A			
diadist_mean	−0.247***	−0.263***	−0.257***
	(0.0409)	(0.0415)	(0.0418)
dia_vcnum	0.00637	0.00833	0.00919
	(0.0149)	(0.0152)	(0.0153)
Panel B			
diadist_mean	−0.295***	−0.300***	−0.300***
	(0.0303)	(0.0308)	(0.0312)
dia_STAR	0.0459	0.0444	0.0507
	(0.0753)	(0.0759)	(0.0759)
Panel C			
diadist_mean	−0.322***	−0.330***	−0.328***
	(0.0284)	(0.0288)	(0.0292)
dia_gov	1.569***	1.592***	1.631***
	(0.197)	(0.195)	(0.195)
Control variables	✓	✓	✓
Industry FE		✓	✓
Year FE			✓
Observations	30,222	30,014	30,014

Notes: The dependent variables are listed at the top of each column. Standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

results. The coefficients of *dia_gov* ($diadist\_mean_{it} \times gov_{it}$) are all positive and significant at 1% level. The results indicate that VC investors with a government background increase the probability of successfully exiting from portfolio firms.

5. Conclusion

In this study, we investigate the effects of cultural proximity on venture capitalists' performance while exiting from portfolio firms based on a sample from China. Our study finds that a decrease in cultural distance increases the likelihood of successfully exiting from portfolio firms. Cultural proximity is also associated with the returns that venture capitalists earn from portfolio firms. VC investors with less cultural proximity are more likely to obtain better financial return when they successfully exit from an investment. Moreover, our study provides empirical evidence on cultural proximity's heterogeneity effects on exit performance. Overall, the study provides novel evidence on cultural proximity's effects on the performance of venture capitalists' exit from portfolio firms.

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Conflict of interests

There is no conflict of interest.

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