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Government ownership and Venture Capital in China[1]

Jo-Ann Suchard[a,*], Mark Humphery-Jenner[a], Xiaping Cao[b]

[a] UNSW Business School, UNSW Sydney, Australia
[b] Lingnan College, Sun Yat-sen University

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ABSTRACT

China's venture capital (VC) market features significant government ownership of VCs. We examine the impact of government-owned VCs on the exit success of entrepreneurial firms. We distinguish between types of government VC according to the degree of government ownership (whole versus partial) and the level of government (central versus provincial). We find that partially government-owned VCs increase the likelihood of a successful exit, especially via initial public offering (IPO) in mainland China, where the IPO process is discretionary and heavily regulated. Entrepreneurial firms backed by partially government-owned VCs also have a higher likelihood of exit at times of policy uncertainty and the timing of exit is less sensitive to prevailing market conditions. Provincial government-owned VCs increase exit likelihood; however, the positive effect decreases when multiple provincial government-owned VCs invest in a firm. Our findings suggest that entrepreneurial firms may benefit from government VC investment, but that complete government control of a VC can lead to inefficiencies.

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1. Introduction

Entrepreneurship drives innovation, employment, and productivity growth in developed and emerging economies. Venture capital (VC) is an important financing source for entrepreneurial activity. In contrast to other financial intermediaries, VC investors take an active role in the development of the entrepreneurial firms that they fund (Bygrave and Timmons, 1992; Hellmann and Puri, 2002). VC investors provide entrepreneurial firms with value-adding activities such as financial, administrative, marketing, strategy, and management support (Denis, 2004; Gorman and Sahlman, 1989; Kaplan and Stromberg, 2004; Sapienza, 1992; Sapienza et al., 1996; Cumming et al., 2005). They also foster the professionalization of young, innovative firms (Bottazzi et al., 2008; Hellmann and Puri, 2002), provide access to specialized professional services, and establish alliances with third parties (Colombo et al., 2006; Hsu, 2006; Lindsey, 2008). Empirical studies suggest that VCs add value to entrepreneurial firms through increased efficiency, productivity, and innovation (Chemmanur et al., 2011; Croce et al., 2013; Kortum and Lerner, 2000) and improved governance structures (Suchard, 2009; Hochberg, 2012).

Potential market failures associated with innovation and entrepreneurial finance (Hall, 2002; Amit et al., 1998) may provide a rationale for government intervention. Governments may intervene in VC markets to spur innovation and entrepreneurship or to achieve social policies and government goals (e.g., Bayer et al., 2019). Governments can support VCs by providing funding or can own and run VCs (Brander et al., 2015). In developed markets, governments have supported privately managed VCs primarily through the provision of significant financing, tax credits, and other subsidies (Lerner, 1999; Leleux and Surlemont, 2003; Armour and Cumming, 2006; Brander et al., 2015; Colombo et al., 2016; Alperovych et al., 2018). Governments have also directly owned VCs, albeit mainly in Europe (Grilli and Murtinu, 2014; Bertoni and Tykvová, 2015; Bertoni et al., 2015; Guerini and Quas, 2016). The role of government ownership in VCs remains relatively underexplored, especially in the context of emerging markets. Each country's unique legal and institutional framework can play a critical role in shaping the VC industry and its impact on entrepreneurial firms (Jeng and Wells, 2000; Megginson, 2004). The distinction between emerging and developed markets is especially important given the increased political and economic risks that are evident in developing economies and the role of political connections in mitigating these risks.

The purpose of this study is to examine the impact of Chinese government-owned VCs on the exit success of entrepreneurial

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* Corresponding author at: UNSW Business School, UNSW Sydney, Sydney NSW 2052, Australia.
E-mail address: j.suchard@unsw.edu.au (J.-A. Suchard).

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firms and the performance of VC funds. China is the largest emerging market and the VC sector has become an important force in the country's industrial transformation. In 2018, over 29.4% of global VC was directed into Chinese start-ups (Pitchbook, 2019). China's VC market features significant government involvement, with many VCs having complete or partial government ownership.

Prior studies suggest that government ownership of firms can have positive and negative impacts. Government intervention in state-owned enterprises (SOEs) can distort investment allocations, reduce investment efficiency, and destroy value (Shleifer, 1998), particularly in local government SOEs (Hao and Lu, 2018). Alternatively, government ownership conveys political connections, which can facilitate access to bank loans, government concessions, and favorable regulatory outcomes (Faccio, 2006; Claessens et al., 2008; Li et al., 2008). In venture capital, government ownership of VCs can confer certain advantages to entrepreneurial firms. Investment by government-owned VCs can imply government endorsement (Colombo et al., 2016) and can assist entrepreneurial firms in obtaining additional public support, such as R&D grants and partnerships (Colombo et al., 2016). The connections to government agencies provided by government-owned VCs are important for entrepreneurial firms in China, where exit through an initial public offering (IPO) requires prolonged government approval.

Despite the potential benefits of government-owned VCs, government ownership could lead to inefficiencies. This can occur both within entrepreneurial firms and the VC itself. Prior studies in developed markets suggest that government-owned VCs suffer from bureaucratic costs and political interest (Cumming et al., 2017), and can struggle to attract and retain talented managers (Jääskeläinen et al., 2007). These shortcomings can lead to less effective monitoring, nurturing, and mentoring of entrepreneurial firms by government-owned VCs (Colombo et al., 2016).

We use a comprehensive sample of 4700 Chinese entrepreneurial firms that received VC funding and examine the impact of government-owned VC investment on the likelihood of the entrepreneurial firm achieving a successful exit (i.e., an IPO or a merger/acquisition). In addition, we examine how the impact of government ownership varies with political and economic uncertainty and the performance of government-owned VC funds. We distinguish between types of government VCs according to the degree of government ownership (wholly versus partially owned) and the level of government (central versus provincial government). Government ownership of a VC confers both advantages and disadvantages, where disadvantages may be somewhat mitigated when the ownership is partial rather than full. Further, the level of the government owner of a VC (provincial versus central) may impact the success of entrepreneurial firms located within the same province as the government owner. Provincial government ownership may provide more effective political connections, superior information, and access to regulators for local entrepreneurial firms. Investment by multiple provincial government-owned VCs however, could increase the risk of negative impacts from politically motivated decision-making.

We find that partially government-owned VCs increase the likelihood of a successful exit, especially via an IPO in the Chinese mainland. As the IPO process in China is discretionary and heavily regulated, government-owned VCs can assist firms in accessing IPO markets. We also find that government-owned VCs can better navigate political uncertainty and are less sensitive to adverse market conditions when exiting entrepreneurial firms.

Further, we find that exit likelihood increases with the presence of a provincial government-owned VC, but the benefit decreases when there are multiple provincial government-owned VCs invested in the firm. In terms of VC fund performance, we find limited evidence that government-owned VCs have lower performance. The lower performance could be driven by the sample of funds that have available performance data, as these funds have a high number of newer investments that have not had adequate time to reach maturity and achieve an exit. Overall, our results suggest that government ownership in VCs can help entrepreneurial firms navigate the discretionary nature of financial market regulations in China, but complete government control can lead to inefficiencies.

Our study contributes to the literature on government intervention in VC markets. First, we focus on government-owned VC whereas the literature tends to focus on government-supported VC (e.g., 86% of the sample in Brander et al. (2015) are government-supported VC funds). Second, much of the literature has focused on developed markets (e.g., Leleux and Surlemont, 2003; Armour and Cumming, 2006; Brander et al., 2015), which may not be generalizable to emerging markets that lack similar business infrastructure and institutions (Khanna and Palepu, 2010). Although Brander et al. (2015) include global data, emerging markets account for only 12% of their sample (and China 6%). We conduct our analysis using a sample from the world's largest emerging market where government-owned VC has played a pivotal role. The analysis of an emerging market allows us to examine the role of government VC in a market that is characterized by significant political and economic risks, which government connections may help to mitigate.

Third, many studies focus on market-level rather than firm-level data and have examined whether government VC substitutes or complements private VC (Hood 2000; Leleux and Surlemont, 2003; Bertoni et al., 2015). Our study considers the impact of government VC at the firm level. Although there is some evidence of the impact of government VC at the firm level, this has focused on European markets (Grilli and Murtinu, 2014; Alperovych et al., 2015; Bertoni and Tykvová, 2015; Munari and Toschi, 2015; Guerini and Quas, 2016; Cumming et al., 2017; Bertoni et al., 2019).

Fourth, prior literature considers government-owned VCs as a homogenous group. The institutional features of the Chinese market allow us to contribute to the literature through an analysis of the impact of the heterogeneity of government ownership. We consider the impact of the degree of government ownership in the VC and whether government ownership is central or local.

Finally, the nature of our data enables us to analyze factors that moderate government VCs' impact on entrepreneurial firm exits. For example, we analyze government VCs' relative sensitivity to policy and economic uncertainty. We also examine the role of government VCs in facilitating different exit types, which is important in China where political connections may influence access to IPOs (Li and Zhou, 2015; Liu et al., 2013).

The structure of the paper is as follows. Section 2 discusses the relevant institutional background and details the hypotheses. Section 3 describes the data. Section 4 presents the results, and Section 5 concludes.

2. Background and hypotheses

2.1. Government- owned VC and entrepreneurial firm exit

Governments often support the financing of innovation to encourage socially beneficial outcomes. Bayer et al. (2019) suggest that government financing may be used to effectively subsidize entrepreneurial firms with higher development costs or greater risks, that is, for firms that are less likely to obtain private sector support. Government support has traditionally included grants, subsidies and tax credits. Governments have also provided incentives or funding subsidies to VCs to encourage private sector investment. Private sector VCs can amplify the impact of government support

by providing expertise and capital (Bayer et al., 2019).[2] Government support for entrepreneurial firms can also be achieved by the establishment and ownership of VC firms. Government ownership of VCs can be whole or partial in combination with private sector parties. Partially government-owned VCs might function similarly to private sector VCs, but with the added value of government connections, whereas wholly government-owned VCs might focus more on policy-orientated outcomes.

Government-owned VCs in China have several advantages over other VCs. Their political connections could be beneficial to the entrepreneurial firms that they invest in (referred to as portfolio companies in the VC literature). Connections, in general, are often seen as a value driver in VC and private equity (PE) investment (Bottazzi et al., 2008; Hochberg et al., 2010, 2007). Political connections can convey several advantages (Faccio, 2006) and can be particularly important in emerging markets for several reasons.

First, arbitrary government decisions and limited recourse to the courts are a feature of many emerging markets including China (He and Su, 2013), and this can influence the investment decisions of VCs (Lin, 2013). Political connections can help firms in China to protect against governmental rent-seeking, especially in areas where the government has more discretion (Chen et al., 2011). Governments are less likely to enforce regulations against connected firms (Berkman et al., 2010) and political connections significantly increase firms' perceptions of property rights security (Zhou, 2013). Such legal issues can deter non-government (i.e., private) investors from engaging with entrepreneurs (Bottazzi et al., 2009).

Second, government connections can help a firm to navigate politically influenced and discretionary bureaucratic processes. The IPO process in China is heavily regulated and at times, subject to suspensions and a quota system (Huang, 2011). IPOs in China require greater government interaction compared with other markets and government connections could help a VC to successfully exit an entrepreneurial firm.

Third, backing from a politically connected VC could also provide greater access to capital in a market where capital access can be pseudo-political (Li et al., 2008). For example, Chen et al. (2013) argue that non-commercial factors such as corruption and bribery determine a firm's access to loans from all but the largest four banks, and loans granted to politically connected firms are less influenced by firm profitability and tangibility (Zheng and Zhu, 2013).

However, government-owned VCs might also present disadvantages, which may outweigh their advantages. Government VCs are susceptible to local government pressure to promote local economies and support new ventures with unattractive risk and return prospects. The government, as the ultimate owner, can intervene in the operations of a firm and may do so when pursuing political and social goals such as reducing unemployment (Wu et al., 2012a). Thus, government-owned VCs might direct entrepreneurial firms towards policy-driven, but less profitable activities.

Government-owned VCs may be less efficient in selecting VC managers and entrepreneurial firms, where they may appoint managers due to political connections rather than expertise or experience. These VCs are also constrained by rigid regulation of compensation contracts, which limits their ability to attract and incentivize managers (Chen et al., 2013). Thus, managers may have less incentive to acquire private information or closely monitor funded firms. Exacerbating this, government-owned VCs have less incentive to generate returns as they do not have to compete with the private sector for new funds.

Government ownership of VCs thus confers both advantages (primarily through political connections) and disadvantages (e.g., inefficiency, politically motivated decision-making, and misallocation of resources). The disadvantages of government ownership may be somewhat mitigated where a VC is partially government owned. Prior studies suggest that privately owned firms with political connections benefit through increased access to subsidies, whereas wholly government-owned firms do not experience these gains (Wu et al., 2012b). Although some level of political connections improve firm performance, high levels of connections are associated with government interference and value destruction (Chen et al., 2012). This suggests that entrepreneurial firms may benefit more from funding from a partially government-owned VC than funding from a wholly government owned VC. We use an IPO or M&A exit as a measure of entrepreneurial firm success/performance, which is commonly used in VC research (e.g., Gompers et al., 2010). Thus, we formulate the following hypothesis.

Hypothesis 1: Partially government-owned VCs increase the likelihood of entrepreneurial firm exits more than wholly government-owned VCs.

2.2. Government-owned VC and political uncertainty

In China, financial markets are especially vulnerable to political uncertainty, which involves uncertainty over future government policy and the enforcement of existing policies. The laws concerning bankruptcy (Tomasic and Zhang, 2012), directors' duties (Xu et al., 2013), anti-trust (Wei, 2013), IPOs, takeovers (Cai, 2011), and securities litigation (Huang, 2010, 2007; Humphery-Jenner, 2012b) have undergone significant changes and face significant uncertainty. Additionally, regulatory approval is required for IPOs and takeovers, and there is government discretion in the enforcement of policies. For IPOs, there is a merits review approach to facilitating securities listings (Huang, 2011; Humphery-Jenner, 2012b), and the government maintains restrictions over the IPO process, leading to potential uncertainty surrounding IPO exits. For takeovers, there is discretion in relation to the application of the mandatory bid rule (Cai, 2011), rendering takeover exits vulnerable to political uncertainty.

Government-owned VCs may mitigate the impact of political uncertainty for entrepreneurial firms (Zhou, 2017). The benefits of government ownership in relation to political uncertainty should concentrate in partially government-owned VCs. Entrepreneurial firms that are backed by wholly government-owned VCs are more exposed to the driver of such political uncertainty (that is, the government), which may offset the benefits of government connections. In partially government-owned VCs, non-government owners may moderate government interventions. Thus, we hypothesize.

Hypothesis 2: Partially government-owned VCs mitigate the impact of political uncertainty for entrepreneurial firms.

2.3. Government-owned VC and market conditions

Poor market conditions generally impact the ability of VCs to achieve entrepreneurial firm exits (Chaplinsky and Gupta-Mukherjee, 2016). However, government-owned VCs may be less sensitive to market conditions when exiting a firm. Government-owned VCs are not exposed to external market forces in relation to raising future funds. In contrast, a non-government VCs' prior performance can influence future capital raising (Kaplan and Schoar, 2005; Hochberg et al., 2013). Thus, we expect that

[2] Several countries have systems that have trialed this. For example, Australia ran the "Innovation Investment Fund" scheme, whereby the government provided lower cost capital to VCs that would focus on preferred investment areas (Humphery-Jenner, 2012a).

government-owned VCs will be less concerned about the timing of their exits. We do not anticipate that government-owned VCs would prefer to exit in poor conditions than in good conditions, nor will they always exit in poor conditions. Rather, we anticipate that as government-owned VCs are less sensitive to market conditions than are non-government VCs, they are incrementally more likely to exit in poor conditions than are non-government VCs. Thus, we make the following hypothesis.

Hypothesis 3: Government-owned VCs are less sensitive to poor market conditions when exiting their entrepreneurial firms than non-government VCs.

2.4. Government owned VC, location and entrepreneurial firm exit

The geographic proximity between a firm and its VCs can have some benefits in relation to monitoring, which can allow the VC to add value to the entrepreneurial firm (Chen et al., 2010; Humphery-Jenner and Suchard, 2013; Lutz et al., 2013). A VC that is based in the same region as the entrepreneurial firm will have greater institutional knowledge about that region, making monitoring and advice more effective and relevant. When a government VC is from the same province as the entrepreneurial firm, their political connections may be more directly useful as they are more immediately relevant to the entrepreneurial firm's operations. Local government VCs might also be better positioned to identify and appropriately support promising companies compared to central government VCs.

However, there may be disadvantages to investment from a government-owned VC located in the same province as the entrepreneurial firm, which could partially offset advantages. As Bayer et al. (2019) highlight, governments might become involved in entrepreneurial firms for policy purposes. This focus on policy goals, rather than on financial goals, is likely to become stronger the more government VCs are invested in a firm. Hao and Lu (2018) argue that as the political promotion of local government officials is closely tied to local economic performance, local government officials have strong incentives to influence local enterprises to invest in assets that make a direct and immediate impact toward achieving economic goals. In this case, government-owned VCs tend to select entrepreneurial firms that are in government-favored sectors or industries. Furthermore, support from the provincial government can tie an entrepreneurial firm to promoting the government's interests, which might impede firm success.

Therefore, we expect that backing from a provincial government-owned VC will improve exit likelihood. However, investment by multiple provincial government-owned VCs could increase the risk of negative impacts from politically motivated decision-making.

Hypothesis 4: There is a quadratic relationship between the proportion of the firm's VC investors who are owned by the provincial government in which the firm is located and entrepreneurial firm exits.[3]

2.5. Government-owned VC and IPOs

Government-owned VCs may be more able to facilitate an IPO exit, particularly a domestic IPO exit, than non-government owned VCs. Recent Chinese evidence suggests that the political capital of underwriters and auditors can increase the likelihood of their clients' IPO applications being approved by regulators (Chen et al., 2017; Yang, 2013). Firms who are politically connected have better access to IPO markets, often featuring lower underpricing and fewer costs during the IPO process (Francis et al., 2009), and a greater probability of IPO approval (Li and Zhou, 2015; Liu et al., 2013). These advantages are attributable to the signaling benefits of government connections (following the logic in Ragozzino and Reuer, 2011), and the benefits of connections in navigating the discretionary nature of China's IPO approval regulations. By contrast, political connections would be less advantageous for other exit types, such as M&As, where there is relatively less government intervention (Huang, 2008, 2005). Therefore, we formulate the following hypotheses.

Hypothesis 5a: Government-owned VCs are more likely to exit their portfolio companies via an IPO.

Hypothesis 5b: Government-owned VCs are more likely to exit their portfolio companies via an IPO in mainland China than an IPO overseas.

2.6. Government-owned VC and fund returns

While political connections can convey benefits to the VC's portfolio companies, this does not imply that the VC is well run or efficient. Eesley (2009) and Bayer (2019) argue that government-backed VCs have both policy as well as financial objectives. Government-owned VCs may also appoint managers due to political connections rather than expertise or experience and are also constrained in their ability to attract and incentivize managers (Chen et al., 2013). Furthermore, government-owned VCs have less incentive to generate returns as they do not have to compete with the private sector for new funds. This forms our final hypothesis.

Hypothesis 6: Government-owned VCs earn lower returns than non-government VCs.

3. Data

The data is from ChinaVenture and is supplemented by hand-collected VC ownership data. The sample contains 4700 entrepreneurial firms that received VC investment and 1254 VC funds. The dataset is cross-sectional, with each observation representing a separate entrepreneurial firm. The entrepreneurial firms are located in mainland China, Hong Kong, and Taiwan.[4] The firms receive their first investment from 1988 to 2011.[5] Of these firms, 820 are exited through either an IPO or a takeover, and 691 are exited via an IPO, 307 of which are in a non-mainland market.

We hand collect data on government ownership of a VC through VC profiles, web searches, and the Chinese company registration database (NECIPS). We classify the VC as wholly or partially owned by the central government or by a provincial government or both.[6]

There are 240 government-owned VCs, comprising 19% of VCs in our sample. We obtain government percentage ownership data from company registration records for 78% of these. The average government ownership of a VC is 74%, and 55% of government-owned VCs are partially government-owned. A firm can receive funding from any combination of VCs that are wholly or partially government-owned at the central or provincial level (or both), and 35% of firms receive funding from at least one government VC.

[3] We measure the proportion of VC investors that are government-owned by looking at the *number* of investors as opposed to their ownership shares. Data on the percentage ownership of VC investors in the portfolio company is unavailable.

[4] The results are robust to excluding Hong Kong and Taiwan from the sample.

[5] The government shut down the IPO market from October, 2012 until January, 2014, thus blocking the most common exit mechanism for VC-backed firms.

[6] Partial ownership is where the VC is not fully owned by the government. For example, the VC may be owned by multiple firms, where some of these firms may be owned by a government.

In the data, few VCs are government-owned at both the central and provincial level, and few entrepreneurial firms are backed by both centrally and provincially owned VCs. Subsequently, we do not separately analyze the interaction effect of having ownership at both the central and provincial levels.

We collect data on economic policy uncertainty from the Economic Policy Uncertainty group.[7] They compute an uncertainty index for most major countries, including China (Baker et al., 2013) and these measures have been used in recent studies (e.g., Pastor and Veronesi, 2013). We use the political uncertainty measure within the context of a Cox hazard model, in which the time variable is the time between first investment and the earlier of the exit date or 2012 (the last year for which we have exits). In these models, we measure policy uncertainty during the terminal year to capture the impact of policy uncertainty on exits.

We also collect VC level data on factors that might influence investment success and the nature of the exit. These factors control for investment risk and the quality of the VC, thereby helping to mitigate concerns that any government ownership/performance relationship might merely reflect some other unobserved factor. For each VC, we identify the average number of exits the VC has previously been engaged in, the natural log of the average capital under management (in USD), whether the fund is a PE or VC fund, the number of investment rounds, and the average number of prior investments. To analyze VC fund performance, we collect data on the exit multiple earned on every IPO exit from ChinaVenture as this data is only available for IPO exits and not for M&A exits. We also calculate each fund's success rate (i.e., the proportion of successfully exited investments).

We control for the provincial location of the entrepreneurial firm, industry, and the first year of investment by the VC. China has been undergoing an economic transition where institutional development varies across regions. The existence of both government-controlled and marked-oriented mechanisms has created a multi-layered institutional system and regional disparity in institutional development (Kafouros et al., 2015), which may impact venture success (Peng, 2003). We use the National Economic Research Institute marketization data to measure variation in institutional development across regions and time. The data includes sub-indicators to rate annual marketization progress in 31 provinces, municipalities, and autonomous regions in China (Fan et al., 2010). There are 30 sub-indicators along five dimensions, including the relationship between the government and the market, the development of non-SOEs, factor market development, product market development, and the development of market intermediaries and legal environment. The variables are defined in Appendix 1.

The sample averages for the variables are in Table 1. [8] Panel A contains summary statistics for the variables that are used in the analysis of the 4700 entrepreneurial firms that receive VC investment. Panel B presents summary statistics for the variables that are used in the analysis of VC fund performance. This sample contains 474 VC funds as performance data is not available for all funds, and we impose a cut-off of 2005 for inclusion to allow the fund at least seven years to exit the investment. Of the funds for which we have the requisite data, around 22% of the VCs have government ownership, with 62% of these being partially government-owned.

4. Analysis

We start by analyzing whether government-owned VCs increase the likelihood of a successful exit. Next, we look at the impact of being backed by a VC owned by the firm's provincial government. We then examine whether government-owned VCs increase the ability to list via an IPO, especially in a mainland market. Thereafter, we analyze the impact of government ownership on VC fund performance. Finally, we include several additional robustness tests.

4.1. Government-owned VC and entrepreneurial firm exit

We first analyze the impact of government ownership on portfolio company exit via IPO or acquisition. We use a Cox proportional hazard model to account for the time required to exit a portfolio company and to avoid unfairly penalizing investments in the recent past (as in Humphery-Jenner and Suchard, 2013). We define the time variable as the time (in years) between the date the firm first receives VC investment and when it is exited or 2012 (if the firm is not exited). We use 2012 because the government shut down the IPO market that year, thus blocking the most common exit mechanism for VC-backed companies. The end condition is an indicator that equals one if the firm is successfully exited or zero otherwise. As the model explicitly accounts for the time between the investment and present time, the model does not penalize firms who received their first investment recently and are not yet exited.

The results are in Table 2 and are consistent with expectations. Columns 1–3 use region fixed effects and columns 4–6 control for the marketization index of the portfolio company's region (per Fan et al., 2010). In all cases, backing by a partially government-owned VC increases exit likelihood. However, backing by a wholly government-owned VC reduces firm exit likelihood (although this effect is statistically insignificant). These results suggest that a partially government-owned VC can convey benefits in the form of government connections. However, for a wholly government-owned VC, the disadvantages of complete government ownership can undermine exit success. We also consider the impact of the degree of ownership of government owners in columns 7–8.[9] The results are consistent with columns 1–6, in that higher government ownership reduces exit success.

The signs on the control variables are largely consistent with expectations. VCs who have successfully exited more companies in the past, as proxied by *Ave Num Exits*, are more likely to exit the focal firm. This is consistent with prior evidence on performance persistence in VC and PE (Kaplan and Schoar, 2005; Hochberg et al., 2013). The marketization index is positively related to exit success suggesting that more developed institutions, governance, and legal systems increase the likelihood of exit. Interestingly, the average number of prior investments made by the VC is negatively associated with exit success. However, it is important to note that this is after controlling for the number of prior successes the VCs have. Thus, the negative coefficient captures the potential effects of a "limited attention" problem arising from the VCs investing in too many portfolio companies simultaneously (Humphery-Jenner, 2012c; Lopez-de-Silanes et al., 2015).

4.2. Government-owned VC and political uncertainty

We next analyze whether government ownership helps to ameliorate the impact of political uncertainty. We run Cox hazard models and include the interaction of the government VC indicators with measures of political uncertainty in China to analyze the effects of government ownership. The results are in Table 3 and are largely consistent with expectations. The coefficients on the interaction term *Partial-Gov VC x Uncertainty (Final Year)* are positive

[7] The data is available from: http://www.policyuncertainty.com/index.html.

[8] We report means and medians in the appendix (Table A1 and A2).

[9] The number of observations is smaller as the percentage government ownership is only available for 78% of sample government-owned VCs.

Table 1
Univariate statistics.

Panel A: Company-level sample	Sample Averages				Differences		
	FullSample [1]	No Gov VC [2]	WhollyGov VC [3]	PartialGov VC [4]	No Gov -Wholly Gov [5] = [2]-[3]	No Gov –Partial Gov [6] = [2]-[4]	Wholly Gov –Partial Gov [7] = [3] - [4]
Partial Gov VC	0.211	0.000	0.173	1.000			
Wholly Gov VC	0.119	0.000	1.000	0.098			
Overseas VC	0.383	0.492	0.111	0.159	0.382***	0.333***	-0.049***
Venture Round	0.724	0.700	0.725	0.806	-0.025	-0.106***	-0.081***
Ave Num Exits (of the VC investors)	9.979	8.459	4.525	17.832	3.934***	-9.373***	-13.307***
ln(Ave VC Cap Under Management)	5.303	5.455	4.144	5.508	1.311***	-0.053***	-1.364***
VC GP	0.574	0.492	0.704	0.800	-0.212***	-0.309***	-0.097***
Ave VC Num Prior Investments	21.404	18.960	12.027	34.173	6.933***	-15.213***	-22.146***

Panel B: Fund-level sample	FullSample [1]	No Gov VC [2]	WhollyGov VC [3]	PartialGov VC [4]	No Gov -Wholly Gov [5] = [2]-[3]	No Gov –Partial Gov [6] = [2]-[4]	Wholly Gov –Partial Gov [7] = [3] - [4]
Wholly Gov VC	0.054						
Partial Gov VC	0.133						
Multiple	0.936	0.969	0.850	0.787	0.119	0.182**	0.063
Success Rate	0.552	0.573	0.472	0.456	0.102	0.117**	0.015
Success Rate (Pre 2005)	0.812	0.820	0.814	0.762	0.006	0.058	0.052
Success Rate (Pre 2007)	0.697	0.702	0.694	0.673	0.008	0.029	0.021
Num Port Cos	11.809	11.485	10.920	14.145	0.565	-2.660	-3.225
Num Regions	4.116	4.264	3.080	3.629	1.184	0.635	-0.549
ln(Capital Under Management)	3.212	3.256	2.734	3.133	0.522	0.123	-0.399
Portfolio Spread	2.199	2.110	4.848	1.696	-2.738**	0.414	3.151**

This table reports the mean value of each variable for the full sample and the sub-samples involving wholly government owned VCs and partially government owned VCs. Panel A contains the statistics for the companies in the sample. Panel B contains the statistics for the VCs in the sample. Columns 1-4 contain sample averages and columns 5-7 contain differences in means. Superscripts ***, **, and * denote statistically significant differences using a two sample t-test.

Table 2
Government-owned VC and entrepreneurial firm exit.

Column	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Partial-Gov VC	0.259***		0.251***	0.227**		0.217**		
	[0.007]		[0.009]	[0.016]		[0.022]		
Wholly-Gov VC		-0.156	-0.131		-0.163	-0.138		
		[0.218]	[0.302]		[0.184]	[0.263]		
Government ownership							-0.008***	-0.007***
							[0.008]	[0.007]
Overseas VC	0.129	0.063	0.111	0.077	0.010	0.055	0.061	0.008
	[0.166]	[0.496]	[0.242]	[0.400]	[0.912]	[0.557]	[0.799]	[0.970]
Venture Round	-0.227**	-0.243**	-0.230**	-0.285***	-0.296***	-0.288***	-0.028	-0.050
	[0.028]	[0.018]	[0.026]	[0.006]	[0.004]	[0.005]	[0.915]	[0.843]
Ave Num Exits	0.021***	0.023***	0.021***	0.026***	0.027***	0.025***	0.009	0.011*
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.200]	[0.096]
ln(Ave VC Cap Under Management)	0.040***	0.042***	0.040**	0.035**	0.037**	0.036**	0.097**	0.108***
	[0.010]	[0.006]	[0.010]	[0.024]	[0.016]	[0.023]	[0.019]	[0.008]
VC GP	0.213**	0.288***	0.223**	0.179*	0.248***	0.192**	0.344	0.205
	[0.025]	[0.002]	[0.019]	[0.057]	[0.006]	[0.042]	[0.199]	[0.401]
Ave VC Num Prior Investments	-0.023***	-0.023***	-0.023***	-0.025***	-0.025***	-0.024***	-0.023***	-0.023***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Marketization index				0.048**	0.043*	0.046*		0.081
				[0.047]	[0.079]	[0.060]		[0.117]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	No	No	No	Yes	No
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,645	4,645	4,645	4,468	4,468	4,468	1,106	1,089
Pseudo R-squared	0.04	0.04	0.04	0.03	0.03	0.03	0.08	0.06
Likelihood Ratio Chi2	437.75	432.16	438.84	337.60	333.79	338.89	184.31	128.93

This table contains Cox proportional hazard models that analyze the likelihood of a firm being exited (via M&A or IPO). The time-variable is either (a) the time between first investment and exit if the firm is exited, or (b) the time between first investment and 2012 if the firm is not exited. The figures are coefficients (not hazard ratios). A positive coefficient on a variable indicates that the variable increases the likelihood of a firm being exited. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

and significant.[10] By contrast, backing by a wholly government-owned VC conveys no such benefit. We find consistent results (unreported) when we use the percentage of government ownership or the marketization index is included rather than region-fixed effects. The results imply that backing by a partially government-owned VC increases the likelihood of a successful exit during times of political uncertainty, particularly in the year of exit.

[10] Although the coefficient of *Partial-Gov VC* is negative, the net average effect of support from a partially government owned VC remains positive. For example, the net effect is positive 0.254 in Column 1 of Table 3. This is calculated as the partial gov coefficient (-2.509) + the interaction term coefficient (0.512) * average uncertainty (5.397)

Table 3
Government-owned VC and political uncertainty.

Column	[1]	[2]	[3]	[4]	[5]	[6]
A: Log Uncertainty (Final Year)	-5.472***	-5.357***	-5.483***	-5.456***	-5.355***	-5.465***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
B: Partial-Gov VC	-2.509***		-2.501***	-2.174**		-2.209**
	[0.008]		[0.009]	[0.023]		[0.021]
A x B	0.512***		0.511***	0.438**		0.446**
	[0.008]		[0.008]	[0.024]		[0.022]
C: Wholly-Gov VC		-0.619	-0.434		-0.201	-0.049
		[0.629]	[0.737]		[0.875]	[0.970]
A x C		0.123	0.091		0.049	0.023
		[0.633]	[0.727]		[0.848]	[0.929]
Marketization index				0.022	0.020	0.023
				[0.383]	[0.442]	[0.364]
Overseas VC	0.204**	0.209**	0.208**	0.181*	0.198**	0.189*
	[0.036]	[0.029]	[0.035]	[0.059]	[0.034]	[0.052]
Venture Round	-0.034	-0.034	-0.033	-0.097	-0.093	-0.093
	[0.751]	[0.753]	[0.756]	[0.363]	[0.383]	[0.385]
Ave Num Exits	0.012***	0.011**	0.012***	0.013***	0.012***	0.014***
	[0.007]	[0.012]	[0.008]	[0.004]	[0.005]	[0.003]
ln(Ave VC Cap Under Management)	-0.020	-0.020	-0.020	-0.020	-0.022	-0.021
	[0.215]	[0.224]	[0.225]	[0.196]	[0.174]	[0.185]
VC GP	-0.061	-0.071	-0.062	0.002	-0.021	-0.005
	[0.527]	[0.443]	[0.526]	[0.982]	[0.818]	[0.957]
Ave VC Num Prior Investments	-0.010***	-0.009***	-0.010***	-0.010***	-0.010***	-0.011***
	[0.001]	[0.003]	[0.001]	[0.001]	[0.002]	[0.001]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	No	No	No
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,645	4,645	4,645	4,468	4,468	4,468
Pseudo R-squared	0.214	0.214	0.214	0.214	0.213	0.214
Likelihood Ratio Chi2	2572	2566	2572	2446	2441	2447

This table analyzes the relationship between political uncertainty, government backing, and the likelihood of a successful exit. The models are Cox hazard models. The time-variable is either (a) the time between first investment and exit if the firm is exited, or (b) the time between first investment and 2012 if the firm is not exited. The figures are coefficients (not hazard ratios). A positive coefficient on a variable indicates that the variable increases the likelihood of a firm being exited. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

4.3. Government owned VC and market conditions

This section analyzes how the VC's sensitivity to market conditions impacts entrepreneurial firm exits. We capture market conditions by obtaining the return over the exit year (or final year if the firm is not exited) on the SSE Composite index or SZ 200 index. We interact the index return variables with our government ownership variables.

The results in Table 4 show that the returns on both indexes are positively associated with the likelihood of an exit, consistent with the idea that VC exits are easier to undertake in strong markets. The coefficients on the interaction terms are negative and significant for the partially government-owned VC interactions. We find consistent results (unreported) when we use the percentage of government ownership or the marketization index, rather than region-fixed effects. The results imply that government-owned VCs are less sensitive to market conditions when exiting their portfolio companies. This is consistent with the idea that government-owned VCs are willing to exit in weaker markets. Unlike private VCs, government-owned VCs do not have to raise future funds from the market and are thus are not subject to external market discipline.

4.4. Government owned VC, location, and entrepreneurial firm exit

We next consider whether the location of the government owner of the VC impacts exit success. We use three measures: an indicator for whether the firm has a government VC investor with ownership from the entrepreneurial firm's province, the proportion of VC investors with government ownership from the entrepreneurial firm's province, and the quadratic of this term. In the results, we do not restrict the sample based on the number of VC investors that the entrepreneurial firm has. However, we obtain qualitatively similar results if we restrict the sample to contain only entrepreneurial firms who receive funding from more than one VC.

The results in Table 5 are consistent with our predictions. Columns 1–4 suggest that being backed by a government-owned VC located in the same province as the firm, is associated with reduced exit likelihood. However, in columns 5–6, we test for a quadratic relationship. We find that while having some VC investors who are owned by the entrepreneurial firm's provincial government is beneficial, a high proportion of such VC investors can reduce exit likelihood. This suggests that some provincial backing could create monitoring benefits. However, investment by multiple provincial government-owned VCs could increase the risk of negative impacts from politically motivated decision-making.

4.5. Government owned VC and access to IPO markets

We next analyze whether firms backed by government-owned VCs have better access to IPO markets, especially in mainland China. We start by analyzing whether government-owned VCs increase the likelihood of an exit via IPO (as opposed to M&A). We use a multinomial logit model, where the outcome variable is whether the firm was exited via an IPO, a takeover, or has not been exited (the base case). We examine the full sample of entrepreneurial firms (Table 6, columns 1 and 2) and the sub-sample of firms that received their first investment round before 2007 as these firms have had longer to achieve a successful exit (Table 6, columns 3 and 4). The results suggest that VCs with partial government ownership increase the likelihood of an IPO exit (but not an M&A exit). Wholly government-owned VCs do not significantly influence either outcome.

Table 4
Government-owned VC and market conditions.

Column	[1]	[2]	[3]	[4]	[5]	[6]
A: SSE Composite Return	2.091***	1.798***	2.103***			
	[0.000]	[0.000]	[0.000]			
B: SZ200 Return				2.071***	1.950***	2.066***
				[0.000]	[0.000]	[0.000]
C: Partial-Gov VC	0.349***		0.340***	0.287***		0.282***
	[0.000]		[0.001]	[0.007]		[0.008]
A x C	-0.980***		-0.992***			
	[0.000]		[0.000]			
D: Wholly-Gov VC		-0.165	-0.145		-0.107	-0.094
		[0.218]	[0.276]		[0.439]	[0.496]
A x D		-0.010	-0.059			
		[0.979]	[0.867]			
B x C				-0.437***		-0.439***
				[0.005]		[0.005]
B x D					0.011	0.059
					[0.962]	[0.797]
Overseas VC	0.056	-0.015	0.035	-0.038	-0.079	-0.049
	[0.549]	[0.873]	[0.711]	[0.690]	[0.404]	[0.614]
Venture Round	-0.275***	-0.287***	-0.279***	-0.288***	-0.300***	-0.290***
	[0.008]	[0.006]	[0.007]	[0.006]	[0.004]	[0.006]
Ave Num Exits	0.019***	0.019***	0.019***	0.017***	0.018***	0.017***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ln(Ave VC Cap Under Management)	0.041***	0.043***	0.042***	0.035**	0.037**	0.035**
	[0.008]	[0.005]	[0.008]	[0.027]	[0.019]	[0.029]
VC GP	0.233**	0.289***	0.246***	0.270***	0.308***	0.277***
	[0.014]	[0.002]	[0.010]	[0.006]	[0.001]	[0.005]
Ave VC Num Prior Investments	-0.022***	-0.021***	-0.022***	-0.019***	-0.019***	-0.019***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,645	4,645	4,645	4,608	4,608	4,608
Pseudo R-squared	0.05	0.05	0.05	0.08	0.08	0.08
Likelihood Ratio Chi2	586.53	568.47	588.06	948.36	937.78	948.83

This table contains Cox Hazard models that examine the sensitivity of government-owned VCs to IPO market conditions. The marked-index returns are measured at the time of the exit (if applicable) or in the final year (2012, for unexited investments). The figures are coefficients (not hazard ratios). A positive coefficient on a variable indicates that the variable increases the likelihood of a firm being exited. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Table 5
Government-owned VC and location.

Column	[1]	[2]	[3]	[4]
Prop Gov-VCs from same prov	-0.560***	-0.576***	3.203***	3.430***
	[0.000]	[0.000]	[0.000]	[0.000]
Squared Prop Gov-VCs from same prov			-4.085***	-4.387***
			[0.000]	[0.000]
Overseas VC	0.018	-0.037	0.015	-0.044
	[0.845]	[0.686]	[0.868]	[0.624]
Venture Round	-0.251**	-0.294***	-0.233**	-0.281***
	[0.015]	[0.004]	[0.024]	[0.006]
Ave Num Exits	0.024***	0.028***	0.023***	0.027***
	[0.000]	[0.000]	[0.000]	[0.000]
ln(Ave VC Cap Under Management)	0.040**	0.037**	0.033**	0.028*
	[0.010]	[0.019]	[0.033]	[0.070]
VC GP	0.327***	0.288***	0.259***	0.221**
	[0.000]	[0.002]	[0.005]	[0.017]
Ave VC Num Prior Investments	-0.023***	-0.025***	-0.022***	-0.024***
	[0.000]	[0.000]	[0.000]	[0.000]
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	4,645	4,468	4,645	4,468
Pseudo R-squared	0.04	0.03	0.04	0.03
Likelihood Ratio Chi2	444.29	348.19	479.95	388.96

This table contains Cox hazard models that examine the impact of being backed by a VC whose government ownership is from the same province as the portfolio company. Here, the main variables of interest are 'Any VC from same prov' (an indicator that equals one if the portfolio company is backed by at least one VC with ownership from that firm's province', and 'Prop VC from same prov' (the proportion of the firm's VC investors who have ownership from the same province as the portfolio company. The figures are coefficients (not hazard ratios) and a positive coefficient indicates an increased likelihood of a successful exit. Brackets contain p-values and superscripts ***, *, and * denote significance at 1%, 5%, and 10%, respectively.

Table 6
Government-owned VC and exit type.

Sample	All Firms		Firms Funded Before 2007	
Outcome Variable	IPO	M&A	IPO	M&A
Column	[1]	[2]	[3]	[4]
Partial-Gov VC	0.294**	-0.076	0.391***	-0.109
	[0.012]	[0.785]	[0.009]	[0.740]
Wholly-Gov VC	-0.244	0.416	-0.064	0.029
	[0.115]	[0.168]	[0.749]	[0.944]
Overseas VC	0.091	0.407*	0.229	0.706**
	[0.429]	[0.086]	[0.122]	[0.017]
Venture Round	-0.349***	-0.895***	0.111	-0.409
	[0.005]	[0.001]	[0.527]	[0.215]
Ave Num Exits	0.035***	0.008	0.033***	-0.007
	[0.000]	[0.519]	[0.000]	[0.660]
ln(Ave VC Cap Under Management)	0.057***	-0.023	0.062**	-0.054
	[0.003]	[0.524]	[0.011]	[0.210]
VC GP	0.359***	-0.037	0.101	-0.159
	[0.002]	[0.880]	[0.499]	[0.580]
Ave VC Num Prior Investments	-0.033***	-0.004	-0.040***	0.007
	[0.000]	[0.555]	[0.000]	[0.472]
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Observations	4,695	4,695	2,239	2,239
Pseudo R-squared	0.16	0.16	0.11	0.11
Likelihood Ratio Chi2	793.77	793.77	342.26	342.26

This table contains multinomial logit models that estimate the likelihood that a firm is exited via an IPO or a takeover (as opposed to the base case of no exit). The sample is cross-sectional and is at the portfolio company level. The dependent variable is an outcome variable, representing three outcomes: IPO exit, M&A exit (or the base case of no exit). Columns 1 and 2 use the full sample of all portfolio companies. Columns 3 and 4 use the sub-sample of companies funded before 2007, for which there is more time for them to have achieved a successful exit. The models contain year, industry and region fixed effects. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Next, we consider more directly the (potential) benefits of government ownership in navigating China's IPO process by considering their impact on the likelihood of an IPO in mainland China. In these models, we restrict the sample to the set of firms that undertake an IPO (691 of sample firms, of which 46% are in foreign markets). However, since the models include year and region effects, and some regions have few IPOs, the regressions include fewer observations (dependent on the fixed effects used). The results in Table 7 indicate that partially government-owned VCs increase access to the markets in mainland China. However, wholly government-owned VCs do not increase access. This result implies that the inefficiencies associated with complete government ownership more than offset the potential connection related benefits.[11]

4.6. Government owned VC and VC fund performance

We next analyze the performance of VC funds. Funds may perform poorly even if their individual portfolio companies perform well. An individual firm might list on a stock exchange or be acquired (connoting a "success" for the firm). However, the VC fund might overpay for the investment, not recoup its money, or simply have excessive overheads, which could undermine performance. Government-owned VC funds could exhibit lower returns due to the reduced outside discipline imposed upon these funds.

We measure a VC's performance as the average exit multiple on the fund's investments, which is the entrepreneurial firm's post-money valuation (multiplied by the fund's stake in the firm) in addition to the amount invested in the firm. We also analyze the fund's success rate, which is calculated in two ways. First, we divide the number of successful exits the fund has made by the number of investments made (irrespective of when those investments were made). Second, we account for the possibility that recent investments have not yet been exited by dividing the number of successful exits by the sum of the number of exited investments and the number of unexited investments made before 2005 (we focus only on investments from 2005 or before to allow seven years for the portfolio company to be exited). As a robustness test, we also use a 2007 cut-off.

The models are Tobit models, with a lower bound of zero, and an upper bound of one when examining the success rate. We include VC fund founding year and region-fixed effects. The results in Table 8 show limited evidence that government-owned VCs perform marginally worse than non-government VCs. The exit multiple result is weakly significant and might merely reflect government VCs overpaying for investments. Government VCs appear to have lower success rates (Table 8, column 3). However, this effect is not evident if we focus on investments made before 2007 or 2005. This suggests that the result in column 3 might merely reflect newer investments that have not had adequate time to reach maturity and achieve an exit.

One possible concern with these results is that they might reflect the relative riskiness of government-owned versus non-government owned VCs. Government-owned VCs might invest in less risky firms, resulting in a higher exit likelihood, but a lower exit valuation. This is unlikely to be a concern given that riskier investments often do not perform better in the venture space (Murmann and Sardana, 2013). Nonetheless, in untabulated results, we find consistent results if we split the sample into halves based on the total amount invested in the portfolio company (and thus, its size and riskiness). We also take steps to mitigate selection issues in Section 4.7.

4.7. Additional robustness tests

A general concern is that government-owned VCs might simply select firms that are more likely to achieve a successful exit, rather

[11] We run a robustness test by excluding all foreign VCs from our sample as their exit patterns are different from domestic VCs. Domestic VCs prefer to exit in the Chinese share market, while foreign VCs prefer to list overseas. Similar results hold, which are available upon request.

Table 7
Government-owned VC and exit location.

Dependent Variable	Mainland listing indicator					
Sample	Companies exited via IPO					
Column	[1]	[2]	[3]	[4]	[5]	[6]
Partial-Gov VC	1.183***	1.030***			1.217***	1.028***
	[0.000]	[0.001]			[0.000]	[0.001]
Wholly-Gov VC			-0.171	0.167	-0.356	0.027
			[0.671]	[0.656]	[0.382]	[0.943]
Overseas VC	-2.917***	-2.793***	-3.100***	-2.917***	-2.942***	-2.792***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Venture Round	0.044	0.142	0.061	0.147	0.035	0.143
	[0.904]	[0.671]	[0.862]	[0.654]	[0.922]	[0.668]
Ave Num Exits	-0.016	-0.010	-0.005	0.004	-0.018	-0.010
	[0.294]	[0.509]	[0.764]	[0.793]	[0.248]	[0.521]
ln(Ave VC Cap Under Management)	-0.087*	-0.098**	-0.066	-0.084*	-0.087*	-0.098**
	[0.087]	[0.035]	[0.187]	[0.068]	[0.086]	[0.035]
VC GP	-0.178	-0.072	0.183	0.215	-0.162	-0.074
	[0.579]	[0.808]	[0.544]	[0.444]	[0.615]	[0.804]
Ave VC Num Prior Investments	-0.006	-0.002	-0.007	-0.005	-0.006	-0.002
	[0.572]	[0.852]	[0.508]	[0.595]	[0.617]	[0.847]
Marketization index		-0.009		0.011		-0.009
		[0.907]		[0.891]		[0.911]
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	No	Yes	No	Yes	No
Observations	643	648	643	648	643	648
Pseudo R-squared	0.45	0.41	0.44	0.40	0.45	0.41
Likelihood Ratio Chi2	396.05	361.33	381.71	349.20	396.81	361.33

This table contains logit models that estimate the likelihood that a firm undertakes an IPO in a mainland market, conditional on the firm being exited via an IPO. The models contain year dummies. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Table 8
Government-owned VC and performance.

Dependent Variable	Fund Multiple	Success Rate	Success Rate (Pre 2005)	Success Rate (pre 2007)
Column	[1]	[2]	[3]	[4]
Wholly-Gov VC	0.089	-0.174**	0.057	-0.005
	[0.459]	[0.021]	[0.575]	[0.958]
Partial-Gov VC	-0.156*	-0.182***	-0.044	-0.048
	[0.062]	[0.001]	[0.515]	[0.442]
Num Port Cos	-0.003*	0.001	-0.001	-0.001
	[0.097]	[0.431]	[0.515]	[0.588]
Num Regions	0.023**	-0.033***	-0.014*	-0.017**
	[0.039]	[0.000]	[0.098]	[0.031]
ln(Capital Under Management)	0.002	-0.043***	-0.040***	-0.048***
	[0.852]	[0.000]	[0.000]	[0.000]
Portfolio Spread	0.002	-0.014***	-0.013***	-0.015***
	[0.703]	[0.000]	[0.001]	[0.000]
Region FE	Yes	Yes	Yes	Yes
Founding Year FE	Yes	Yes	Yes	Yes
Observations	474	474	474	474
R-squared	0.13	0.45	0.45	0.42

This table examines the drivers of VC performance. The column title contains the dependent variable. The fund's multiple are averages across the fund's investments. The models are tobit models with a lower bound of zero and upper bound of one where relevant (i.e., Columns 3-5). All models contain year and region fixed effects. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

than actually contributing to that successful exit. We address selection concerns in several ways.

First, the benefits accruing to government ownership might merely reflect the government VC investing at a later, less risky, stage when an exit is more likely. We address this by constructing a firm round sample in which we analyze the round in which government-owned VCs invest. We run Tobit and negative binomial models, where the dependent variable is the investment round and model the investment round as a function of government ownership and control for other relevant factors. The main finding in Table 9 is that government-owned VCs are significantly more likely to invest in earlier rounds. This suggests the success of government-owned VCs is not merely attributable to them investing at a later round in the firm's development.

Second, government-owned VCs might simply cherry-pick firms without providing any guidance or influence. This is addressed by only including entrepreneurial firms where the government VC invests in the first round. While it is still possible that the government VC could cherry-pick early-stage firms in the first round, the likelihood of cherry picking is decreased. The results in Table 10 are consistent with our main results in that funding by a partially government-owned VC increases exit success, whereas backing by a wholly government-owned VC tends to reduce exit success.

Table 9
Government-owned VC and investment round.

Dependent Variable	Investment round					
Column	[1]	[2]	[3]	[4]	[5]	[6]
Wholly Gov	-0.203***		-0.230***	-0.149***		-0.167***
	[0.000]		[0.000]	[0.000]		[0.000]
Partial Gov		-0.152***	-0.180***		-0.107***	-0.125***
		[0.000]	[0.000]		[0.000]	[0.000]
ln(VC's Num Prior Investments)	-0.116***	-0.116***	-0.107***	-0.077***	-0.077***	-0.071***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ln(VC's Amt Prior Investments)	0.038***	0.039***	0.037***	0.026***	0.026***	0.025***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
ln(VC Capital Under Management)	0.015***	0.018***	0.015***	0.010***	0.012***	0.010***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
VC	0.018	0.019	0.034	0.013	0.013	0.023
	[0.424]	[0.387]	[0.122]	[0.398]	[0.381]	[0.122]
Constant	1.396***	1.375***	1.398***	0.333***	0.319***	0.335***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	8,896	8,896	8,896	8,896	8,896	8,896
Pseudo R-squared	0.009	0.008	0.011	0.004	0.004	0.005

This table examines the determinants of the investment round. The dependent variable is the round of investment. The data is at the deal level (c.f. the firm level). In this sample, a VC can make multiple investments in multiple rounds. Thus, the sample is not a firm/VC panel. Columns 1-7 contain Tobit models with a lower bound of zero and columns 8-14 contain negative binomial models. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Table 10
Government-owned VC and first round investment.

Column	[1]	[2]	[3]	[4]	[5]	[6]
Partial-Gov VC	1.017***		1.161***	0.748***		1.079***
	[0.000]		[0.000]	[0.000]		[0.000]
Wholly-Gov VC		-0.603***	0.184		-0.387**	0.387
		[0.002]	[0.490]		[0.026]	[0.119]
Overseas VC	-0.018	-0.007	-0.012	-0.047	-0.038	-0.022
	[0.957]	[0.982]	[0.971]	[0.881]	[0.905]	[0.944]
Venture Round	0.050	0.062	0.050	-0.082	-0.052	-0.081
	[0.858]	[0.823]	[0.860]	[0.751]	[0.841]	[0.755]
Ave Num Exits	0.015**	0.016**	0.016**	0.019***	0.019***	0.021***
	[0.020]	[0.016]	[0.017]	[0.002]	[0.002]	[0.001]
ln(Ave VC Cap Under Management)	0.048	0.073*	0.044	0.055	0.073*	0.045
	[0.251]	[0.070]	[0.294]	[0.154]	[0.052]	[0.245]
VC GP	0.074	0.152	0.059	0.012	0.052	-0.032
	[0.764]	[0.534]	[0.810]	[0.957]	[0.814]	[0.888]
Ave VC Num Prior Investments	-0.028***	-0.028***	-0.028***	-0.028***	-0.028***	-0.028***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Marketization index				0.068	0.075	0.070
				[0.185]	[0.141]	[0.175]
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	No	No	No
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,180	1,180	1,180	1,169	1,169	1,169
Pseudo R-squared	0.09	0.08	0.09	0.07	0.06	0.07
Likelihood Ratio Chi2	202.95	190.28	203.42	151.38	140.82	153.65

This table contains Cox hazard models that restrict the sample to exclude any government VC backed companies who do not receive government VC backing in the first round. That is, the firm is in the sample only if it is either not government VC backed or is government VC backed and receives investment in the first round. The figures are coefficients (not hazard ratios). Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

A similar concern is that government VCs invest in systematically different entrepreneurial firms to non-government VCs. We address this concern using propensity score matching. We use one-to-one matching to match entrepreneurial firms that have support from a partially government-owned VC with those that do not. We follow a similar process for those supported by a wholly government-owned VC. We then replicate the relevant regressions from Table 2. The results are consistent with our main reported regressions but unreported for brevity. Support from a partially government-owned VC remains positively and significantly associated with exit likelihood.

An additional concern is that the results might reflect systemic differences in the stage (i.e., start-up, development, expansion, or late-stage) of the entrepreneurial firm in which the government VC invests. We address this by dividing the sample into the four types of investment-stage and analyzing whether the results hold for each stage. We obtain qualitatively similar results across all investment stages and the results are unreported for brevity. The impact of government-owned VCs on exit success is higher in development and expansion stage firms than in late-stage or early-stage firms.

We further explore that the results are robust to using a simple OLS linear probability model to predict the likelihood that a portfolio company is exited. We construct an indicator that equals one if the firm receives a successful exit and equals zero otherwise. We examine whether government VC investment increases the likeli-

Table 11
Government-owned VC and entrepreneurial firm exit : OLS linear probability models.

Dependent Variable	Exited Indicator					
Panel A	Full Sample					
Column	[1]	[2]	[3]	[4]	[5]	[6]
Partial-Gov VC	0.030**		0.028*			
	[0.043]		[0.057]			
Wholly-Gov VC		-0.026	-0.023			
		[0.138]	[0.191]			
Government ownership				-0.001***		
				[0.008]		
Prop Gov-VCs from same prov					-0.077***	0.709***
					[0.000]	[0.000]
Squared Prop Gov-VCs from same prov						-0.814***
						[0.000]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,695	4,695	4,695	1,113	4,695	4,695
R-squared	0.109	0.108	0.109	0.174	0.111	0.119
Panel B	First Investment Year Before 2007					
Partial-Gov VC	0.055**		0.054**			
	[0.025]		[0.028]			
Wholly-Gov VC		-0.020	-0.013			
		[0.529]	[0.686]			
Government ownership				-0.002*		
				[0.060]		
Prop Gov-VCs from same prov					-0.030	0.955***
					[0.408]	[0.000]
Squared Prop Gov-VCs from same prov						-1.025***
						[0.000]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,239	2,239	2,239	509	2,239	2,239
R-squared	0.085	0.083	0.085	0.202	0.083	0.095

This table contains OLS linear probability models that predict the likelihood of the portfolio company being exited. The dependent variable is an indicator that equals one if the firm is exited and that equals zero otherwise. The regressions include all controls, year effects, region effects, and industry effects. Panel A uses the full sample of portfolio companies and Panel B examines the sub-sample of portfolio companies that received funding before 2007. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Table 12
Government-owned VC and entrepreneurial firm exit: Instrumental variables.

Dependent Variable	Exited Indicator					
	Linear probability			Probit		
Column	(1)	(2)	(3)	(4)	(5)	(6)
Partial-Gov VC	0.408**		0.357*	1.345**		1.149*
	[0.025]		[0.070]	[0.010]		[0.072]
Wholly-Gov VC		-0.125	-0.057		-0.530	-0.255
		[0.111]	[0.529]		[0.109]	[0.487]
Overseas VC	0.079**	-0.006	0.062	0.275***	-0.019	0.208
	[0.017]	[0.735]	[0.134]	[0.005]	[0.798]	[0.149]
Venture Round	-0.035*	-0.064***	-0.040*	-0.159*	-0.287***	-0.189**
	[0.073]	[0.000]	[0.055]	[0.063]	[0.000]	[0.049]
Ave Num Exits	0.001	0.004***	0.001	0.006	0.019***	0.008
	[0.753]	[0.000]	[0.663]	[0.403]	[0.000]	[0.333]
ln(Ave VC Cap Under Management)	0.001	0.004	0.001	0.007	0.018*	0.009
	[0.741]	[0.101]	[0.659]	[0.495]	[0.062]	[0.425]
VC GP	-0.055	0.050***	-0.039	-0.167	0.203***	-0.098
	[0.217]	[0.000]	[0.447]	[0.263]	[0.001]	[0.603]
Ave VC Num Prior Investments	-0.002***	-0.002***	-0.002***	-0.012***	-0.015***	-0.012***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Anderson Underidentification Test	33.461***	223.682***	27.881***			
Sargan Overidentification Test	1.652	5.096	1.308			
Observations	4,512	4,512	4,512	4,502	4,502	4,502
R-squared	-0.041	0.089	-0.009			
Uncentered R-squared	0.1397	0.2467	0.1657			
Wald Chi2				539.55***	375.69***	487.68***

This table contains the results for two-stage least squares regressions in which we use a linear probability model in columns (1) to (3) and a Probit model in columns (4) to (6) to predict whether the portfolio company is exited. The core regressors are the government VC indicators, which are the results of the first stage regression. We include industry and year fixed effects. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Table 13
Government owned VC and time to exit.

Dependent Variable	Time to Exit		
Panel A:	OLS		
Column	(1)	(2)	(3)
Partial-Gov VC	-1.450**		-1.517**
	[0.025]		[0.034]
Wholly-Gov VC		0.214	-0.075
		[0.442]	[0.821]
Overseas VC	-0.437***	-0.168***	-0.459***
	[0.000]	[0.006]	[0.003]
Venture Round	0.022	0.118**	0.015
	[0.747]	[0.030]	[0.842]
Ave Num Exits	-0.002	-0.015***	-0.001
	[0.795]	[0.000]	[0.834]
ln(Ave VC Cap Under Management)	-0.003	-0.013	-0.002
	[0.782]	[0.109]	[0.818]
VC GP	0.307*	-0.048	0.328*
	[0.054]	[0.336]	[0.077]
Ave VC Num Prior Investments	0.005***	0.007***	0.005***
	[0.000]	[0.000]	[0.000]
Anderson Underidentification Test	33.461***	223.682***	27.881***
Sargan Overidentification Test	0.601	5.845	0.542
Observations	4,512	4,512	4,512
R-squared	0.807	0.832	0.805
Uncentered R-squared	0.936	0.9442	0.9351
Panel B:	Cox hazard model		
	(1)	(2)	(3)
Predicted Partial-Gov VC	1.639**		1.477*
	[0.046]		[0.079]
Predicted Wholly-Gov VC		-0.718	-0.581
		[0.147]	[0.253]
Overseas VC	0.357**	-0.058	0.243
	[0.048]	[0.608]	[0.239]
Venture Round	-0.139	-0.301***	-0.174
	[0.259]	[0.004]	[0.170]
Ave Num Exits	0.013	0.025***	0.012
	[0.122]	[0.000]	[0.140]
ln(Ave VC Cap Under Management)	0.024	0.035**	0.025
	[0.148]	[0.026]	[0.131]
VC GP	-0.123	0.311***	-0.043
	[0.560]	[0.002]	[0.848]
Ave VC Num Prior Investments	-0.023***	-0.025***	-0.023***
	[0.000]	[0.000]	[0.000]
Observations	4,464	4,464	4,464
Pseudo R-Squared	0.03	0.03	0.03
Likelihood Ratio Chi2	345.65	344.02	346.99

Panel A contains two stage least square regression models that predict the time to exit. In Panel A, a negative coefficient denotes a shorter time to exit. The core regressors regarding government VCs are the result of a first stage regression. Panel B uses a two stage Cox hazard model in which the core government VC regressors are the predicted values from a first stage regression. All regressions include industry and year fixed effects. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

hood of a successful exit for the full sample and firms that received funding before 2007, and thus, are more likely to have had time to achieve a successful exit. The results in Table 11 are qualitatively similar to those in the main regressions. Partially government-owned VCs are positively associated with exit likelihood, unlike wholly government-owned VCs. Furthermore, investment from a local VC is associated with improved exit likelihood, but the benefit decreases with the increase in the number of same-province government VCs.

The results indicate that the impact of partially government-owned VCs is economically meaningful. In the full sample, around 17.4% of portfolio companies achieve a successful exit. Support from a partially government-owned VC increases the likelihood of a successful exit by 3% (which is statistically significant). This indicates a 17.2% increase in exit likelihood. For the firms funded before 2007, 24.2% achieve a successful exit. Partially government-owned VCs increase this by 5.5 percentage points, which translates into a 22.7% increase in the likelihood of a successful exit.

We also take steps to mitigate identification and endogeneity concerns using an instrumental variable approach. The first set of instruments are based on market conditions, similar to Brander et al. (2015). We use the proportion and number of deals that were financed by partially and wholly government-owned VCs in the year before the first investment year. It could be argued that the availability of government-owned VC funding is exogenous from a firm's perspective but is likely to affect the probability of the firm obtaining funding from a government-owned VC. The second set of instruments is whether there was a turnover of a governor or party secretary in the entrepreneurial firm's province in the year before the firm's first VC investment. Governor or party secretary turnover could influence the desirability of having support from a government VC due to a disruption in political connections.

We argue that the instruments satisfy the exclusion requirement for several reasons. First, we construct the instruments from data one year before the first round of investment. As the average time to exit is 4.53 years, the instruments are unlikely to impact whether the firm is exited. Second, two of our instruments are

based on changes in the provincial governor or secretary. Given that we measure whether there was a turnover one year before the first investment year, this is unlikely to impact the investment or exit thereafter. Furthermore, these variables are not based on a particular official's views, policies, or connections. There is therefore no reason to suspect an average bias towards or against facilitating exits in any specific instance.

Third, several instruments are related to the proportion, or number, of deals that are backed by wholly or partially government-owned VC. As these are measured from the year before the first investment round, they do not capture the conditions at the time of exit. Given that exit conditions change frequently and rapidly in China, it is not clear how the average level of government VC activity would impact exit likelihood several years after the first investment round in the entrepreneurial firm.

The first stage regression model is in Table A3. We run several instrumental variable models; a linear probability model (Table 12, columns 1–3) and a probit model (Table 12, columns 4–6) to analyze the impact of government VC investment on entrepreneurial firm exit.

We also estimate a model where we measure the number of years between investment and exit (Panel A, Table 13). Finally, we estimate Cox hazard models but replace the government VC variables with predicted values from the first stage regression (Panel B, Table 13). The core results regarding government VCs remain qualitatively the same. [12] Partially government-owned VCs are more likely to exit their portfolio companies and achieve a quicker exit (fewer years to exit). However, wholly government-owned VCs are not significantly related to exit likelihood or exit speed. The results suggest that our findings are not merely due to identification or endogeneity concerns.

5. Conclusion

This paper examines the impact of government-owned VCs on the exit success of entrepreneurial firms and the performance of VC funds in China. Government ownership confers both advantages and disadvantages, where disadvantages might be somewhat mitigated in partial government owned VCs. We find that partially government-owned VCs increase the likelihood of a successful exit, especially via an IPO in the Chinese mainland. This result suggests that some government ownership of VCs can help entrepreneurial firms navigate the discretionary nature of financial market regulations in China, but complete government ownership can lead to inefficiencies.

We further find that government-owned VCs can convey benefits in the form of navigating political and economic uncertainties. Entrepreneurial firms backed by a partially government-owned VC are more likely to exit during times of high political uncertainty and government-owned VCs are less sensitive to market conditions when exiting. We also show that successful exits are more likely if at least one of the VC investors is owned by the firm's local provincial government. However, a high proportion of local VC investors can reduce exit likelihood, suggesting an increased risk of negative impacts from politically motivated decision-making. In terms of VC fund performance, we find limited evidence of lower performance by government-owned VCs.

We provide new evidence on the benefits and disadvantages of government-owned VCs. We highlight that while a degree of government ownership might benefit entrepreneurial firms, wholly government-owned VCs tend not to increase entrepreneurial firm exit success. The results suggest that in emerging markets, a degree of government ownership can convey value-creating connections; however, complete government control can generate inefficiencies. Our research highlights the importance of institutional and political factors related to VC financing of entrepreneurial firms in emerging markets and has important implications for policy makers, VCs, entrepreneurial firms and investors.

[12] The Anderson and Sargan tests provide additional confidence in the instruments.

Declaration of Competing Interest

None.

Appendix I

Variable definitions

Variable	Definition
Wholly Gov VC	An indicator that equals one if at least one of the VCs that invest in the firm is wholly owned by the government (either at the provincial level or the central level).
Partial Gov VC	An indicator that equals one if at least one of the VCs that invest in the firm is partially owned by the government (either at the provincial level or the central level).
Government ownership	The government percentage ownership in the VC
Overseas VC	An indicator that equals one if at least one VC derives its capital from purely overseas sources.
Venture Round	An indicator that equals one if the firm has at least one investment round that is classified as 'start-up' or venture. The four rounds in the data are 'start-up', development, expansion, and late.
Ave Num Exits	The average number of prior exits that the VCs have done.
ln(Ave VC Cap Under Management)	The natural log of the average capital under management for the VCs.
VC GP	An indicator that equals one if at least one manager invests in venture capital (but not in private equity).
Ave VC Num Prior Investments	The average number of prior investments that the VCs have made.
Marketization index	Index developed by the National Economic Research Institute to measure variation in institutional development across regions and time.
Log uncertainty	Uncertainty index for China developed by the Economic Policy Uncertainty group (http://www.policyuncertainty.com/index.html).
SSE Composite/SZ200 Return	The return over the exit year (or final year, if the firm is not exited) on the SSE Composite index, or SZ 200 index.
Prop Gov-VCs from same prov	The proportion of VC investors with government ownership from the entrepreneurial firm's province.
ln(VC's Amt Prior Investments)	The natural log of the amount of capital invested in prior investments that the VCs have made.
Num Port Cos	The number of portfolio companies in the fund.
Num Regions	The number of regions in which the fund has portfolio companies. Here, each province counts as a different region.
ln(Capital Under Management)	The natural log of the amount of capital under management for the VCs
Portfolio Spread	The number of portfolio companies scaled by the capital under management.
Average multiple	The fund's average exit multiple.
Success rate	Proportion of successfully exited investments.

Appendix II

Additional Tables

A1-A3

Table A1
Mean, Median, and Standard Deviation for firm level sample.

Full sample	Mean	Median	SD
Any Gov VC	0.310	0.000	0.462
Partial Gov VC	0.211	0.000	0.408
Wholly Gov VC	0.119	0.000	0.324
Overseas VC	0.383	0.000	0.486
Venture Round	0.724	1.000	0.447
Ave Num Exits (of the VC investors)	9.979	4.592	15.081
ln(Ave VC Cap Under Management USDm)	5.304	6.105	2.973
VC GP	0.574	1.000	0.495
Ave VC Num Prior Investments	21.402	9.000	35.081
No Government			
Partial Gov VC	0.000	0.000	0.000
Wholly Gov VC	0.000	0.000	0.000
Overseas VC	0.492	0.000	0.500
Venture Round	0.700	1.000	0.458
Ave Num Exits (of the VC investors)	8.459	5.000	11.540
ln(Ave VC Cap Under Management USDm)	5.455	6.217	3.055
VC GP	0.492	0.000	0.500
Ave VC Num Prior Investments	18.958	9.000	27.577
Wholly Government			
Partial Gov VC	0.173	0.000	0.379
Wholly Gov VC	1.000	1.000	0.000
Overseas VC	0.111	0.000	0.314
Venture Round	0.725	1.000	0.447
Ave Num Exits (of the VC investors)	4.525	2.000	6.058
ln(Ave VC Cap Under Management USDm)	4.159	4.494	2.916
VC GP	0.704	1.000	0.457
Ave VC Num Prior Investments	12.029	7.000	14.609
Partial government			
Partial Gov VC	1.000	1.000	0.000
Wholly Gov VC	0.098	0.000	0.297
Overseas VC	0.159	0.000	0.366
Venture Round	0.806	1.000	0.395
Ave Num Exits (of the VC investors)	17.832	6.000	23.336
ln(Ave VC Cap Under Management USDm)	5.508	6.321	2.472
VC GP	0.800	1.000	0.400
Ave VC Num Prior Investments	34.171	10.333	55.112

This table contains the mean, median, and standard deviation for the variables used in the firm level sample.

Table A2
Mean, median, and standard deviation for fund-level sample.

Full Sample	Mean	Median	SD
Wholly Gov VC	0.052	0.000	0.223
Partial Gov VC	0.130	0.000	0.336
Multiple	0.936	0.912	0.578
Success Rate	0.548	0.500	0.334
Success Rate (Pre 2005)	0.808	1.000	0.262
Success Rate (Pre 2007)	0.693	0.739	0.309
Num Port Cos	12.299	4.000	22.682
Num Regions	4.224	2.000	4.407
ln(Capital Under Management)	3.246	2.758	3.180
Portfolio Spread	2.199	0.191	6.264
No Government			
Multiple	0.969	0.949	0.581
Success Rate	0.567	0.500	0.341
Success Rate (Pre 2005)	0.815	1.000	0.256
Success Rate (Pre 2007)	0.696	0.750	0.308
Num Port Cos	12.095	4.000	20.969
Num Regions	4.391	3.000	4.456
ln(Capital Under Management)	3.297	2.750	3.309
Portfolio Spread	2.110	0.185	6.243
Wholly Government			
Multiple	0.850	0.773	0.700
Success Rate	0.850	0.773	0.700
Success Rate (Pre 2005)	0.814	1.000	0.277
Success Rate (Pre 2007)	0.694	0.750	0.315
Num Port Cos	10.920	5.000	13.982
Num Regions	3.080	2.000	3.774
ln(Capital Under Management)	2.734	2.750	2.987
Portfolio Spread	4.848	0.256	10.689
Partial Government			
Multiple	0.787	0.818	0.443
Success Rate	0.456	0.400	0.279
Success Rate (Pre 2005)	0.762	1.000	0.289

(*continued on next page*)

Table A2 (*continued*)

Success Rate (Pre 2007)	0.673	0.667	0.321
Num Port Cos	14.145	7.000	33.623
Num Regions	3.629	2.000	4.271
ln(Capital Under Management)	3.133	3.251	2.338
Portfolio Spread	1.696	0.226	3.082

Table A3
Instrumental variables - first stage regression.

Dependent Variable	Partial-Gov VC	Wholly-Gov VC
Column	[1]	[2]
Gov Turnover (t-1)	-0.010	0.026*
	[0.584]	[0.068]
Secretary Turnover (t-1)	0.001	-0.002
	[0.943]	[0.841]
Province Proportion Wholly Gov VC (t-1)	-0.114**	0.397***
	[0.010]	[0.000]
Province Number Wholly Gov VC (t-1)	0.003	0.004**
	[0.114]	[0.031]
Province Proportion Partial Gov VC (t-1)	0.186***	-0.011
	[0.000]	[0.722]
Province Number Partial Gov VC (t-1)	-0.002	-0.000
	[0.127]	[0.949]
Overseas VC	-0.164***	-0.126***
	[0.000]	[0.000]
Venture Round	-0.059***	-0.034***
	[0.000]	[0.007]
Ave Num Exits	0.009***	-0.004***
	[0.000]	[0.000]
ln(Ave VC Cap Under Management)	0.008***	-0.002
	[0.000]	[0.211]
VC GP	0.235***	0.065***
	[0.000]	[0.000]
Ave VC Num Prior Investments	-0.001***	0.001***
	[0.000]	[0.003]
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	4,512	4,512
R-squared	0.209	0.145

This table contains first stage regressions that analyze the relationship between whether a firm has support from either a partially government owned VC (Column 1) or a wholly government owned VC (Column 2). We include the baseline regressors and the set of instrumental variables. We also control for year and industry fixed effects. The models are OLS regressions. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

CRediT authorship contribution statement

Jo-Ann Suchard: Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing. **Mark Humphery-Jenner:** Methodology, Formal analysis, Data curation, Writing – original draft, Writing – review & editing. **Xiaping Cao:** Investigation, Writing – original draft.

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