Investing with the Government: A Field Experiment in China

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We conduct a large-scale, nondeceptive field experiment to elicit preferences for government participation in China's venture capital and private equity market. Our main result is that the average firm dislikes investors with government ties. We show that such dislike is not present with government-owned firms and that this dislike is highest with best-performing firms. Additional results and surveys suggest that political interference in decision-making is the leading reason why government investors are unattractive to private firms. Overall, our findings point to the limits of a model of "state capitalism" that strongly relies on the complementarity between private firms and government capital to drive high-growth entrepreneurship and innovation.

We thank Matt Denes, Mike Ewens, Will Gornall, John Graham, Zhiguo He, Sabrina Howell, Niklas Huther, Jessica Jeffers, Ruixue Jia, Steve Kaplan, Josh Lerner, Song Ma, Elisa Maffioli, Scott Nelson, Ludovic Phalippou, Tommaso Porzio, Wenlan Qian, Raghu Rajan, David Robinson, Andrei Shleifer, Michael Song, Amir Sufi, Xuan Tian, Rob Vishny, Shang-Jin Wei, Wei Xiong, David Yang, Bernard Yeung, Anthony Lee Zhang, and Lugi Zingales,

Electronically published December 7, 2023

Journal of Political Economy, volume 132, number 1, January 2024.

https://doi.org/10.1086/726237

I. Introduction

Government participation in the economy via direct or indirect ownership of private sector firms is ubiquitous around the world (La Porta, López-de Silanes, and Shleifer 1999; Bortolotti and Faccio 2009; Aminadav and Papaioannou 2020). China is perhaps the most striking example of this phenomenon, with the government representing the leading investor in and minority owner of private firms (Allen et al. 2021). These patterns characterize a model of "state capitalism," fundamentally grounded on the complementarity between high-growth private firms and government capital (Bai et al. 2020). There is a heated political and academic debate around how this model affects China's growth and role in the global economy.

Our paper starts from the premise that the government is a rather special investor and that, to appreciate the implications of government participation in the market economy, it is crucial to understand both the supply of and the demand for government capital. Yet because of the fundamental difficulty of measuring the private sector demand for government capital, the latter remains a neglected aspect of the debate.

We tackle these issues directly by combining a field experiment with new administrative and survey data to ask whether—all else equal—firms prefer to receive capital from the government vis-à-vis private investors. Our context is that of venture capital and private equity (VCPE) in China, representing the second-largest market for innovative and high-growth firms in the world (after the United States) and a multitrillion-dollar market where the government plays a central role in the allocation of capital. Specifically, we focus on the matching between capital investors, that is, the limited partners (LPs), and profit-seeking firms, that is, the fund

and seminar participants at Princeton, the University of Chicago, Columbia Business School, Harvard Business School, the Einaudi Institute for Economics and Finance, Instituto Tecnológico Autónomo de México, Tsinghua PBC (People's Bank of China) School of Finance, Peking Guanghua School of Management, Chinese University of Hong Kong, Cheung Kong Graduate School of Business, the National Bureau of Economic Research China, the European Finance Association, the Society for Financial Studies Cavalcade, the Northwestern Kellogg Israel Center for Innovation–Start-Up Nation Policy Institute Entrepreneurship and Innovation Conference, the Asian Bureau of Finance and Economic Research (ABFER)–Becker Friedman Institute China Capital Market Development Series, the ABFER Annual Conference, WEFIDEV (Webinar series in Finance and Development), the Five Star Junior Conference at Chinese University of Hong Kong, and the Kentucky Finance Conference for helpful comments and suggestions. Yiren Ding, Pranav Garg, Liming Ning, Sixun Tang, Shiqi Yang, Ziang Zhang, and Chun Zhao provided superb research assistance. We are grateful to the University of Chicago Booth School of Business, the Tsinghua University–University of Chicago Joint Research Center for Economics and Finance, the MV Advisors Research Fund, the Fama Research Fund, the Liew Family Junior Faculty Fellowship, and the National Science Foundation of China (award NSFC 71790605). The experiment was preregistered as project AEARCTR-0006039. The views expressed in this paper are the authors' views and should not be attributed to Zero2IPO or its team. This paper was edited by Leonardo Bursztyn.

managers or general partners (GPs), that manage the invested capital by deploying it to high-growth entrepreneurs.[1]

In the first part of the paper, we characterize the role of government in China's VCPE market by matching data on VCPE investments over the 2015–19 period with administrative business registration records, through which we can observe the ownership structure of all firms (GPs) and investors (LPs) in the data. We establish four main descriptive facts. First, the government—represented by central, provincial, and local government agencies as well as state-owned enterprises (SOEs)—is the leading investor, with the government as a majority owner of about half of LPs and government LPs significantly larger investors than private LPs. Second, the government is also a minority owner of a significant share (about a third) of GPs. Third, government-owned GPs perform worse than private GPs. Fourth, there is a pattern of assortative matching, with government LPs investing disproportionally more in government-owned GPs.

In the second and central part of this paper, we aim to estimate the demand for government capital. To do so, we conducted a field experiment in 2019 in collaboration with the leading VCPE industry service provider in China, Zero2IPO. Our collaboration led to a new experimental survey of 688 leading GPs in the market (which together account for nearly $1 trillion), launched as part of a new service by Zero2IPO that aims to experimentally measure GP preferences so as to help GPs connect to investors. We obtained a response rate of 43%.

The experiment is inspired by the literature in labor economics and discrimination on correspondence audit studies (Bertrand and Mullainathan 2004) and more specifically by its recent refinement without deception by Kessler, Low, and Sullivan (2019). As part of the experiment, GPs are asked to rate 20 profiles of hypothetical LPs along two dimensions: (i) how interested they would be in establishing an investment relationship with the LP and (ii) the likelihood that the LP would be interested in entering an investment relationship with them. There are real incentives to report truthfully because within this context, Zero2IPO promises to use the ratings of each GP to introduce them to existing LPs that match their preferred characteristics.

An attractive feature of this setting is that we have full control over the creation of the LP profiles, which allows us to estimate GP preferences for several randomized characteristics of LPs, while holding other characteristics fixed. Together with the Zero2IPO research team, we create the profiles by decomposing real profiles into the "components" that profiles typically consist of, following the distribution of profiles on the Zero2IPO

[1] In the paper, for brevity, we primarily use the standard VCPE terminology of LPs and GPs, even though we at times also refer to them as "investors" and "firms," respectively.

platform. For example, almost all profiles list the headquarters of a given LP or the amount of capital they are looking to invest. Importantly, many profiles also list the relationship of the LP to the government, perhaps because they are SOEs or because they received endorsement by, say, a provincial government. We randomize components to generate the synthetic profiles we use to elicit preferences, make a few changes to the text to ensure language accuracy and realism of the profiles, and pick a random set for each GP to rate.

Our main finding is that, on average, GPs dislike LPs with government ties. We also find that GPs prefer deep-pocketed investors, those headquartered in Beijing, and those that are not focused on specific industries and stages of investment. Several other investor characteristics do not seem to matter. All results are robust to the inclusion of respondent fixed effects. The average effects we uncover indicate that the negatives of receiving capital that is tied to the government outweigh the positive value GPs may obtain from establishing a link to a government-related, politically connected investor.

We then move to the analysis of mechanisms behind our main findings. The leading explanation we explore is that government capital is unattractive to firms because of interference in decision-making that is due to political, rather than profit-maximizing, incentives.[2] A key prediction of such a channel is that the effects should vary, depending on both the type of government entity that is providing the capital and the sector of focus of the GP. Consistent with this, we find a null and, if anything, positive preference when focusing on local governments, which, by means of regulatory approvals and tax benefits, are especially important for the growth of early-stage firms (Bai et al. 2020). We show that GPs display the largest dislike for central government agencies. Importantly, we also find a larger dislike among GPs focused on the "new" tech industries, relative to those operating in state-dominated industries, highlighting an important trade-off between the costs and benefits of having government investors.

Furthermore, if the presence of political interference in decision-making is seen as unattractive, this should be especially so for non–government-owned GPs that operate according to market principles. In our regression of GP interest on LP characteristics, we find that the negative coefficient on the indicator for the LP having government ties can be fully accounted for by non–government-owned, private GPs. Instead, we find that government ties of the LP do not matter for the preferences of government-owned GPs. Importantly, the dislike for government capital is especially pronounced for the best-performing private GPs.

[2] In the paper, we also discuss an alternative explanation whereby GPs might have an information disadvantage when evaluating government LPs. We provide several empirical tests inconsistent with such a mechanism.

We provide additional, largely qualitative evidence to further unpack a channel of political interference, using results from a new round of surveys we conducted jointly with Zero2IPO. Designed to obfuscate their specific purpose, these additional surveys ask respondents to evaluate a list of pros and cons of establishing a relationship with an investor linked to the government. By and large, GPs lament the presence of political interference in the investment decision-making process by LPs with government ties, consistent with our experimental evidence. To a lesser extent, GPs also consider the presence of increased policy uncertainty and the lack of professionalization of teams working for LPs tied to the government to be unattractive features of government LPs.

We expand on our analysis of the role of government participation in China's VCPE market by conducting a contemporaneous analogous experimental survey to also estimate preferences of the other side of the market, namely, investors or LPs. Then, motivated by the significant heterogeneity in preferences for government partners from both firms and investors, we feed the elicited preferences into a simple two-sided search-and-matching model of VCPE and study counterfactual implications of government participation.

Our study is related to a well-established body of work on the role of government participation in the economy (Shleifer 1998; Megginson and Netter 2001). Several studies emphasize the many inefficiencies that arise when the government participates in economic activity and financial markets (La Porta and López-de Silanes 1999; La Porta, López-de Silanes, and Shleifer 2002; Sapienza 2004; Dinç 2005; Bai, Lu, and Tao 2006), with a related and large literature on the benefits of political connections (Fisman 2001; Khwaja and Mian 2005; Faccio 2006) and the costs of corruption (Shleifer and Vishny 1993; Fisman and Golden 2017; Colonnelli and Prem 2022).[3] Our approach differs from the existing literature, which, by predominantly studying the effects of government intervention, leads to findings that typically reflect the combination of the state's active involvement in the economy with the selection of firms willing to do business with the state in the first place. Our key insight, and contribution, is the estimation of demand for government participation, by means of a novel field experiment, which puts the spotlight on the pros (e.g., political connections) and cons (e.g., political interference in decision-making) as seen directly from the perspective of the private sector. Our results show that—within the context of leading VCPE firms—the cons outweigh the pros, with

[3] Relatively little is known in the context of high-growth firms, with exceptions including Lerner (2000, 2009), Howell (2017), Fang et al. (2018), Babina et al. (2020), and Bai et al. (2021). Recent work has also looked at the direct provision of venture capital funding through specific government vehicles in China and around the world (Brander, Du, and Hellmann 2015; Cumming, Grilli, and Murtinu 2017; Fei 2018).

government investors especially unattractive to the best-performing private firms. Overall, while we do not speak directly to the broader goals of the state and their overall efficiency implications, our findings point to important limits of a model of "state capitalism" that relies on the complementarity between private firms and government capital to drive high-growth entrepreneurship and innovation.

A related contribution of our work is to provide a comprehensive account of the VCPE market in China. In particular, despite its size and importance for both innovation and growth, extremely little is known about preferences of firms and investors and what the key features of this market are (Cong et al. 2020; Huang and Tian 2020). This is in stark contrast with the growing body of evidence regarding the Chinese government's impact on other sectors of the economy.[4] Bai et al. (2020) and Allen et al. (2021) describe the ownership structure of private firms in China, uncovering an increasingly blurry distinction between state-owned and privately owned firms and emphasizing the important implications of disentangling the reasons behind this new form of state-firm relationships. Our paper provides a novel finding to inform this debate—that government capital is unattractive to high-performing private firms—that has implications for understanding the nature of China's economic growth. Given the tight link between government participation and development, our paper also naturally relates to earlier work on financial development and growth more broadly (King and Levine 1993; Rajan and Zingales 1998; Levine 1999, 2002; Wurgler 2000).

Finally, we directly contribute to the literature on VCPE (see Da Rin, Hellmann, and Puri 2013 for a review). Bernstein, Lerner, and Schoar (2013) and Andonov, Hochberg, and Rauh (2018) discuss the role of political investors in the contexts of sovereign wealth funds and US public pension funds, respectively. Survey evidence on high-level decision-makers in VCPE include Gompers, Kaplan, and Mukharlyamov (2016), Da Rin and Phalippou (2017), and Gompers et al. (2020). Few experiments have been conducted in this area, and they largely focus on early-stage investments in the United States (Bernstein, Korteweg, and Laws 2017; Gornall and Strebulaev 2020; Zhang 2020). To our knowledge, ours is the first field experiment that identifies preferences of both GPs and LPs. We do so in a novel match-making setting, with robust incentives and a high response rate, and by targeting a large sample of high-profile managers of leading entities in the market. In particular, we contribute to the understanding of both the search and matching processes in the VCPE market—with a

[4] See, among others, Young (2000), Song, Storesletten, and Zilibotti (2012), Hsieh and Song (2015), Xiong (2018), Liu (2019), Beraja, Yang, and Yuchtman (2020), Brunnermeier, Sockin, and Xiong (2020), and Jia, Lan, and Padró i Miquel (2021). Amstad, Sun, and Xiong (2020) gives a review of the literature.

specific focus on GP-LP matches (Lerner et al. 2022) rather than those between GPs and the target investments (Sørensen 2007; Ewens, Gorbenko, and Korteweg 2022)—and of VCPE in emerging markets more broadly (Lerner and Schoar 2005; Kaplan, Martel, and Strömberg 2007; Lerner et al. 2018).

The paper is organized as follows. Section II provides institutional details. Section III describes the main data sources and establishes key facts about the market. Section IV illustrates the experimental design. Section V reports the main results. Section VI focuses on the mechanisms and equilibrium impact of government participation. Section VII concludes.

II. Institutional Context

We study the VCPE market, which refers to capital investments in firms that are not publicly listed or traded. While venture capital (VC)—which specifically refers to the funding of high-growth, high-risk companies, typically innovative entrepreneurial startups—is seen as largely distinct from private equity (PE) more broadly in the United States and most other developed economies, such distinctions are quite blurry in China (Huang and Tian 2020). We therefore refer to the general "VCPE" market and investors therein, noting that the market is characterized primarily by early-stage and growth-equity investors. The VCPE market in China is second in size only to that in the United States.

The main players in the VCPE market are the capital providers, which are typically referred to as "limited partners" (LPs), and the firms that manage the invested capital, namely, the "general partners" (GPs), which subsequently deploy the capital by acquiring ownership, or equity, in other typically high-growth firms. Such investments generate returns to the investors once the firms' shares are sold, either publicly through an IPO (initial public offering) or privately to other investors or firms. GPs also capture a share of the profits, in addition to their asset management fee. Specifically, one or more LPs generally invest capital into a "fund," which is the pool of capital raised by a given GP. LPs can invest into more than one fund, and a GP can raise multiple funds over time. This structure, typical of the US market, is known as "limited partnership," and it has also become the dominant structure in China with the Partnership Enterprise Law of 2007. In this context, LPs are considered "passive" investors, to the extent that their limited liability comes at the cost of not interfering with the investment allocation decisions of the GP. In practice, however, examples abound about how LPs can exert a certain degree of influence over how the capital is ultimately allocated.[5]

[5] While the two-sided nature of the market is the most common in the United States, China, and around the world, there are a myriad of other nuanced variations of the VCPE

A distinctive feature of VCPE in China is the predominant role played by the government in the allocation of capital. Central government agencies, local governments, and SOEs supervise or own (partially or wholly) a large share of LPs actively operating in the market, thus playing a primary role in driving high-growth entrepreneurship and private sector development. For instance, LPs may be SOEs funded by the Provincial People's Government. Similarly, local governments may formally approve the establishment of an LP and guide its capital allocation process. The role of government as an LP is at times made operational by the existence of so-called government-guided funds, namely, mixed private-public funds created and partially contributed to by government entities (usually local governments), to which nongovernment LPs are expected to contribute. In our paper, for brevity, we consider LPs as having government ties if the government is involved in any role in providing capital to any fund managed by a given GP.

We focus on the matching between GPs and LPs. Within this setting, learning to deal with government-related entities is often considered a "required course" for VCPE fund managers (see *Economist* 2021). Many argue that having the government as an investment partner introduces inefficiencies in the investment process and can distort the allocation of capital away from their most profitable uses. There are several reasons why this is the case, as illustrated through large qualitative evidence gathered in the recent reviews by Luong, Arnold, and Murphy (2021) and Malkin (2021). First, the government is seen as a more "active" investor, compared to other (commonly passive) LPs, because, after the capital is disbursed, it often introduces restrictions on the specific types of investment the GPs can undertake, for example, by trying to favor specific firms, locations, or sectors. As a result of political incentives, government LPs might also want to prioritize projects that are less risky or that can generate returns within a short time frame. These are all potentially severe forms of interference for GPs, who tend to look for risky projects with high upsides that often require a long investment horizon and a high degree of flexibility in decision-making. Moreover, such distortions are emphasized by the fact that relying on the government as an investor can lead to extra exposure to policy uncertainty, for example, because changing government objectives may lead to unexpected interference in investment decisions. Another source of inefficiency argued by opponents of government participation in the market is the presence of bureaucrats or political actors, rather than investment professionals, in investment and managerial committees.

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model, such as GPs and LPs playing the roles of both investor and fund manager at the same time. For brevity, we abstract away from these details in the paper. For a comprehensive description of the VCPE model, see Lerner, Leamon, and Hardymon (2012).

There are, on the other hand, several reasons why—from the perspective of fund managers and entrepreneurs alike—having the government as an investor may confer a number of advantages. Typically, such benefits range from faster regulatory approvals and tax reductions to better access to information and other favors occurring thanks to political connections, especially in state-dominated sectors such as construction, mining, or manufacturing. In particular, local government's support is often seen as necessary to "open doors" for target firms to grow. For these same reasons, having the government as an investor might be seen as a positive signal by other investors who are looking for GPs to manage their capital, and having government-connected individuals in the investment team may prove valuable.[6]

III. VCPE in China: Data and Facts

In this section, we describe the main sources of administrative data we use throughout the paper. First, we describe the administrative data from Zero2IPO on GPs, LPs, and VC and PE investments (sec. III.A). We then illustrate the data on the ownership structure of GPs and LPs and related measures of government connections (sec. III.B). Finally, in section III.C, we discuss basic summary statistics of our sample and establish a few descriptive facts.

A. Administrative Data on VCPE

Our primary source of administrative data is the full database created and maintained by our research partner Zero2IPO, which collects data on VCPE firms and their investments in a number of ways. First, they continuously aggregate multiple sources of data from administrative registries such as those of the Asset Management Association of China, the National Enterprise Credit Information Publicity System (NECIPS), and stock exchanges and regional equity markets, as well as from several industry associations and competing data platforms, including information announcements from government agencies and news press releases in VCPE-focused publications.

These data cover GPs and LPs actively operating in the market, but the lack of formal reporting requirements makes them imperfect with respect to coverage of deals and their performance, a typical issue in markets

[6] From a social perspective, which remains beyond the scope of our paper, the main argument is about externalities, as the government may allow for capital to flow to projects that would otherwise remain underfunded (see Lerner 2000 for a discussion). In China, this is reflected in a push by the government for capital flows to strategic sectors and locations that private LPs are not targeting.

for private capital around the world. To alleviate this issue, Zero2IPO collects its own data through a range of quarterly and annual online surveys, which are regularly validated through in-person meetings and follow-ups with respondents via phone and at leading conferences, workshops, and similar events throughout the year. Finally, Zero2IPO has a dedicated research team to cross-check and standardize the information, not only across data sources but also by verifying the information reported by multiple parties (e.g., GP and LPs in a given deal). Overall, despite some limitations that are standard, given the context, the data collection and validation process of Zero2IPO is largely similar to that of leading and widely trusted data providers in the US VCPE space.

Because of the nature of the data collection, the database provides accurate information about the identity of GPs, LPs, and the funds they are associated with, together with registry information such as company name, founding date, headquarters location, and registered capital. We match GPs and LPs using the fund-level data, which indicate the GP managing the fund and the LPs that committed capital to the fund. For each of the entities in the data, the Zero2IPO data platform also provides a text-based profile description of the entity. We design the synthetic profiles used for the experimental surveys to mimic these real-world textual profile descriptions, a point we return to in detail in section IV. Finally, for a subset of the sample we have access to data at the deal level, which includes information on the target company, the deal's size and date, and the round of fundraising, among others.

Measuring performance.—A common issue with VCPE data is that observing performance measures is difficult, because the data often remain confidential and because there are several weaknesses associated with various measurement approaches, not least because of the dependence on data from unrealized private investments (see Phalippou 2008; Cole et al. 2020; and Jeffers, Lyu, and Posenau 2021 for discussions of these issues).

Similar to most standard US-focused datasets, our data also lack the universe (and respective timing) of cash flows between GPs, LPs, and funds. However, our collaboration with Zero2IPO allows us to construct a measure of returns, which they label "comprehensive return" (henceforth CR). The CR is a weighted average of various measures Zero2IPO collects, such as funds raised, investments, and exits, among others. Because the magnitude of this measure is not directly interpretable, in our analysis we use each GP's corresponding quantile of CR as a performance measure between 0 and 1. While also subject to many of the common reporting concerns, the CR is relevant to the extent that it is used by Zero2IPO to compile its yearly rankings of GPs in China. Whenever we split GPs in terms of high versus low quality in the paper, we do so by cutting the sample at the median of CR (within the analysis sample) and considering a GP as high quality if it has above-median CR or was ever ranked as a top GP by

Zero2IPO. Finally, despite the fact that they are sensitive to the timing of cash flows, whenever using performance data, we report robustness results that use the simpler measure of internal rates of return (IRRs), which are reported by the GPs directly to Zero2IPO for a subset of the data.

B. Measuring Government Ownership

We measure whether GPs and LPs are partially or wholly owned by the government, using business registration data from NECIPS, as in Bai et al. (2020). We access the database through a dedicated application programming interface provided by the commercial company Tianyancha. The database contains the ownership structure of each legal business entity in China. That is, for each entity, we can observe its shareholders, and the shareholders of each shareholder, until we reach the ultimate owners and their respective shares in the given entity.

To define government ownership, we search for ultimate owners that are either SOEs or (central, provincial, or local) government agencies. We obtain the most comprehensive list of SOEs from the State-Owned Assets Supervision and Administration Commission, which we match to the business registration data. To identify government agencies, we proceed in two steps. First, we create a list of agencies from the State Council and from each provincial government's website. Second, starting from these lists, we extract the primary keywords in their names that are indicative of a government agency, such as "department," "administration," "bureau," and "government," and search for these keywords in the business registry data. We do a similar search for the list of city names in the data, as many local governments are city administrations. We then manually go over the results from the searches to screen out false positives and to categorize government agencies into central-, provincial-, and city-(hereafter, local-)level agencies, for a total of 124 central, 220 provincial, and 1,110 local government agencies in the business registration data. We complement these data with data collected by Zero2IPO itself through their regular surveys regarding the ownership and government relation of LPs and funds.

Our main analyses consider GPs and LPs government owned if they have a positive share of government ownership; that is, if any of their ultimate owners are a government entity, we consider a GP or LP government owned.[7]

[7] We report robustness to another commonly used definition to capture corporate control, according to which we define as government owned only those entities where the government owns at least 20% of the shares (Aminadav and Papaioannou 2020). For brevity, we add to the appendix, available online, only the tables corresponding to the main analysis tables. These robustness tables are tables A40–A43 (tables A1–A44 are available online).

C. *Sample Selection and Descriptive Analysis*

The main starting administrative data sample we rely on throughout the paper consists of all GPs that are labeled "active" by our partner and data provider, Zero2IPO, as of December 2019. This includes all GPs that have made at least one investment in the 5-year period 2015–19 and that Zero2IPO has flagged as GPs for which confidence regarding data quality is high. The data do not include individual investors, and so the focus is only formal business entities, which account for the bulk of VCPE capital in the market. We have a total 6,308 active GPs, which include all respondents to our survey—discussed in detail in section IV. We then define as "active" all LPs that have ever invested in a fund managed by an active GP. We have a total of 7,974 active LPs, which also include all respondents to our survey. We were able to collect ownership information for the near-universe of these GPs and LPs.[8] Within this sample of active entities, Zero2IPO sent our main surveys to a total of 1,600 GPs and 790 LPs. We obtained a total of 1,000 responses, 688 from GPs and 312 from LPs, for an average response rate of nearly 43%.[9]

Our sampling procedure gives rise to three stages of selection: (i) one due to the initial restriction to active entities in the Zero2IPO database; (ii) one due to Zero2IPO reaching out to only a subset of the active entities for our surveys; and (iii) one due to the fact that only a fraction of the entities who receive the survey actually respond. In the tables discussed in this section, as well as in figures A1 and A2 (figs. A1–A5 are available online), we report a comparison of the basic characteristics of our respondents to the other GPs and LPs in our main dataset of active entities. Similarly to the VCPE studies of Gompers, Kaplan, and Mukharlyamov (2016) and Gompers et al. (2020), our sample selection leads to a final sample of respondents that is more representative of large and better-performing entities in the VCPE ecosystem in China.[10]

We present a few main facts to characterize the VCPE market in China, focusing the discussion on all active GPs and LPs over the period 2015–19.[11]

[8] The only exceptions are the GPs that are registered as foreign entities. We classify these GPs as privately (i.e., nongovernment) owned. Because our respondents are not foreign, we remove foreign-owned GPs and LPs from the descriptive statistics reported below.

[9] Of these, we drop from the main analysis 11 GPs and 2 LPs that did not fully complete the surveys.

[10] In table A1, we provide a comparison of the active entities in our baseline sample with the sample of all other (inactive) entities in the Zero2IPO database having at least one investment made in the period 2015–19, the latter being considerably smaller entities under the several reported metrics. In table A2, we also report a comparison of the respondent entities to the entities to which Zero2IPO sent the survey but that did not respond (nonrespondents). Respondents are positively selected (larger, better performing), relative to the nonrespondents.

[11] The facts established in this section apply similarly to the sample of respondents only. In addition to the output discussed below for facts 1 and 2, we also report tables A3 and A4 to show that facts 3 and 4 hold in the respondents-only sample as well.

1. Fact 1

The government is the leading VCPE investor. Table 1 reports summary statistics on our main data sample, showing the characteristics of LPs (panel A) split by government-owned and non–government-owned entities. The first fact we point to in the data is the dominant role of government investors in the market. First, about half of the entire set of investors consists of government-owned LPs, as shown in the first row of the LP panel. Second, there is a large difference in size between government-owned investors and other investors, with the former investing significantly larger amounts of capital (about six times more than a non–government-owned LP) and investing in more VCPE funds on average.

We characterize the role of government investors in several additional ways. Table 2 reports a more detailed breakdown of government

TABLE 1
Summary Statistics

	Active			Respondents		
	All	Government Owned	Non–Government Owned	All	Government Owned	Non–Government Owned
	A. LPs					
Share government owned (%)	50.11	100.00	.00	77.52	100.00	.00
Capital invested ($ million)	50.36	98.95	16.18	399.59	471.71	207.33
Funds invested	1.98	2.53	1.43	9.24	10.18	4.45
Firm age (years)	8.29	9.77	6.83	9.11	8.53	11.13
	B. GPs					
Share government owned (%)	38.63	100.00	.00	32.05	100.00	.00
AUM ($ million)	741.30	993.02	607.21	1,001.76	1,491.48	691.78
IRR (% median)	27.64	23.48	31.16	32.34	25.78	36.57
Funds	2.54	2.77	2.38	3.32	4.22	2.81
Investments	13.42	11.72	14.47	48.40	44.36	50.35
Exits	5.91	6.82	5.37	9.36	11.86	8.06
Firm age (years)	6.95	8.18	6.17	7.13	7.54	6.94

Note.—This table reports summary statistics for both LPs and GPs, using Zero2IPO administrative data for the period 2015–19. We have 7,974 active LPs, of which 312 are respondents, and 6,308 active GPs, of which 688 are respondents. We exclude foreign entities from this analysis. Panel A includes variables for LPs. Panel B includes variables for GPs. "Share government owned" is the share of entities that have at least one ultimate owner that is affiliated either with a government agency or an SOE, "Capital invested" is the amount of capital the LP invested in funds, "Funds invested" is the number of funds the LP invested in. "Firm age" is the age of the firm as of 2019. AUM is the assets under management, IRR is the median internal rate of return, "Funds" is the number of funds managed by the GP, "Investments" is the number of investments made by the GP, and "Exits" is the number of exit events for the GP investments. Capital invested, AUM, and IRR are winsorized at the top 95%.

TABLE 2
Government Ownership of Investors and Fund Managers

	Active								Respondents							
	Minimum	p10	p25	Median	Mean	p75	p90	Maximum	Minimum	p10	p25	Median	Mean	p75	p90	Maximum
	A. LPs															
TotalGovShare	.00	.00	.00	.00	28.86	70.00	100.00	100.00	.00	.00	.00	55.06	53.79	100.00	100.00	100.00
GovShare (within entities)	.00	.28	6.84	70.68	57.98	100.00	100.00	100.00	.00	8.23	41.97	99.05	70.51	100.00	100.00	100.00
CentralGovShare	.00	.02	.44	2.81	17.24	17.47	68.25	100.00	.00	.14	1.74	9.60	23.55	39.31	70.89	100.00
ProvincialGovShare	.00	.02	.26	4.95	28.02	45.74	100.00	100.00	.00	.09	3.33	22.04	42.98	100.00	100.00	100.00
LocalGovShare	.00	.18	1.52	45.00	50.79	100.00	100.00	100.00	.00	.29	3.03	50.83	53.01	100.00	100.00	100.00
	B. GPs															
TotalGovShare	.00	.00	.00	.00	12.48	.13	59.60	100.00	.00	.00	.00	.00	10.99	1.04	45.75	100.00
GovShare (within entities)	.00	.00	3.02	35.00	43.43	95.20	100.00	100.00	.00	.00	2.48	23.58	34.99	58.26	100.00	100.00
CentralGovShare	.00	.06	.60	3.22	19.45	29.73	69.19	100.00	.00	.04	.35	2.00	14.92	17.88	45.76	100.00
ProvincialGovShare	.00	.05	.27	5.99	24.99	35.13	100.00	100.00	.00	.02	.14	2.17	20.65	31.02	90.00	100.00
LocalGovShare	.00	.10	.98	8.15	31.66	53.08	100.00	100.00	.00	.09	.95	4.67	20.68	33.70	69.91	100.00

Note.—This table reports the summary statistics of government ownership for both LPs and GPs. We have 3,969 active government-owned LPs (out of 7,974 active LPs), of which 238 are respondents (out of 312 LP respondents), and 1,812 active government-owned GPs (out of 6,308 active GPs) of which 216 are respondents (out of 688 GP respondents). We exclude foreign entities from this analysis. For this analysis, we omit government-owned entities whose government ownership was identified but for which the precise government ownership share value was missing. TotalGovShare is computed using all entities, with non–government-owned entities having 0 government ownership share. GovShare (within entities) is computed with only the government-owned entities; CentralGovShare is computed with only the sample of entities with at least some central government ownership; ProvincialGovShare is computed with only the sample of entities with at least some provincial government ownership; LocalGovShare is computed with only the sample of entities with at least some local government ownership. Government-owned entities are those with at least one ultimate government owner, as described in the paper. pn = nth percentile.

ownership shares across different layers of the government. The government is typically a majority owner of the LPs: in panel A of table 2, we find that, conditional on having at least one government shareholder, the median LP ownership share by the government is 82.62%. The additional statistics by government layer indicate the distribution of ownership, conditional on the LP having at least a positive ownership share by that government type (central, provincial, or local), pointing to the pervasive presence of local governments in the market.[12]

We further report the distribution of LP types in table A5, using the internal classification of Zero2IPO and weighting by the total investment amount of each LP type over 2015–19. Not only are the majority of entities dedicated VCPE institutions, but there is also a range of players typical of other leading international VCPE markets. Importantly, while the government does have wholly owned entities such as government bureaus and guided funds, which do not have a counterpart among private investors, we find a large overlap across other entity types.

Finally, figure 1 displays the distribution of headquarters location, investment region, and investment industries among active LPs, while illustrating the differences between government-owned and all other entities. Relative to private investors, government investors are more focused on traditional industries (e.g., manufacturing) and less developed regions (e.g., inland China). However, we still observe a large degree of overlap across regions and industries.

2. Fact 2

The government is a minority owner of a significant share of VCPE fund managers. Moving the focus to the GP side of the market, we establish that a striking 38% of these fund managers also have a positive share of government ownership, as shown in panel B of table 1.

Akin to the LP analysis, we find that government-owned GPs are also larger, as they have more assets under management (AUM). As reported in table 2, however, the government is typically a minority owner of the GPs, with the median government-owned GP having a 41.97% government ownership share. Figure 1 and tables A5 and A6 report additional summary statistics analogous to the previous analysis of LPs.

3. Fact 3

Government-owned fund managers perform worse than their private counterparts. We find that government-owned GPs have a lower performance

[12] In table A6, we show what share of LPs is owned by central, provincial, or local government agencies.

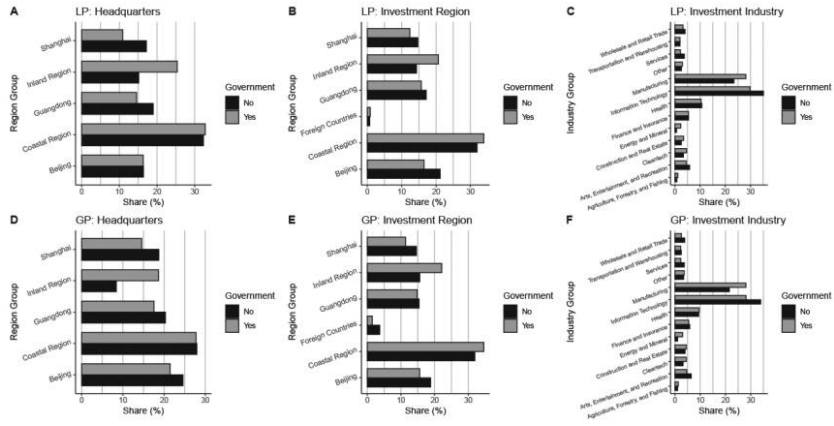

FIG. 1.—This figure reports the distribution of headquarters location, investment region, and investment industry for the sample of active LPs and GPs, split by government-owned versus non–government-owned entities. We have 3,969 government-owned active LPs and 4,005 non–government-owned active LPs. We have 1,812 government-owned active GPs and 4,496 non–government-owned active GPs. We exclude foreign entities from this analysis. Panels *A* and *D* show the distribution of headquarters for LPs and GPs, respectively. Panels *B* and *E* show the proportion of investment in each region group for LPs and GPs, respectively. In *A*, *B*, *D*, and *E*, we map all regions into six categories for visualization: Beijing, Shanghai, Guangdong, Inland Region, Coastal Region, and Foreign Countries, in which "Coastal Region" indicates that the area belongs to a province adjacent to the sea, while "Inland Region" indicates the opposite. Panels *C* and *F* show the proportion of investment in each industry group for LPs and GPs, respectively.

compared to privately owned GPs. While this is already apparent in the raw summary statistics of table 1, which show a much lower IRR, we can also analyze it more precisely when controlling for other characteristics. In table 3, we observe that government-owned GPs have lower CR (introduced in sec. III.A) as well as lower IRR, even after controlling for size (AUM) and location (headquarters fixed effects). While these performance measures are imperfect, these patterns are nevertheless suggestive that government-owned entities tend to underperform in terms of generating financial returns on investments. These findings are consistent with other work on government funding in China, as reviewed by Cong et al. (2020).

4. Fact 4

There is assortative matching, as the government invests disproportionally more in government-owned fund managers. Among the actual GP-LP matches, there is sorting along the dimension of government ownership: government-owned GPs are significantly more likely to receive capital from government-owned LPs, and conversely, government-owned LPs are significantly more likely to invest in government-owned GPs.

TABLE 3
GOVERNMENT-OWNED GPS PERFORM WORSE

	CR				IRR			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Government GPs	−.012***	−.006**	−.014***	−.008**	−12.871***	−10.529**	−17.211***	−15.112***
	(−3.74)	(−2.21)	(−3.25)	(−2.22)	(−3.13)	(−2.51)	(−3.52)	(−3.00)
AUM			.000*	−.000			−.001	−.002
			(1.84)	(−.13)			(−1.09)	(−1.60)
Observations	1,104	1,104	683	683	984	984	631	631
HQ FEs	No	Yes	No	Yes	No	Yes	No	Yes

NOTE.—This table illustrates the association between GPs' government ownership status and GP performance. The specification is $y_j = \alpha_i + \beta \times \text{GovGPs}_j + \gamma \times \text{AUM}_j + \epsilon_{ij}$. The sample includes all active GPs with nonmissing data for CR (cols. 1–4) and IRR (cols. 5–8). GovGPs is a dummy indicating whether a GP is government owned. CR is comprehensive return, which is standardized to 0–1. IRR is winsorized at the 95th percentile. AUM is the total asset under management in millions of USD and is winsorized at the 95th percentile. Columns 1 and 5 show the basic models. Columns 2 and 6 show the results with headquarters fixed effects (HQ FEs). Columns 3 and 7 show the results with AUM as controls. Columns 4 and 8 show the results with both HQ FEs and AUM controls. The *t*-statistics are presented in parentheses.

* $p < .1$.

** $p < .05$.

*** $p < .01$.

TABLE 4
ASSORTATIVE MATCHING BETWEEN GOVERNMENT-OWNED GPS AND LPS

	Government LP (1)	Nongovernment LP (2)	Column Ratio (3)
1. Government GP	1.608	.633	2.540
	(33.54%)	(13.46%)	(.000)
2. Nongovernment GP	.828	1.001	.827
	(23.75%)	(29.25%)	(.000)
Row ratio	1.941	.632	
	(.000)	(.000)	
Assortative index		1.254	
Homogeneity test (p-value)		.000	

NOTE.—This table presents the distribution of matching links in the administrative data between different GPs and LPs, grouped by government ownership. The likelihood ratio index is calculated as $s(p^{GP}, p^{LP}) = \Pr(G^{GP} = p^{GP}, G^{LP} = p^{LP}) / \Pr(G^{GP} = p^{GP}) \Pr(G^{LP} = p^{LP})$. We define $\Pr(G^{GP} = p)$ as the ratio of type-p GPs among all GPs with at least one link; e.g., if p is government owned, then the probability is the ratio of government-owned GPs among GPs with at least one link. $\Pr(G^{GP} = G^{LP} = p)$ is defined as the ratio of links where GP and LP both belong to group p among all links in the sample. The number in the parentheses is the fraction of links among all links formed between GP and LP with ownership information. The assortative index is calculated as the weighted average of the diagonal elements. Column ratio is calculated as col. 1 divided by col. 2 in the same row. Row ratio is calculated as row 1 divided by row 2 in the same column. The numbers in the parentheses for the ratios are the p-values of the binomial test within the corresponding rows and columns, respectively, under the null hypothesis of random matching. The p-value of the homogeneity test is a χ^2 test. "Government GP" and "government LP" are defined as entities that have at least one ultimate government owner, as described in the paper.

These patterns are illustrated in table 4, where we report the likelihood ratio index for each pair of LP and GP types. The likelihood ratio index for each GP of type i and LP of type j, with $i, j \in \{\text{government, nongovernment}\}$ is defined as

$$s(i, j) = \frac{\Pr(\text{GP of type } i \text{ matches with LP of type } j)}{\Pr(\text{a random GP has type } i) \times \Pr(\text{a random LP has type } j)}.$$

The measure $s(i, j)$ benchmarks the empirically observed frequency of matches relative to the frequency that would have occurred by chance. If GPs and LPs form matches at random—without sorting by type—then the likelihood ratio should be equal to 1 in a large sample. A likelihood ratio $s(i, j)$ above 1 indicates that matches between type-i GPs and type-j LPs occur more often than could be attributable to chance, suggesting a preference to match on both sides relative to potential partners of other types. Conversely, $s(i, j) < 1$ indicates that type-i GPs and type-j LPs may have a dislike for being matched with each other.

IV. Experimental Design

The previous section establishes a few important facts regarding the matching between GPs and LPs. Yet the equilibrium nature of the

observational data makes it difficult to tease out the demand and supply of government capital. In this section, we describe our main experimental survey design, which aims to estimate fund managers' demand for different sources of capital, and specifically for capital coming from investors with government ties.

Estimating preferences for government capital versus capital from private sources is empirically challenging for several reasons. First, it is difficult to separate capital coming from government investors from other confounding factors, such as the fact that they tend to have deep pockets, as we established above. That is, that the investor has government ties is correlated with a host of other traits of the investor. Second, government investors may be more or less inclined to provide capital to a given GP, relative to other investors. As a result, GPs may have differential expectations about whether the government investor would provide capital to them in the first place. Third, any match between GPs and investors in observational data would reflect both preferences as well as the endogenous matching process during which the GP observes several other characteristics of the investor that are unobserved by the econometrician. Therefore, the objective of our experiment is to create an environment where we can randomize whether an investor is connected to the government while holding fixed other characteristics, and where we can isolate GPs' preferences for investors independent of the likelihood of a match.

Our research design is further explained in what follows. We introduce the surveys we conducted with Zero2IPO in section IV.A. We then focus on the experimental setting used to estimate GPs' preferences for LPs.[13] In section IV.B, we illustrate how we create the pool of realistic synthetic profiles of investors, including details on the specific features we include in the profiles. In section IV.C, we describe the questions we ask respondents to rate potential partners, which will be used as dependent variables in our analysis. In section IV.D, we discuss some limitations of our experimental approach and how we alleviate concerns regarding realism and quality of the evaluation data.

A. The China Equity Investment Survey

The core of our paper consists of new experimental surveys of a large number of GPs and LPs we conducted in collaboration with Zero2IPO, widely considered the leading integrated service and data provider in the China VCPE market since its founding in 2001. We conducted these surveys in the last quarter of 2019.

[13] The analogous setting to estimate LPs' preferences for GPs is briefly discussed in sec. V.C.

We designed a new survey instrument, which we labeled the "Chinese Equity Investment Survey," to be filled in by high-level managers or partners of the targeted organizations. As part of the survey, we first show an introductory page describing the goals of the survey and the incentives to participate, while also providing survey instructions to the participants. Then, respondents are asked to rate 20 synthetic profiles of potential investment partners along several dimensions. The incentive for GPs (LPs) is to be matched with real LPs (GPs) by Zero2IPO—a partner that respondents trust and that can make credible promises—based on their evaluation of the synthetic profiles. Such a design is inspired by the work of Kessler, Low, and Sullivan (2019) to measure preferences for individual characteristics without deception in hiring decisions.[14] To this end, our survey is marketed as a joint collaboration between Zero2IPO and Tsinghua University PBC School of Finance, with the objective of using machine-learning techniques to improve the matching between GPs and LPs.

The process of recruiting respondents is managed directly by Zero2IPO, which regularly conducts surveys of GPs and LPs in the VCPE market in China. Zero2IPO has also recently started to play the important role of facilitating the matching between GPs and LPs, by means of face-to-face events and introductions made among various industry players. We report the full recruitment script sent to respondents, translated to English, in figure A3. As discussed in section III.C, we obtained a total of 688 responses from GPs and 312 responses from LPs, for an average response rate of nearly 43%. The response rate and sample size are high for this setting.[15]

B. Creating Partner Profiles

We estimate GPs' preferences for LPs by asking each of them to evaluate 20 unique synthetic profiles. These profiles are brief textual descriptions of LPs summarizing their key features. We create the synthetic LP profiles in direct collaboration with the Zero2IPO research team, using a combination of automated programming and manual checks.

The first step of the process consists of a structured analysis of all text-based descriptions of LPs on the Zero2IPO platform. In particular, we aim to first identify general text organization patterns that we can use

[14] See Colonnelli, Neto, and Teso (2022) and Low (2024) for other applications of this design, and Harrison and List (2004) for a broader discussion of "framed field experiments."

[15] For example, the response rates for other survey-based studies of investors are 13.8% for Da Rin and Phalippou (2017), 10.3% for Bernstein, Lerner, and Mezzanotti (2019), 11.6% for Denes et al. (2020), 6.5% for Gornall and Strebulaev (2020), 0.5% for Zhang (2020), and 2.5%–4% for Giglio et al. (2021). The highest response rates in the literature are those for Gompers, Kaplan, and Mukharlyamov (2016), 47%, and Gompers et al. (2020), 21%. Relatedly, in the seminal survey work on the practices of chief financial officers, Graham and Harvey (2001) obtain a response rate of 8.9%.

to create realistic profiles, for example, by studying how long the profile description typically is, how it is organized in terms of paragraphs, and the order in which certain pieces of information appear. Second, we identify the pieces of information, that is, "components," that a profile typically consists of (e.g., size, location, relation to the government), and their approximate probability distribution. Third, we create a few pieces of text that are often used to characterize each component, which we generate by reading several hundred profiles for each component identified in the previous step. In this way we are able to ensure that survey respondents observe realistic variation in the profiles they are evaluating, which would not be possible if all the information was mechanically presented using the same exact sentence or words in each profile.

Table A7 reports the variables we create from the text of the synthetic LP profiles, together with a brief explanation of what each variable captures. We expand on the description of all profile components from which the analysis variables are generated in table A8, where we report all possible ways through which a given component may appear in the text of the synthetic profile. The first column of table A8 also reports, in parentheses, the unconditional probability that a given component is randomly drawn to be included in a profile. For a given component, each piece of text has equal probability of being drawn, conditional on the component appearing in the synthetic profile. For a given component, certain pieces of text (displayed in boldface) indicate when the dummy variable in our regression takes value 1, while the others indicate when the variable takes value 0, as reported in the second column of table A8, which refers to the specific numbered text boxes.[16]

To illustrate, consider our main LP characteristic of interest, namely, "government ties," drawn to appear in a synthetic profile with 80% probability. Conditional on appearing, the LP displays the related text-based information in 11 possible ways (as per the column "Options" in table A8). Of these 11 pieces of text, seven of them (i.e., those in bold) would capture an LP that has government ties (i.e., GovernmentTies = 1), while four of them would indicate that the LP is not linked to the government (i.e., GovernmentTies = 0) using analogous pieces of text. For example, a synthetic profile would suggest the LP has government ties when it reads, "It is an investment organization established by a state-owned firm funded by the provincial government." Meanwhile, an LP synthetic profile that does not have government ties reads, "This company aims to give full play to the role of the market in allocating resources and expand private capital investments in innovation and entrepreneurship."

[16] Respondents see text only in Chinese, but we report a translated version in English as well.

The second step of the process consists of randomly generating synthetic profiles of LPs by mixing and matching the profile components according to the respective probabilities of appearance. Staying somewhat close to the real probability distribution is important so that respondents evaluate profiles they deem realistic. Relatedly, note that the creation of the final synthetic profiles involves a certain degree of manual adjustment. In particular, the probabilities of appearance of each component and the specific pieces of text used to characterize a given component are ultimately decided by Zero2IPO. There are two reasons for this. First, text-based profiles are not available for all LPs. Second, only Zero2IPO (and not the researchers) was aware of the specific pool of GPs that would receive the survey invitation. As a result, the Zero2IPO team was able to ensure that the synthetic profiles would look realistic and be a good fit with respect to the specific sample in our study, an issue of crucial importance, as also highlighted by Kessler, Low, and Sullivan (2019) in the context of employers screening CVs they deem relevant to them.[17]

The process of actually generating the synthetic profiles is then straightforward. Following the probability distribution in place, a program would randomly generate all possible profiles by putting together the randomly selected pieces of text for each component that is drawn to appear in a given profile. Second, we randomly draw from this pool the total number of profiles needed to generate the surveys that would be sent out to the potential respondents. Because our survey was sent to 1,600 GPs, a total of 32,000 profiles were created. Finally, the research team at Zero2IPO and a large team of research assistants from the University of Chicago and Tsinghua University manually went over every profile to make small manual changes needed to ensure perfect readability of each profile.[18] An example of a synthetic LP profile (with government ties) shown to GPs is the following:

> The investment institution has a total registered capital of RMB 1 billion, was established at the beginning of 2007, and is located in Guangdong to promote stronger domestic enterprises in the Greater Bay area. It is an investment organization established by a state-owned firm funded by the provincial government. It mainly

[17] For similar reasons, in their seminal study on labor market discrimination, Bertrand and Mullainathan (2004) avoid constructing CVs that would make the candidates overqualified or would include unusual combinations of components that might make respondents suspicious.

[18] Note that the order in which components are shown is typically fixed to best reflect the profiles in Zero2IPO. With reference to the components described in table A8, the order of appearance is registered capital, founding year, location of headquarters, government ties, investment philosophy, industry, stage focus, fund size and management, corporate governance.

focuses on investment, financing, and asset management. The investments target late-stage projects which can facilitate the IPO of innovative companies. The total size of the funds it provided capital to reached 700 million yuan, with 15 RMB funds in total. The capital went to 20 startups, 8 of which are now listed companies.

C. Rating Profiles of Investment Partners

We measure GPs' interest in LPs by asking the GPs to rate 20 synthetic LP profiles. We use a 10-point Likert scale to measure the rating, which allows us to observe GPs' preferences toward characteristics of inframarginal LP profiles. The respondents are instructed that the responses to both questions would be used to generate their LP matches. Our main dependent variable is captured by the following question:

1. "Are you interested in establishing an investment relationship with this investment partner?"

We measure the response on a scale of 1–10, where 1 means "not interested" and 10 "extremely interested." We indicate the answers to these questions as PartnerRating, and they represent our main dependent variable to capture how interested a GP is in a given LP profile. We also specify, "Assume that the investment partner is already interested in establishing an investment relationship with your organization—therefore please only consider your views on the quality of the investment partner." Importantly, the additional emphasis on assuming that the LP is interested allows us to separate the GPs' interest from their beliefs about the likelihood that the LP would want to provide capital to them.[19]

We then ask an additional question whose primary purpose is to further encourage GPs to focus only on their interest in establishing an investment partnership with the given LP when answering the main question. On its own, this additional question allows us to also explore GPs' beliefs about the likelihood that an LP would want to provide investment capital to the GP if given the chance. The question asks the following:

2. "How likely do you think it is that this investment partner would want to enter an investment relationship with your organization?"

We measure the response on a scale of 1–10, where 1 means "not likely" and 10 "extremely likely". We also specify, "Assume that you have already

[19] We also measure whether the GP is interested in meeting an LP with the given synthetic profile with a simple additional question: "Would you like to be introduced to this investment partner?" The binary answer to this question is akin to what the résumé audit literature typically captures in hiring settings (Bertrand and Mullainathan 2004), but a concern is that it conflates GP interest in an LP with the GP's expectation that the LP would be interested in establishing an investment relationship if they had the chance (Kessler, Low, and Sullivan 2019). We report results for this measure in the appendix.

expressed interest in the investment partner—therefore please only consider whether you think the partner is interested in establishing an investment relationship with your organization." We indicate the answers to these questions as ExpectedInterest, and we report results for this measure in the appendix.

D. Discussion: Realism and Quality of Evaluation Data

A limitation of the experimental design is that our Likert-scale measure is not a common step in the investment-matching process. Additionally, the incentive structure is similar but not identical to that in the investment process, and therefore we cannot be sure that respondents evaluate our synthetic profiles of investment partners with the same rigor or using the same criteria as they would real ones. It might also be the case that the incentives are stronger for some respondents than for others, which could result in differential attention paid to filling out the surveys: for instance, by those who have less interest in being matched to a specific investment partner.

A few aspects of our study help alleviate these concerns. First, Zero2IPO conducted follow-up phone calls with the GPs after the survey links were sent, further explaining the project's goal and reiterating the main participation incentive of introductions to potential capital providers. Zero2IPO also explained the details of the synthetic rating part of the survey, ensuring that respondents understood both the incentive and the rating questions. This level of engagement alleviates the earlier concerns that are more common in online surveys without any direct interaction between the senders and the receivers of the surveys. The high response rate, combined with the fact that the main incentive to participate in the survey consists of being introduced to potential capital providers, gives us confidence that GPs value this incentive, as participating in a 45-minute survey is costly for VCPE fund managers.

Second, we emphasize that, in a context like that of GP-LP matching, the type of introductions promised by Zero2IPO as incentives are indeed valuable, as there is no central marketplace and survey evidence suggests that introductions by trusted third parties are a common tool to establish investment partnerships (Hochberg, Ljungqvist, and Lu 2007; Gompers et al. 2020). After our surveys were sent out, Zero2IPO reached out to our respondents to ask, "How important do you think this matching process is to help your organization gain exposure to new investment partners?" On a scale of 1–10, GPs' mean (median) response was 7.05 (7), while LPs' mean (median) response was 7.36 (7). In section V.B, we show that our main results are similar when we account for the possibly differential strength of the incentive across different respondents.

Last but not least, Zero2IPO placed special emphasis on making sure that only high-level employees of the organization directly responded to the survey. We show in figure A4 the positions in the firm of the respondents that Zero2IPO targeted for our survey. Among GPs, we see that the most common type belongs to the "partner" category (including founding, senior, and junior partner). The second most common position is that of "manager/executive" in the firm, which includes primarily positions such as chief investment officer and head of venture capital, among others, while a smaller share of respondents are listed as belonging to the firm's "directors" (typically managing or regional director). A small subset of our surveys target someone in the "other" category, which mainly consists of more junior positions, such as investment associate and analyst. Moreover, as shown in table A9, the targeted respondents have significant experience in the firm: the targeted GP individual respondents have an average (median) of 9.56 (9) years working at the firm.

V. Estimating Preferences for Investment Partners

This section describes our baseline experimental results. We begin, in section V.A, by outlining the econometric specifications used to analyze our survey experiment. In section V.B, we report the main results on the GPs' preferences for LP characteristics, and specifically for LPs with government ties. In section V.C, we briefly analyze the results of our experimental surveys of LPs' preferences for GPs.

A. *Estimating Equations*

We estimate specifications of the following form:

$$y_{ij} = \alpha_i + \beta \times \text{GovernmentTies}_j + \sum_{m=1}^{N} \gamma_m \times \text{Characteristic}_{jm} + \epsilon_{ij}, \qquad (1)$$

where i indicates the GP that is responding to the survey, and j indicates the synthetic LP profile that is evaluated; y is one of our main dependent variables, described in section IV.C, such as PartnerRating. The main parameter of interest is β, which measures the average effect of rating an LP that is connected to the government. The parameters γ_m capture all other characteristics that we randomized in the synthetic LP profiles, as discussed in section IV.B. We report results both with and without α_i, which are the GP fixed effects that account for different average ratings across respondents.

The set of other characteristics included in the regression is discussed next, together with the analysis of the results, while table A7 summarizes

the main variables that we create from the synthetic profiles. All regressors are indicator variables equal to 1 or 0, depending on the piece of text included in the synthetic profile, as indicated in tables A7 and A8.[20]

B. GPs' Preferences for LPs

We report our main experimental results in table 5. In particular, we show regression results where the dependent variable is PartnerRating, which measures the GP interest in LP profiles on a scale of 1–10. The coefficients in the top row show that, on average, GPs dislike LPs with government ties. The coefficient is −0.114 on the Likert scale, which indicates that the average respondent GP is willing to give up nearly $70 million in potential investment from the given LP.[21] The negative coefficient on GovernmentTies is significant in both our specification without (col. 1) and that with (col. 2) GP fixed effects. This is a key result we return to in the next section to discuss mechanisms in detail.

Other LP characteristics are also valued positively. GPs are attracted to deep-pocketed LPs, as indicated by the positive coefficients on LargeInvestor—which captures LPs that have allocated at least 1 billion yuan to VCPE—and HighRegisteredCapital—which captures LPs with at least 1 billion yuan in registered capital. These results are intuitive as, all else equal, GPs are unsurprisingly attracted to LPs that could generate larger influxes of capital to their funds. We also find that GPs have a preference for LPs with headquarters in Beijing. On the other hand, we observe a dislike for LPs depicted to have a focus on specific industries (measured by IndustryInformation) or stages of investments (StageFocus). These latter findings are consistent with the average GP in the VCPE market in China having a wide spectrum with regard to its investment focus. More broadly, the findings on preferences with respect to these standard characteristics of the LPs seem to be largely uncontroversial, which is reassuring to the extent that we can interpret them as a signal that GPs are indeed evaluating the synthetic profiles according to their true preferences.

We also find that several other components of the LP profiles do not seem to affect GP preferences. We do not observe a statistically significant differential preference for young LPs established after 2010, for LPs with headquarters in a foreign country, or for profiles displaying information about the investment philosophy or the corporate governance practices of the LP.

[20] If the profile component we use to construct our variables of interest does not appear in the profile, the variable takes value 0.

[21] To compute the dollar values of the Likert coefficient, we rely on the variable LargeInvestor, whose coefficient is 0.147, which has a more quantitative interpretation.

TABLE 5
GP PREFERENCES FOR LPS

	PARTNERRATING	
	(1)	(2)
GovernmentTies	−.114***	−.079**
	(−2.92)	(−2.14)
LargeInvestor	.147***	.167***
	(4.21)	(5.03)
HighRegisteredCapital	.196***	.185***
	(5.52)	(5.53)
IndustryInformation	−.231***	−.178***
	(−6.68)	(−5.39)
YoungLP	−.004	−.010
	(−.11)	(−.29)
HeadquartersInForeignCountry	.034	−.022
	(.55)	(−.35)
HeadquartersInBeijing	.208***	.175***
	(4.04)	(3.51)
CorporateGovernance	.013	.055*
	(.37)	(1.67)
InvestmentPhilosophy	.014	.039
	(.40)	(1.14)
StageFocus	−.085**	−.086**
	(−2.44)	(−2.57)
Observations	13,375	13,375
Unique GPs	679	679
GP fixed effects	No	Yes
Model	OLS	OLS
Dependent-variable mean	6.448	6.448
Dependent-variable SD	2.016	2.016

NOTE.—This table shows GP preferences for LP synthetic characteristics. The specification is $y_{ij} = \alpha_i + \beta \times \text{GovernmentTies}_j + \Sigma_{m=1}^{N} \gamma_m \times \text{Characteristic}_{jm} + \epsilon_{ij}$. The sample includes all GP respondents participating in the experiments who gave at least one valid answer to each question. GovernmentTies is a dummy indicating whether the LP profile displays a link to the government. Details of the remaining characteristics are illustrated in table A7. PartnerRating is on a scale of 1–10. Column 1 shows the baseline OLS (ordinary least squares) regression. Column 2 shows the regression adding GP respondents fixed effects. The t statistics are presented in parentheses.

* $p < .1$.
** $p < .05$.
*** $p < .01$.

As described above, our surveys also include a separate question that captures the likelihood that the (synthetic) LP would want to provide investment capital to the GP if given the chance. While this is included primarily to ensure that our measure of partner rating is not confounded with concerns that the LP would be interested in the GP in the first place, it is also of interest on its own. We explore what influences GPs' expected likelihood that a given LP would provide capital to them in table A10. We find that GPs report LPs with government ties to be less likely to provide them investment capital, albeit the coefficient becomes statistically marginally insignificant when GP fixed effects are included.

Robustness.—As our main specifications are ordinary least squares (OLS) regressions, we are implicitly making a linearity assumption regarding the 10-point Likert-scale ratings. In table A11, we show that our results are robust to relaxing this assumption by running ordered probit regressions, which require only that GPs, on average, value a higher rating more highly than a lower rating. Table A12 reports the analysis, using as dependent variable the 0/1 indicator for cooperation interest, namely, the answer to the question "Would you like to be introduced to this investment partner?" as discussed in section IV.C. Table A13 reports the main analysis clustering the standard errors at the respondent level.

As discussed in section IV.D, our incentives may be weaker for respondents who have less interest in being matched to a specific investment partner or for those who pay less attention to our main matching incentive. We test the robustness of our findings to such concerns in table A14. In this analysis, we report our baseline results for different samples of the data. In particular, we report the results for different groups of targeted respondents on the basis of their job positions. We do not find our main results to be driven by lower-ranked respondents in "other" positions (who may have less direct interest in the matching process and therefore pay less attention to the rating exercise); we find instead that the dislike for government investors is strongest among the manager/executive category and still present (albeit with a coefficient that is marginally statistically insignificant) among the highest levels of partners. We also find that the average dislike for government LPs is present regardless of whether the synthetic profile being rated was ranked below median according to the expected-interest measure (i.e., the response to our second question on how likely the respondent thinks that the given potential partner would be interested in matching with them). Finally, we also find that the results are also robust when considering the sample split based on the responses to the direct questions Zero2IPO asked our respondents in 2019 to measure how important they think our matching process is to help the respondents' organization gain exposure to new investment partners.[22]

C. LPs' Preferences for GPs

We conduct a contemporaneous experimental survey of LPs to study LP preferences for GP characteristics. This additional survey allows us to study both sides of the market, a unique feature of our experimental setting that we return to when discussing the equilibrium impact of government participation in section VI.D. The survey, recruitment, and incentive

[22] Importantly, we also find that the key heterogeneity findings, depending on the ownership structure of GPs—discussed in detail in sec. VI.B—are largely unaffected by these sample splits, as shown in table A15.

structures are analogous to those in the survey of GPs. The profile components are slightly different, to reflect the different type of market participants. We excluded foreign LPs, and we were able to reach a total of 312 LPs. We report the details of the variables used in the analysis and the randomized components of synthetic GP profiles in tables A16 and A17, respectively.

The analysis follows the same structure as the previous analysis of GP preferences. The results are presented in table 6. Some of the key findings are that LPs prefer high-performing, foreign, recently established GPs that have a specialized focus in specific industries. What stands out, however, is that the strongest determinant of LP interest in a GP is whether that GP already has entities with government ties among its investors. We also find that LPs value positively GPs whose team members have direct experience in the government, while industry experience does not matter.[23] These findings suggest that, relative to nongovernment investors, government LPs may provide more value-added to the other LPs involved in the partnership; at the same time, government LPs may also have stronger bargaining power, thereby retaining a larger share of the surplus and leaving lower surplus to the GPs, consistent with the GPs' dislike for government capital we documented above.

Unlike the GP-level analysis, we find little heterogeneity, depending on the ownership structure of the LP itself, as illustrated in table A21, even though private LPs have a slightly stronger preference for high-performing GPs.

VI. Why Do Firms Dislike Investors with Government Ties? Mechanisms and Implications

In this section, we explore the mechanisms behind the main results established in the previous section (table 5), namely, that, on average, GPs shy away from LPs with government ties.

Our main focus is on isolating the fundamental trade-off between the costs and benefits of government connections in the context of China's VC market. Through these lenses, a leading economic explanation for our findings is one of political interference by government investors. Such a channel—consistent with many anecdotes in which investors linked to the government might interfere with firm operations because of political rather than profit-maximizing motives, as discussed in section II—implies that, in our context, typical political-connection considerations that would make the government attractive are not strong enough to outweigh the cons of

[23] Table A18 shows the analysis with ExpectedInterest as the dependent variable. Table A19 shows robustness to an ordered probit specification, while table A20 reports the analysis clustering the standard errors at the respondent level.

TABLE 6
LP Preferences for GPs

	PartnerRating	
	(1)	(2)
GovernmentInvestors	.652***	.692***
	(7.27)	(7.60)
TeamGovernmentExperience	.196**	.191**
	(2.40)	(2.31)
TeamIndustryExperience	.050	.041
	(.61)	(.49)
HighAUM	.025	.056
	(.35)	(.76)
HighIRR	.153**	.159**
	(2.46)	(2.50)
Exits	.151**	.160**
	(2.27)	(2.35)
RankedGP	−.271	−.252
	(−1.22)	(−1.12)
IndustryInformation	.631***	.637***
	(10.85)	(10.69)
YoungGP	.172***	.137**
	(2.60)	(2.02)
HeadquartersInForeignCountry	.490***	.466***
	(3.87)	(3.62)
HeadquartersInBeijing	.069	.065
	(.87)	(.81)
VC	.019	−.010
	(.23)	(−.12)
MarketApproach	.111	.106
	(1.55)	(1.45)
InvestmentPhilosophy	−.029	−.042
	(−.50)	(−.71)
InvestmentStage	.076	.072
	(1.06)	(1.00)
InvestmentHorizon	−.101*	−.094
	(−1.65)	(−1.50)
SerialFundManager	.042	.007
	(.47)	(.08)
Observations	6,220	6,220
Unique LPs	311	311
LP fixed effects	No	Yes
Model	OLS	OLS
Dependent-variable mean	4.284	4.284
Dependent-variable SD	2.326	2.326

Note.—This table shows LP preferences for GP synthetic characteristics. The specification is $y_{ij} = \alpha_i + \beta \times \text{GovernmentInvestors}_j + \Sigma_{m=1}^{N} \gamma_m \times \text{Characteristic}_{jm} + \epsilon_{ij}$. The sample includes all LP respondents participating in the experiments who gave at least one valid answer to each question. GovernmentInvestors is a dummy indicating whether the GP profile indicates that the GP already had government investors. Details of the remaining characteristics are illustrated in table A16. PartnerRating is on a scale of 1–10. Column 1 shows the basic models. Column 2 shows regressions adding LP respondents fixed effects. The *t*-statistics are presented in parentheses.

* $p < .1$.
** $p < .05$.
*** $p < .01$.

dealing with government LPs. In this section, we report a set of heterogeneity results that are consistent with this channel. We also provide largely qualitative evidence aimed at unpacking the black box of political interference by government investors, highlighting the role of interference in the investment decision-making process of the GPs.

There are a few alternative explanations that might account for the average dislike by firms for matching with investors with government ties. Many such alternative explanations are ruled out by our experimental design. For instance, real government-related LPs are different along many dimensions from private LPs, such as size and preference for certain regions and industries. Without controlling for these differences, our estimates might be suggestive of both a dislike for, say, government interference in investment decisions and a general dislike for other characteristics of the investor that are correlated with the investor having government ties. For instance, a dislike for government investors might simply be driven by a general dislike for certain industries or regions that are not considered attractive investment opportunities. Since both industry and regions of focus are randomized across LP profiles, these concerns are largely muted in our setting. Moreover, note that our findings are unlikely to be explained by a differential expectation that government LPs would actually invest in the GP. Indeed, as discussed in section IV, the instructions of the experiment make clear that the respondent should assume that the LP would provide funding to them if they expressed interest. A remaining potential alternative explanation is one according to which GPs have an information disadvantage in assessing government investors, which leads them to rate the latter profiles lower than those of private investors they can more reliably evaluate.[24] In this section, we therefore discuss the plausibility of such an explanation and provide a few results that seem inconsistent with this channel.

We proceed as follows. First, we show heterogeneities across government layers and sectors (sec. VI.A). Second, we study how the effects vary, depending on whether the GP is private or government owned (sec. VI.B). Third, we discuss the findings from additional qualitative surveys that allow us to both confirm the central importance of a channel of political interference in investment decisions and assess additional, more nuanced mechanisms that would be difficult to identify with the experimental or administrative data alone (sec. VI.C). Finally, we build a simple model of two-sided search to discuss the distributional implications of government participation (sec. VI.D).

[24] Such an information channel would be consistent with, e.g., a literature on social connections and investing (Cohen, Frazzini, and Malloy 2008, 2010; Shue 2013) and social proximity to capital (Kuchler et al. 2022).

A. *Heterogeneity across Layers of Governments and Sectors*

A key prediction of a channel in which political interference by government investors dominates the benefits of being connected to the government is that, in the context of China, the effects should vary, depending on both the specific type of government entity that is providing the capital and the sector of focus of the GP.

Local government connections, by means of regulatory approvals and tax benefits, are especially important for the growth of early-stage firms typically targeted by VCPE investors, and we would expect that these pros might compensate for the costs of political interference (Bai, Hsieh, and Song 2020). In table 7, we explore whether the dislike for government investors is less pronounced for certain types of government entities.[25] When estimating a specification analogous to equation (1), but where the main regressor is split into different indicators for each level of government, we find that the dislike is strongest for investors related to the central government, and it is also present when focusing only on ties to the provincial government. On the other hand, we do not find evidence of a dislike for government investors linked to local governments, and, if anything, we uncover a positive (but statistically insignificant) coefficient.

Another important margin of heterogeneity for which having a government investor might be particularly important is the focus of a GP's investments. Indeed, if government connections were important to "open doors," they should be particularly so in state-dominated sectors, as also discussed in Bai et al. (2020). We therefore explore whether GPs focused on specific sectors might have a stronger preference for investors with government ties relative to other GPs. To do so, we first categorize GPs into their specific sector of focus, by picking the sector in which at least 50% of their 2015–19 investments were made.[26] We subsequently estimate a nonparametric causal-forest model to measure heterogeneous treatment effects, following the methodology of Wager and Athey (2018) and Athey and Wager (2019). We report the conditional average treatment effects for the various sectors in figure 2. Despite the noise in the estimation, we observe a pattern suggestive of a lower dislike for sectors where the government plays a more dominant role, such as construction and real estate, manufacturing, mining, and finance and insurance, relative to sectors with a smaller government role, such as cleantech and health, among others.

[25] To do so, instead of using just a single dummy variable, we assign specific pieces of text related to GovernmentTies in table A8 to create a dummy for central (option 5), provincial (options 6–9), or local (options 10–11) ties to the government.

[26] As a result, for this specific test, we drop sector-agnostic GPs to which we cannot assign a specific sector of focus and are left with a sample of 236 respondent GPs. We use the coarsest categorization of sectors in the Zero2IPO administrative data, which was also used in the creation of fig. 1. Some sectors do not enter our analysis if the sample of respondent GPs listing that sector as their primary investment area is too small.

TABLE 7
GP Preferences for LPs: Heterogeneity across Government Levels

	PartnerRating	
	(1)	(2)
GovTies-Central	−.327***	−.328***
	(−3.02)	(−3.35)
GovTies-Provincial	−.112***	−.068*
	(−2.63)	(−1.70)
GovTies-Local	.105	.117
	(1.15)	(1.29)
LargeInvestor	.147***	.167***
	(4.21)	(5.02)
HighRegisteredCapital	.198***	.187***
	(5.58)	(5.57)
IndustryInformation	−.230***	−.177***
	(−6.65)	(−5.37)
YoungLP	−.003	−.008
	(−.07)	(−.24)
HeadquartersInForeignCountry	.040	−.014
	(.65)	(−.23)
HeadquartersInBeijing	.236***	.207***
	(4.42)	(4.01)
CorporateGovernance	.013	.055*
	(.37)	(1.67)
InvestmentPhilosophy	.015	.040
	(.43)	(1.18)
StageFocus	−.086**	−.086***
	(−2.45)	(−2.58)
Observations	13,375	13,375
Unique GPs	679	679
GP fixed effects	No	Yes
Model	OLS	OLS
Dependent-variable mean	6.448	6.448
Dependent-variable SD	2.016	2.016

NOTE.—This table shows GP preferences for LP synthetic characteristics where LPs' government ties are divided into three levels, central, provincial, and local. The specification is $y_{ij} = \alpha_i + \beta_1 \times \text{GovTies-Central}_j + \beta_2 \times \text{GovTies-Provincial}_j + \beta_3 \times \text{GovTies-Local}_j + \Sigma_{m=1}^{N} \gamma_m \times \text{Characteristic}_{jm} + \epsilon_{ij}$. The sample includes all GP respondents participating in the experiments who gave at least one valid answer to each question. GovTies-Central, GovTies-Provincial, and GovTies-Local are dummy variables indicating whether the LP profile displays a link to the central, provincial, and local government, respectively. Details of the remaining characteristics are illustrated in table A7. PartnerRating is on a scale of 1–10. Column 1 shows the baseline OLS regression. Column 2 shows the regressions adding GP respondents fixed effects). The *t*-statistics are presented in parentheses.

* $p < .1$.
** $p < .05$.
*** $p < .01$.

Importantly, such heterogenous effects are unlikely to be explained by informational frictions. In particular, local governments are many and tend to be notoriously opaque in their operations as LPs (Luong, Arnold, and Murphy 2021). This would imply that GPs should believe, if anything, that they have an information disadvantage in evaluating them

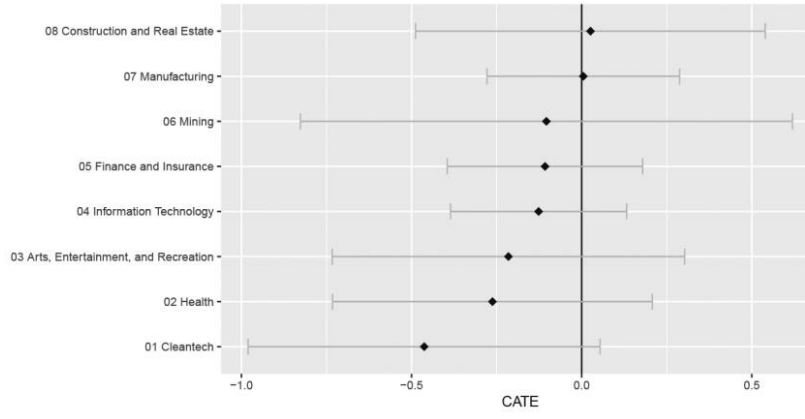

FIG. 2.—GP dislike for LPs with government ties: heterogeneity by investment sector. This figure shows the heterogeneity of GP preferences for government investors, depending on the GP's industry focus, using the causal-forest machine-learning model by Athey and Wager (2019). The 95% confidence intervals are reported. We define the "industry focus" of a GP as the industry that accounts for more than half of the GP's total investment deals. Five industries (agriculture, forestry, and fishing; other; services; transportation and warehousing; and wholesale and retail trade) were dropped because of small sample size. The conditional average treatment effects are estimated on a sample of 236 GP respondents.

as investors relative to, say, well-known central government agencies, contrary to what we observe.[27]

B. Government-Owned versus Private GPs

We now test another important prediction of a mechanism of political interference by studying the heterogeneity of our main results, depending on whether the respondent GP is government owned. If the dislike for government-related investors is due to the distortions the government introduces after providing investment capital, we should see stronger (i.e., more negative) effects for GPs that have no existing link to the government and that operate according to market principles. On the other hand, we expect the incentives of government-owned GPs to be more aligned with those of government investors, which should result in a more favorable view

[27] Moreover, the heterogeneity across sectors is estimated with controls not just for all regressors listed in table A7 but also for whether the GP is government owned, whether it is focused on the same region and/or same industry as the synthetic LP profile, and whether the respondent GP had ever received capital from the government in the past. These controls, as we discuss in more detail in the next subsection, help rule out a channel of informational frictions explaining these heterogeneous effects.

of government LPs as investment partners. These views are vastly confirmed by anecdotal evidence from both government and private sources, as summarized by Luong, Arnold, and Murphy (2021), among others.

We report the analysis for the sample of government-owned GPs versus private GPs in table 8, where we focus on our main dependent variable, PartnerRating. We find that the negative coefficient on the indicator for the LP having government ties can be fully accounted for by private GPs. In comparison, we find that government ties of the LP do not matter for the preferences of government-owned GPs. Interestingly, we find that no other component of the LP profiles displays a meaningful difference, depending on whether the GP is owned by the government.[28]

We further conduct a heterogeneity analysis where, in addition to studying how the effects vary, depending on the ownership structure of the GPs, we also augment the analysis by using data on whether GPs are high- or low-performing firms. To do so, we rely on data on GP performance introduced in section III.A. Using these data, we categorize respondents as high or low quality, depending on whether their CR is above or below the median CR in the sample. We then report, in table A23, the results for a specification analogous to equation (1), where we interact all possible splits by government ownership and performance of the GP with our main regressor of interest, GovernmentTies. All estimates of these heterogeneities are therefore relative to the preference of private low-performing GPs for nongovernment LPs. Interestingly, we find that the strongest dislike for government LPs is driven by high-performing private GPs.

Overall, the evidence seems consistent with a view of the government according to which—all else equal—government investors introduce distortions in the investment process that are particularly unattractive to high-performing private firms. However, while these patterns are striking, they may in principle be consistent with an information channel as well. Indeed, private GPs might face a relative information disadvantage in evaluating government-owned LPs. We provide below a number of additional results that suggest that informational frictions are unlikely to be important drivers of the heterogeneous effects we document.

1. Controlling for Industry-Region Match

First, a caveat of the above analysis is that while all components of the LP profiles are randomized and all GPs are incentivized in an identical way, it is plausible that government-owned GPs are more likely to focus on regions or industries that are a better match with the focus of government-related LPs. In this case, we would expect that government-owned GPs are better

[28] In table A22, we further report the differential dislike of government-owned vs. private GPs for investors with ties to central, provincial, or local levels of the government.

TABLE 8
GP Preferences for LPs: Heterogeneity by Government-Owned GPs

	(1) Government		(2) Nongovernment		(3) (1) = (2)	(4) Government		(5) Nongovernment		(6) (3) = (4)
	Coeff.	*t*-stat.	Coeff.	*t*-stat.	*p*-Value	Coeff.	*t*-stat.	Coeff.	*t*-stat.	*p*-Value
Government Ties	.016	(.22)	−.173***	(−3.68)	.026	.008	(.13)	−.119***	(−2.70)	.104
Large Investor	.186***	(2.95)	.131***	(3.11)	.470	.186***	(3.08)	.157***	(3.94)	.682
High Registered Capital	.210***	(3.28)	.189***	(4.44)	.782	.163***	(2.66)	.194***	(4.85)	.664
Industry Information	−.255***	(−4.09)	−.222***	(−5.33)	.658	−.172***	(−2.84)	−.181***	(−4.59)	.893
Young LP	.010	(.16)	−.012	(−.28)	.774	−.007	(−.11)	−.013	(−.33)	.931
Headquarters In Foreign Country	.027	(.24)	.039	(.52)	.926	−.091	(−.81)	.011	(.15)	.431
Headquarters In Beijing	.281***	(2.98)	.175***	(2.84)	.349	.226**	(2.46)	.151**	(2.54)	.486
Corporate Governance	.047	(.75)	−.003	(−.08)	.503	.123**	(2.05)	.024	(.62)	.160
Investment Philosophy	.008	(.13)	.020	(.45)	.882	.050	(.80)	.036	(.88)	.852
Stage Focus	−.083	(−1.31)	−.084**	(−1.99)	.985	−.115*	(−1.90)	−.071*	(−1.78)	.531
Observations	4,221		9,154			4,221		9,154		
Unique GPs	214		465			214		465		
GP fixed effects	No		No			Yes		Yes		
Model	OLS		OLS		SUR	OLS		OLS		SUR
Dependent-variable mean	6.452		6.445			6.452		6.445		
Dependent-variable SD	2.038		2.006			2.038		2.006		

Note.—This table compares government GP and nongovernment GP preferences for LP synthetic characteristics. The specification is $y_{ij} = \alpha_i + \beta \times \text{GovernmentTies}_j + \Sigma_{m=1}^{N} \gamma_m \times \text{Characteristic}_{jm} + \epsilon_{ij}$. We run separate regressions for government GPs and nongovernment GPs. Government GPs are defined as GPs with government owners. The sample includes all GP respondents participating in the experiments who gave at least one valid answer to each question. GovernmentTies is a dummy indicating whether the LP profile displays a link to the government. Details of the remaining characteristics are illustrated in table A7. Columns 1 and 2 show the basic models for government GPs and nongovernment GPs, respectively. Column 3 shows the difference in coefficients (coeff.) between cols. 1 and 2 using the SUR (seemingly unrelated regressions) model. Columns 4 and 5 show regressions with GP respondents fixed effects. Column 6 shows the difference in coefficients between cols. 4 and 5 using the SUR model. The *t*-statistics are presented in parentheses.

* $p < .1$.

** $p < .05$.

*** $p < .01$.

able to evaluate government LPs. To account for this, we report in table A24 a version of table 8 where we also control for whether the GP has a region and/or industry of focus that matches that of the given synthetic LP profile under evaluation.[29] We find that our main results remain strong, thus indicating that independently of whether the LP's investment focus aligns with that of the GP, the GP prefers to receive funding from LPs that do not have government ties.

2. Controlling for Differential Exposure to Government Investors

A further possible explanation that would be consistent with an information channel is that government-owned versus privately owned GPs have prior differential exposure to government LPs, consistent with the assortative matching patterns we documented earlier in this paper. In this case, the differential effects we observe might be driven by differential information regarding the costs and benefits of having the government as an investor. We therefore also report our analysis controlling for whether the respondent GP ever had a government LP as an investor in the past three years. As shown in table A26, we find that our results are mostly unchanged. Similarly, as reported in table A27, we find that GPs with prior experience working with a government LP do not have significantly different preferences, compared to other GPs.[30]

3. Controlling for Government Experience of Individual Respondents

As an additional, direct approach to capture differential information levels regarding government entities, we can also test whether our findings depend on whether the individual person responding to the survey had prior experience working for government entities. Importantly, this is independent of whether the VCPE firm the respondent works for is government owned. To do so, we construct an indicator variable for whether the individual respondent worked for either a government bureau, an SOE, or a government-owned VCPE entity before their current (i.e., at the time of the survey) job.[31] We show in table A35 that both respondents

[29] Table A25 reports instead a version of table 5 that includes these additional controls.

[30] In tables A28–A30 (or tables A31–A33), we show that the results remain basically unchanged if we also control (or test the heterogeneity) for whether the respondent GP ever had a central, provincial, or local government LP as an investor in the past three years, respectively.

[31] Note that while government-owned GPs are more likely to have individuals with prior government work experience answer the survey, there is significant variation. This can be seen in table A34, where we find, e.g., that nearly one-third of respondents belonging to private GPs have past government work experience.

with prior government work experience and those without report a dislike for government LPs, with the difference between the estimates indistinguishable from zero.[32]

C. *Surveying GPs on Pros and Cons of Investors with Government Ties*

Our analysis so far points to an explanation according to which the government introduces frictions in the investment process of GPs, therefore making government capital unattractive. We conducted a new round of surveys of our respondents to provide additional, more granular evidence on the economic channels at play. These surveys, which are not experimental but rather qualitative in nature, were conducted in the last quarter of 2021 and have two primary goals. First, the direct survey evidence provides corroborating evidence as to whether political interference in decision-making is a relevant mechanism. Second, the surveys allow us to highlight additional mechanisms that administrative or experimental data cannot speak to directly.

These new surveys were pitched as a research study to understand the advantages and disadvantages introduced by government participation as an LP. The surveys were not incentivized, except for the promise of a general summary of the results. We were able to reach a total of 361 GPs that are a subset of the respondents to our main 2019 survey.[33]

We take several steps to ensure that responses reflect the accurate, unbiased beliefs of the respondents regarding the role of government in the capital allocation process. First, it was promised that all responses were to be used only for research purposes and anonymized, and all questions were framed by detaching the respondent from the questions. That is, following the literature on measuring sensitive issues such as corruption (Sequeira 2012; Colonnelli et al. 2022), we ask respondents to state not what they think, but rather what they think are the main advantages and disadvantages of having government-related entities as LPs from the perspective of typical GPs in the market. Second, even though our interest is primarily to identify the reasons why the government might not be an attractive LP to GPs, we attempt to alleviate the issue that respondents might be wary of speaking negatively about the government. To do so, we do not use explicitly negative language in the introductory messages, and we ask

[32] We also find that our main heterogeneous results across government ownership are not affected when we control in the regressions for whether the individual respondent has government experience (table A36).

[33] We analyze the attrition between the original survey and the new qualitative survey in table A37. We observe a limited extent of selection bias, with those who responded to both surveys having made more investments, on average.

respondents to first state the "advantages" that government LPs can bring. Only afterward do we ask for what "improvements" might make the government a better investment partner. The survey defines as government-related LPs government entities or SOEs and those sponsoring a government-guided fund. We report the full recruitment script (translated to English) in figure A5.

Our survey frames the pros and cons of government investors on the basis of anecdotal evidence discussed in section II, alongside several discussions with Zero2IPO's expert team. A few key findings emerge from our new survey, as illustrated in figure 3. First, as shown in figure 3*A*, we find that GPs rank postinvestment interference in the investment process as the main negative of receiving capital from government LPs. To a lesser extent, GPs also list the presence of increased policy uncertainty and the lack of professionalization of teams working for LPs tied to the government as unattractive features of government LPs. On the other hand, the GPs are less concerned about differential requirements in terms of project risk or investment horizon with government LPs. Second, as shown in figure 3*B*, when analyzing what are considered the main advantages of receiving government capital, we observe that GPs find the ability to obtain more favorable local government support to be the most attractive feature of having government-related entities as investors. The survey evidence seems consistent with our experimental results, including the various heterogeneities discussed above.[34]

While the evidence remains purely descriptive, we can provide a more direct, suggestive link with the experimental results by studying how the responses to the qualitative surveys correlate with the experimental preferences we elicit. To do so, we first estimate one baseline regression (1) for each respondent GP, which is possible because each GP evaluates 20 synthetic profiles of investment partners. Albeit with a larger degree of noise in the estimation, this allows us to rank GPs by their median dislike for government LPs (using the coefficient on GovernmentTies). We can then report the median dislike for government LPs of all GPs (using our 2019 experimental surveys), together with their stated preferences for specific mechanisms (using

[34] One might prefer an assessment of the potential channels at play that does not rely on an explicit list of options provided by the researcher. To this end, we accessed the responses to an open-ended question Zero2IPO asked GPs in a 2019 survey, in which they sought suggestions for improving the matching with government investors. We have 127 valid responses from GPs that belong to our main set of respondents. Following Colonnelli, Gormsen, and McQuade (2023), we asked two independent research assistants to classify the open-ended textual responses into any of the mechanisms we ask about in our qualitative surveys, or in an "other" category if none of the options apply. We find that, using the coding of either research assistant, nearly 75% of the responses—the largest share among all options—directly mention political interference in the investment decision-making process as a main issue GPs face (table A38).

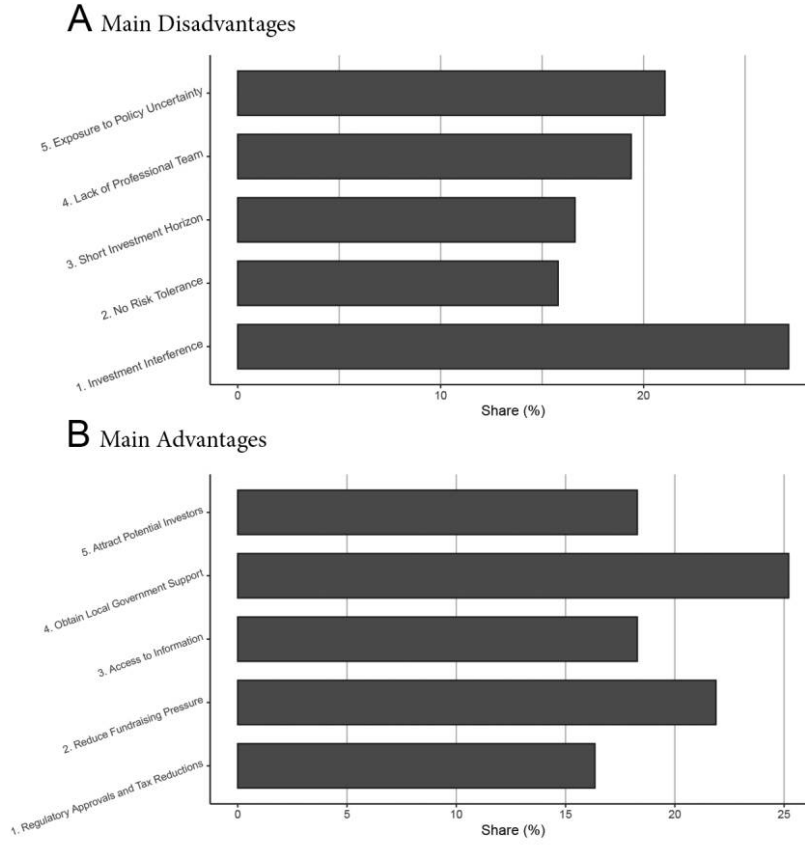

FIG. 3.—Survey on pros and cons of government investors. This figure shows the distribution of responses from the 2021 survey, and specifically the shares of each option marked as the most important reason by the respondent. *A* shows the main advantages of government LPs. *B* shows the main disadvantages of government LPs. The sample consists of 361 GPs.

our 2021 qualitative surveys). As we show in table A39, we find that the dislike for government LPs is the highest precisely for the group of GPs that pick investment interference as the main disadvantage.

D. Equilibrium Impact of Government Participation

Our experimental surveys reveal substantial heterogeneity in preferences for government participation from both the firm and investor sides of China's VCPE market. Given the nature of the VC investments—GPs do not offer a standardized investment product—the VC market is best

characterized not by a competitive market but by a frictional search-and-matching environment between GPs and LPs. The allocation of government capital is codetermined by both the ability of government LPs to find GPs and the preferences and demand for capital on the GP side. To better understand the equilibrium and distributional consequences of government participation, in Appendix A.2 we build a simple model of GP-LP matching. We parameterize the model with both our experimental surveys and the administrative data, and we conduct counterfactual exercises that change the nature and extent of government participation. We highlight two economic intuitions through these exercises.

First, in the data, government LPs invest disproportionately more into government GPs, especially worse-performing ones. One common narrative is that government investors misallocate funds by favoring underperforming politically connected firms. However, in light of our experimental results, a nuanced view is that to the extent that high-performing, privately owned GPs have a dislike for government capital, the sorting pattern might suggest, at least in part, government LPs' inability to attract the best firms rather than poor decision-making due to corruption, favoritism, or incompetence (Murphy, Shleifer, and Vishny 1993; Shleifer 1998; Lerner 2009; Colonnelli, Prem, and Teso 2020).

Second, our experimental results show that, while private GPs dislike government LPs, the average LP actually prefers to invest in GPs that already have government LPs as investors. Through the lens of the model, the market participants' preferences for potential partners reflect not only the joint value of the partnership—which depends on both the GP's ability to manage funds and select successful startups and the LP's potential value-added, such as cutting through red tape and bureaucratic hurdles when the LP is government owned—but also how that joint value is shared between the GP and the LP. Government LPs may be able to capture an outsized share of value vis-à-vis nongovernment GPs; hence, even though government LPs' investments may provide high value-added (attractive from the perspective of future LP investors), they may still be less preferable by nongovernment GPs.

Together, these counterfactuals point to the importance of understanding both the supply and the demand for government capital in the two-sided VCPE market and highlight the value of our experimental surveys for understanding the equilibrium impact of government participation.

VII. Conclusion

In China, as well as in many other, typically developing, economies around the world, the government plays a key role as an investor in and owner of

private sector firms. In light of this fact—which we establish using rich administrative data within the context of the second-largest market for investment in high-growth firms and entrepreneurs, namely, that of venture capital and private equity (VCPE) in China—understanding what model of state-firm relationships is at play is crucial to our understanding of the growth path of these economies. We highlight the limits faced by a model of "state capitalism" that relies on the complementarity between government capital and high-growth private firms in a context in which—because of political interference in decision-making—the former might be unattractive to the latter, independent of the goals of the state.

Our main contribution to the literature consists of the design of a nondeceptive field experiment to estimate the demand for government participation. In collaboration with the leading industry organization, we conduct 1,000 experimental surveys of both sides of the market: the capital investors and the private firms that manage the invested capital by deploying it to high-growth entrepreneurs. The experimental design, which is inspired by studies of discrimination in the labor market, allows us to overcome typical empirical difficulties, which in our context are that we observe only equilibrium matching outcomes and that government investors differ from other investors along a multitude of dimensions. We document that the average firm dislikes investors with government ties, that such dislike is not present for government-owned firms, that it is highest for the best-performing firms, and that it is lowest toward local governments and for firms operating in state-dominated industries. Consistent with the experimental evidence, we also conduct new qualitative surveys that directly point to political interference in decision-making as a leading reason why government capital is unattractive to private firms. We conclude the paper by quantifying the distributional implications of government participation, using an equilibrium model of matching between government and nongovernment firms and investors.

Our study has several implications. On the one hand, by providing direct evidence of the private sector perspective of the advantages and, in particular, the disadvantages of government investors, we help advance the recent debate aimed at understanding the nature of China's model of economic growth grounded on the dominance of state economic actors (Bai et al. 2020). On the other hand, our paper makes the simple point that the demand for government capital differs across different types of firms. As a result, understanding the demand side is important to fully capture the efficiency implications of government participation, because independent of the societal goals of the state, the state might not be able to attract the best firms to pursue such goals. We believe that this is an aspect of the debate that has been largely neglected but is crucial for both theory and policy, as analyzing potential misallocation consequences of government participation requires understanding the demand for what the government

offers. Such an implication is natural in the context of government as an investor, like the one we study, and in several contexts—such as that of public procurement or foreign direct investments—where there might be differential (potentially negative) selection of firms willing to engage with the state in the first place.

Our paper also naturally has limitations that future research should build on. First, our experiment focuses only on a specific market largely characterized by sophisticated investors and on a context, that of China, that is certainly unique. For example, government connections may have been more critical at different stages of firm development. Indeed, our focus on the top VCPE firms naturally biases our average findings, as these firms are likely to be less in need of a "helping hand" from the government. There are reasons to believe that several of the pros and cons that typically accompany government investments are prevalent in the broader debate about how governments around the world should foster entrepreneurship and innovation and whether governments are well equipped to do so in the first place (Bai et al. 2021), but establishing external validity to other contexts should be an important next step. Second, in the interest of realism, our design favors simplicity to the detriment of a perfect quantification of magnitudes. Third, our study does not directly speak to the broader efficiency goals of the government. For example, the state might engage in political interference to channel resources to regions and industries where the social value of investments, such as poverty reduction, might be higher. These are first-order issues that should be studied in future work, and for which we hope our study can have important lessons.

Data Availability

Code and information about the proprietary data used in this article can be found in Colonnelli, Li, and Liu (2023) in the Harvard Dataverse, https://doi.org/10.7910/DVN/JVC1XQ.

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