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How does infrastructural upgrading help promote financial efficiency? Evidence from HSR and VC development in China

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Abstract
Using project level venture capital (VC) data combined with high-speed rail (HSR) connection information for Chinese cities, this paper studies whether and how infrastructural upgrading affects financial efficiency. To begin with, we find that direct HSR connection is associated with higher quantity of VC investment and the pattern is robust to various tests. More importantly, we discover the following two patterns that help shed light on the selection and monitoring mechanisms through which HSR connection promotes VC investment: first, HSR connection leads to a broader industry coverage, and the positive effects are stronger for industries and projects that have more reliance on soft information (namely non-codified information). These results are consistent with the importance of soft information in VC investment and HSR's role in improving the efficiency of VC projects by lowering the cost of acquiring and verifying such information. Second, HSR connection is associated with higher average investment amount per project and higher success rates for projects backed by VC firms with stronger monitoring capabilities. These results provide evidence that more post-investment management participation has been facilitated by improved HSR accessibility, thus supporting project monitoring as an important mechanism in boosting VC investment, in addition to project selection. Furthermore, heterogeneity analyses reveal the importance of financial development and foreign investment in boosting HSR's positive effects. Finally, we find no evidence that increased VC investment in HSR-connected cities crowds out investment in other regions, thus highlighting infrastructural improvement's net gains in economic outcomes.

Keywords Venture capital · High-speed rail · Financial efficiency · Soft information · Post-investment monitoring

JEL Classification R40 · G24

Extended author information available on the last page of the article

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1 Introduction

A large body of literature focuses on the importance of financial development in promoting economic growth by allocating financial resources to profitable investment projects, while another line of research has studied how infrastructure affects economic growth by lowering costs in energy, transportation, and other production factors. Given that the efficiency of the financial system depends on the speedy and accurate circulation of information, infrastructure development could help improve the efficiency of a country's financial system by lowering information cost. However, this important complementary relationship between infrastructure and finance has received limited attention in the literature. Instead, existing studies have largely emphasized their competitive relationship (Ansar et al., 2016; Huang et al., 2016), i.e., the crowding-out effect of public infrastructure on private investment.

This paper attempts to fill the gap by focusing on the channel of information cost through which infrastructure development affects financial efficiency. We outline two channels in VC investment through which higher-quality infrastructure increases the efficiency of financial resource allocation: the project selection channel and the monitoring channel. Specifically, transportation infrastructure upgrading generates two effects. First, it lowers project selection cost, making profitable investment projects that were previously invisible to geographically distant investors observable, thereby increasing investment. Second, it lowers monitoring cost, enabling investors to monitor the invested projects more intensively, which improves project performance and further increases investment. As monitoring is the key component of management participation in the invested project, we use the terms monitoring channel and management participation channel interchangeably throughout the paper.

We conduct empirical tests using project-level venture capital (VC) investment data combined with high-speed rail (HSR) connection data for Chinese cities and obtain several key findings. First, direct HSR connection between two cities is significantly correlated with a larger number of VC investment projects and higher total VC investment, and these results remain when various robustness tests are conducted. Second, the HSR connection leads to a broader industry coverage of VC investment, and the positive effects on VC quantity are stronger for industries and projects with greater reliance on soft information, i.e., information difficult to standardize or verify thus impossible to codify, such as managerial risk attitudes and trustworthiness. Taken together, these results underscore the role of HSR connection in mitigating soft information friction. Third, HSR connections are associated with higher average VC investment per project and higher project success rates for VC firms with stronger monitoring capabilities (proxied by greater investment experience), thus providing support for enhanced post-investment monitoring following HSR connection and the importance of VC investors in project monitoring. Fourth, the positive effects on VC investment volume are stronger in regions with higher levels of financial development, while the effects on investment performance are mainly attributable to foreign VC investors, underscoring the importance of institutional quality in boosting HSR's positive effects. Finally, the increase in VC investment in the HSR connected cities does not appear to have crowded out investment in other regions, which highlights infrastructural improvement's net gains in economic outcomes.

Beyond the literature on how infrastructure affects growth, our paper contributes to three additional strands of literature. First, by highlighting the importance of information cost in determining economic behaviors and outcomes, it contributes to the literature on information asymmetry and geographic agglomeration (Agarwal & Hauswald, 2010; Hochberg & Rauh, 2013; Petersen & Rajan, 2002). Second, this study provides empirical evidence on the dual channels of project selection and post-investment monitoring in a transition economy, offering new insights into the relatively underexplored monitoring mechanisms within China's venture capital industry, thus complementing the broader literature that emphasizes the importance of monitoring in financial investment (Bernstein et al., 2016; Giroud, 2013; Long et al., 2017). Third, our findings help explain the heterogeneous effects of infrastructure development on economic growth. Evidence on project success rates suggests that the extent to which infrastructure development enhances financial efficiency also depends on other factors, including the efficiency of the local financial market as well as the vitality of micro agents in the market as predicted by ownership type and investment experiences. In other words, infrastructure development alone is insufficient to guarantee improved outcomes without simultaneous improvements in the capacity of market actors to effectively utilize such infrastructure. These findings help reconcile mixed results in the literature, which documents positive, zero, or negative effects of infrastructure building (Banerjee et al., 2020; Chandra & Thompson, 2000; Duranton & Turner, 2012; Faber, 2014; Qin, 2017).

The remainder of the paper is structured as follows: Sect. 2 provides background information and reviews the related literature on the development of high-speed rail (HSR) and the VC industry in China. Section 3 outlines a theoretical framework to develop the testable hypotheses. Section 4 discusses data sources and the empirical estimation strategy. Sections 5–7 present the empirical results from baseline estimations, mechanism analyses and extension studies. And Sect. 8 concludes.

2 VC and HSR Development in China: background and literature review

In this section, background information on venture capital (VC) investment and high-speed rail (HSR) construction in China is provided, based on both official documents and data as well as multiple field interviews we conducted ourselves. Combined with a brief review of the existing literature also included in this section, such information will help inform the theoretical and empirical analysis of how infrastructure quality impacts VC investment in the later sections.

2.1 Financial markets and venture capital investment in China

Despite increasing importance of direct financing in recent years, debt financing continues to play a predominant role in China's financial markets, with bank loans accounting for more than 60% of the nation's total financing during 2002–2023. While they were established to help firms below the scale requirement of the main board of China's stock market to raise funds, the GEM (Growth Enterprise Market)

board, the SME (Small and Medium-size Enterprise) board and the STAR (Sci-Tech Innovation Board) board have not been very effective in providing funds for many promising enterprises, largely due to the stringent requirements and the cumbersome approval procedures in their early stages. Thus, the short-term focus of the credit market, combined with the inadequacy of the stock market, help account for the severity of financial constraints faced by small and medium-sized firms in China, especially struggling start-ups in high-tech industries.

It is thus natural to turn to venture capital investment as a source for financing new firms. While venture capital (VC) investment in its modern form took shape as early as 1946 in the United States, with the founding of the American Research Development Corporation (ARDC), in China it was not until 1984 when VC was recommended in a government advisory report as a way to address the challenge of technological innovation, before it was adopted by the Central Committee of the Chinese Communist Party (CCP) shortly afterwards, with the State Science and Technology Committee and the Ministry of Finance jointly founding the first VC firm in China, China New Technology Venture Investment Corporation,[1] a year later. But the real boost to the VC industry did not come till much later in 1998, when a proposal made by the China Democratic National Construction Association (CDNCA)[2] became the talk of the nation, by advocating the fast development of venture capital industry in China to help promote technological innovation. The proposal received strong support from the central government and local governments, which actively participated by both providing policy guidance and establishing funds to invest in venture capital operations themselves.

In its early years, China's VC industry was dominated by state-owned VC firms established by the central government and local governments, due to lack of exit strategies. But as the proposal of 1998 also initiated the discussion to set up a GEM board on China's stock market, which, by promising a viable exit strategy, the VC industry started to attract private and foreign funds. During the 2006–2013 period, the percentage of VC funds coming from government budgetary sources fell from 33 to 15% of the total amount, while the share of state ownership dropped from 82 to 55%, according to the "Development Report of the VC Industry in China (2014)".

Although still a very small portion of the country's total investment, China's venture capital investment has registered spectacular growth, especially in the second decade of the twenty-first century. As shown in Fig. 1, the total amount of VC investment was around $1.2 billion and the number of projects was less than 200 in 2000, but by 2024, the total amount reached $85.06 billion, involving 6382 projects. According to a report by the industry consulting firm Crunchbase, VC investment in China surpassed that of the United States for the first time in the first ten months of 2018, leading the global market.[3]

[1] See Zhang (2015) for more detailed discussion of China's VC industry development.

[2] As one of China's eight non-communist parties, known in Mandarin as the "democratic parties", the CDNCA draws its members mainly from professionals working in business and commerce, who are most interested in making policy recommendations in related areas.

[3] Source: https://www.nbd.com.cn/articles/2018-10-18/1264272.html (accessed on October 15, 2025).

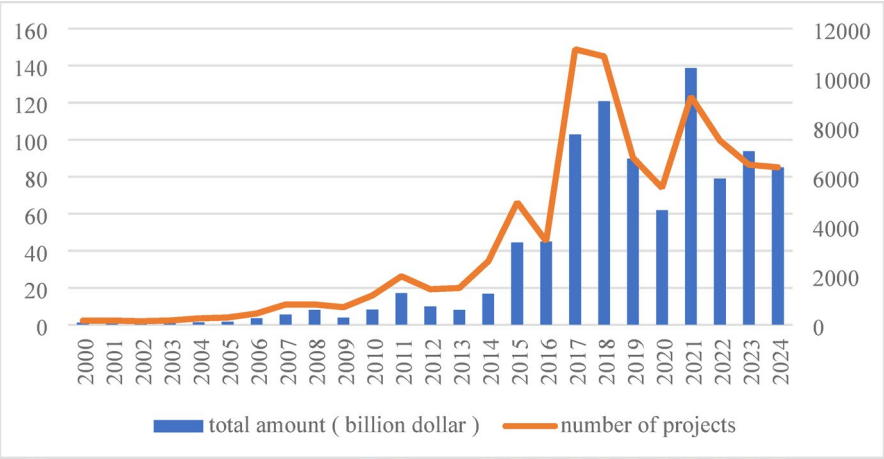


Fig. 1 VC investment in China. *Notes*: Left scale: total investment amount; right scale: the number of projects. *Source*: CVSource

And indeed, VC investment has concentrated more on more innovative high-tech projects right from the beginning. The "Development Report of the VC Industry in China (2014)" documents that VC invested firms had an average growth rate of 40% in R&D expenditure between 2009 and 2013, twice the national average. During the same period, over 50% of the approved patents owned by VC invested firms were invention patents, while the corresponding number for Chinese listed firms was only 35%. In recent years, high-tech fields, such as smart manufacturing, semiconductors, artificial intelligence, and biomedicine, have become the main fields of VC investment.

Given its rapid growth record and the emphasis on high-tech industries and more innovative projects, venture capital investment has attracted more attention from the government, the industry, and scholars in China, especially as the country is striving to move from a manufacturing powerhouse fueled by low-cost labor and resources to a modern economy powered by innovation. And because VC investment involves direct financing instead of credit financing, it also has the potential to help promote long-term financing in China, especially because the country's stock market still has much room for improvement.

2.2 HSR development and potential effects on VC

The quintessential example of infrastructural development in China is the phenomenal growth in high-speed rail (HSR), which has been nothing short of miraculous. From 2008 to 2023, the mileage covered by HSR has increased by more than 60-fold, from 671 to over 45,000 km, giving the nation two thirds of the world's total HSR mileage. As these HSR routes mostly carry passenger trains, the biggest impact has been felt in travels for people in all walks of life. Thanks to the short trip of three hours made possible by HSR, the inner province of Hunan has become the largest supplier of taxi drivers in the coastal city of Shenzhen. And the train journey from

Beijing, the nation's capital, to Shanghai, its commercial center, has been shortened from eight hours to just five hours with the HSR connection.

The substantial reduction in travel time should have important effects on economic outcomes. Because face-to-face communications and direct on-site investigations are required to collect information that is difficult to duplicate and transfer with accuracy, it has been shown that geographic proximity can help facilitate the circulation of soft information (Agarwal & Hauswald, 2010; Stein, 2002). As information is key to investment decisions, travel time reduction is equivalent to closer distance and thus should lead to more efficient investment decisions. While in-person communication is relevant in all sectors, the reliance on soft information is greater in financial activities (Berger & Udell, 1995; Stein, 2002; Uzzi, 1999).

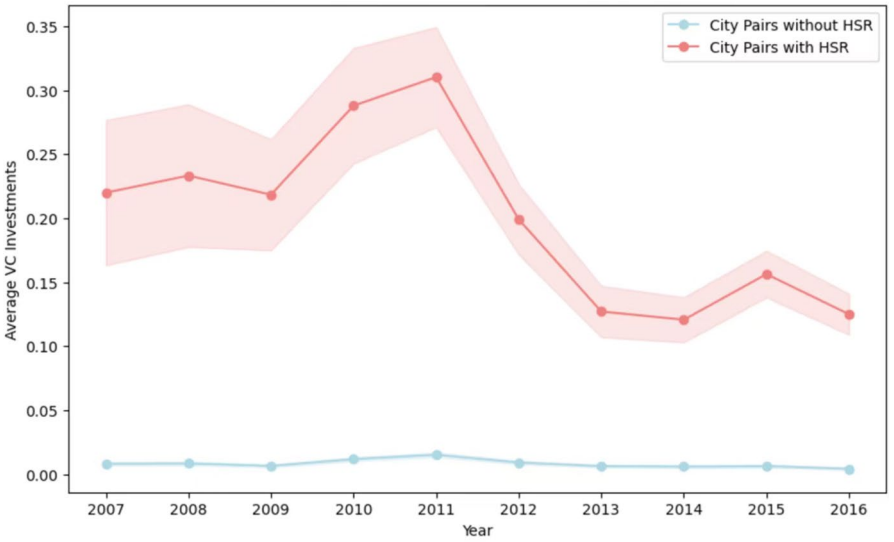
And the beneficial effect of less travel time should be especially important for VC investment projects, as these early-stage projects require more frequent on-site visits and face-to-face communications, due to lack of public information and prior evidence (Cumming & Dai, 2010; Gompers & Lerner, 1999). A preliminary examination of data provides supportive evidence for the above argument, when comparing the amount of VC investment made between Chinese city pairs directly connected by high-speed-rail (HSR) routes with that between city pairs not connected by HSR. Specifically, panels (a)–-(b) of Fig. 2 below show the clear pattern of more VC investment projects between cities with direct HSR connections relative to city-pairs without such connections.

2.3 HSR and VC: views from the ground

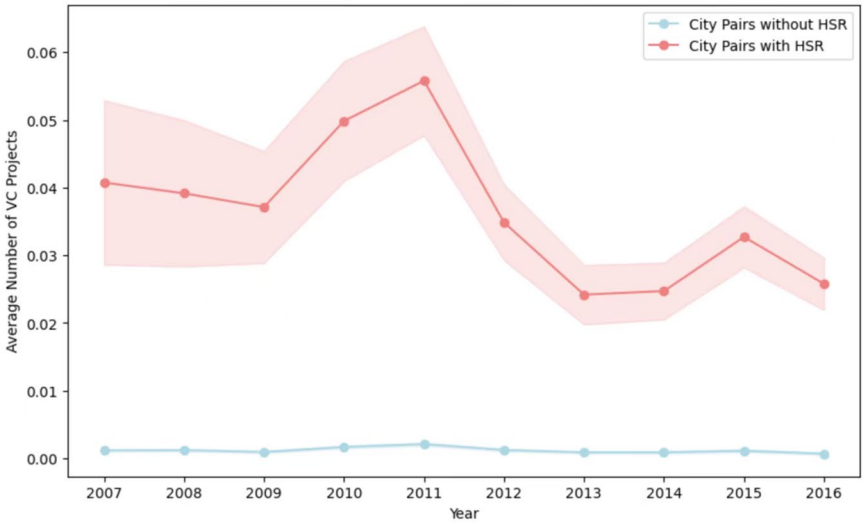
While the figures above exhibited the pattern of more VC investment between cities connected by HSR, it could be showing correlation rather than causality. In other words, the higher volumes of VC investment between the HSR connected cities may as well be due to other features of these cities. Furthermore, even if the larger VC investment could be attributed to HSR connection, it is not clear from the figures how exactly such a positive impact has been made. In particular, although studies on mature VC markets have established the channels of project selection and management participation in VC investment (Bernstein et al., 2016; Chemmanur et al., 2011), there is a general suspicion about the importance of monitoring in China's VC industry, given the inadequate monitoring abilities of Chinese financial institutions and the country's short history of VC investment. In fact, it has been argued that entrepreneurs know the best about how to manage their own projects, thus the VC investors should just be absentee business owners, staying away from post-investment monitoring.[4]

While empirical evidence is needed to answer the above question more definitively, the primary challenge is the lack of detailed data and information. To overcome this difficulty, we conducted three in-depth interviews with two senior project

[4] For example, Mr. Zhikang Dai, a prominent Chinese VC investor, believes that entrepreneurs know the best about how to manage their own projects, thus the VC investors should just be absentee business owners, staying away from post-investment monitoring. See the interview posted at https://www.chinaventure.com.cn/cmsmodel/news/detail/255206.shtml (accessed on April 9, 2024).



Panel (a): Average VC investment between cities with and without HSR connection



Panel (b): Average number of VC investments between cities with and without HSR connection

Fig. 2 Descriptive evidence on the relationship between HSR and VC activities

managers who work for venture capital (VC) investment firms located in Xiamen and Shenzhen, respectively. In this section, we summarize the main insights obtained from these interviews, while more complete information on the interview questions as well as background of the interviewees and their employers is provided in the "Appendix".

Firstly, insights from field interviews provide clear evidence that investment projects differ in their reliance on soft information. Some projects can be evaluated largely using "hard information" such as financial statements, business plans, and written reports. Others depend heavily on context-specific "soft information," including entrepreneurial capability, team culture, and local market nuances, which requires in-person, face-to-face interactions for accurate assessment. Both senior project managers we interviewed confirmed that information costs vary substantially across projects. One noted that while projects with clear business models and complete financial data can often be assessed online, evaluating "team chemistry," "founder leadership," or "actual operations in non-core business areas" demands on-site visits—"without visiting in person and having tea with the founder, there simply can be no confidence." These statements confirm that projects with heavy reliance on soft information entail higher evaluation costs.

Moreover, projects with greater reliance on soft information are not systematically inferior in quality. Their prior underinvestment reflects higher evaluation costs rather than lower intrinsic potential, as investment decisions, guided by expected returns and risks, will result in similar levels of investment for projects with comparable distributions of success probability. One interviewee noted that although industrial structures differ by region—"for example, Shenzhen undoubtedly has a higher concentration of hardware projects"—the overall distribution of project success probability remains consistent. Another emphasized that returns "basically follow the 80/20 rule—only a few star projects generate most of the gains," and high-quality projects are scarce everywhere, not limited to major hubs or trendy sectors. These insights indicate that success rate distributions are similar for projects across industries and regions, regardless of their reliance on soft information.

Finally, we learn that high-speed rail (HSR) connectivity significantly reduces the cost of conducting on-site visits to distant cities, facilitating the discovery of and investment in valuable projects that had been previously overlooked due to high information barriers. Both interviewees stressed that improved accessibility has expanded their geographical and sectoral reach. The Shenzhen-based manager explained that the expansion of the HSR network has "broadened our geographical and sectoral investment horizons." Similarly, the Xiamen-based investor noted that "previously, we mainly focused on projects in Xiamen and its surrounding areas. Now, we can make round trips to both the Yangtze River Delta and the Pearl River Delta within several days." And he vividly illustrated this by adding, "Previously, we might only have seen two projects in Shanghai in one day. Now, we can meet a client in Suzhou in the morning, visit a factory in Changzhou at noon, and still make it back to Shanghai for an evening meeting."

While the VC project managers we interviewed share the stories of multiple field visits along the same HSR route scheduled during a one-day trip, a more subtle picture has emerged from a review of newspaper articles and online publications.

Some VC investors take the hands-off approach and largely entrust their funds to the entrepreneurs that start the projects, whereas other VC investors closely follow up with their invested projects by conducting regular inspections of the investment projects and even designating representatives on the board or the management team of the invested company. Consequently, to capture the heterogeneity in Chinese VC investors' willingness and capacity to monitor projects, we will study two possible scenarios in the theoretical analysis of VC investment: one with the VC investor only involved in selecting the project for investment, and the other with the VC investor participating in project management after investment. The different predictions will then allow us to test the empirical relevance of these two possibilities.

2.4 HSR and VC: literature review

Extensive research has shown that infrastructure improvements generate substantial economic benefits, including facilitation of trade, enhancement of corporate management, and improvement in IPO pricing efficiency (Faber, 2014; Giroud, 2013; Huang et al., 2016). These benefits primarily arise from lower transportation and information costs. In China, high-speed rail (HSR), designed mainly for passenger transport, reduces information frictions by enabling more frequent face-to-face interactions (Lin, 2017). Consistent with the extraordinary importance of information in VC investment, existing studies have demonstrated that access to HSR increases VC investment volume and improves investment performance (Kuang et al., 2021; Long et al., 2017).

The existing literature on VC investment has focused on two channels through which VC investors succeed: the selection channel and the management channel. Project selection constitutes the initial and critical step in VC investment, where investors choose projects with better financial prospects and thus help enhance the efficiency of resources allocation (Chan, 1983). The central challenge within this selection process lies in how VC investors arrive at sound investment decisions by searching and leveraging information amidst conditions of high level uncertainty and pronounced information asymmetry (Kaplan & Strömberg, 2004). Traditionally, project selection relies on quantifiable and verifiable *hard information*, such as financial reports and data on market size and patent counts. However, as such hard information is often scarce for startups, which typically lack historical performance records and tangible assets, VC investors must rely on *soft information*—context-dependent knowledge such as local knowledge, organizational culture, and entrepreneurial commitment (Bengtsson & Hsu, 2015; Gompers et al., 2020; Sorenson & Stuart, 2001).

Project monitoring is the other channel studied in the literature beyond project selection: Successful VC investors are often actively engaged in the monitoring and management of the investment project post investment. Although such participation incurs substantial costs (Kaplan & Strömberg, 2004), it generates three benefits: (1) Timely exit: Quitting from underperforming projects to reallocate capital efficiently (Gompers, 1995); (2) Agency cost reduction: Mitigating managerial shirking and tunneling behaviors through enhanced oversight, such as board participation (Lerner, 1995; Sorenson & Stuart, 2001; Kaplan & Strömberg, 2003; Gompers et al., 2020); and, (3) Value-added services: Enhancing portfolio companies' value via strategic

mentoring, talent recruitment support, and industry network integration (Hellmann & Puri, 2002; Hsu, 2004). And empirical studies have consistently shown that VC involvement positively correlates with investment performance (Gompers & Lerner, 1999; Bernstein et al., 2016).

While HSR's impact on VC investment in China has been shown in the literature, it is not clear how exactly the easier access to information has incentivized VC investors to increase the investment volume. Furthermore, while the importance of project selection has been widely accepted in the literature, the discovery of the VC investors' role in project management has been relatively new, and evidence for active monitoring in the context of Chinese VC industry is yet to be found. By exploring whether and how HSR access impacts VC investment in China at the micro level, the current study aims to fill these gaps in the literature.

3 Hypothesis development

Building on the background information and literature review provided above, this section outlines a theoretical framework to analyze the impact of HSR access on VC investment. As venture capital investment fundamentally depends on the acquisition, processing, and evaluation of information, the achievement of investment success is constrained by information costs, which vary systematically across projects and are affected by various factors. To crystalize the important role of information, we can classify VC projects into two types.[5] Type I projects are characterized by relatively low information costs. Their evaluation relies largely on standardized, codifiable, and publicly available information, such as financial statements, observable market performance, or mature and well-understood business models. As a result, investment decisions for Type I projects can be made through impersonal and infrequent interactions with the project, thus not impacted by geographic distance. By contrast, Type II projects rely heavily on soft information that is difficult to codify. Acquiring such information typically requires repeated, face-to-face interactions and on-site visits, making the evaluation process substantially more costly, especially for projects far away from the investors.

Consequently, by reducing travel time and thus information costs, especially those associated with soft information, the newly available access to HSR leads to more projects that can be evaluated, resulting in more funded projects and higher total investment. In other words, HSR access enables VCs to assess and identify previously overlooked Type II projects in more distant regions.[6] Thus, the first theoretical prediction is as follows:

[5] While the discussion on soft information and the resulted distinction between different project types originated in developed economies, our interviews with senior VC investors suggest that such distinction also applies to China (see Sect. 2.3 above).

[6] HSR connection also boosts VC investment through the monitoring channel, which will be discussed in more detail when Hypothesis 3 is developed below. Briefly, by lowering monitoring costs, HSR connection enables investors to fund projects that are previously unviable, thereby increasing both the number of projects and the total volume of VC investment.

Hypothesis 1 *Direct HSR connection leads to a larger number of VC investment projects and higher total amount of VC investment.*

We now further explore the mechanisms through which HSR connection affects VC investments. A pivotal mechanism lies in the reduction of information friction, particularly for soft information. As HSR connection primarily reduces soft information costs, its impact should be strongest in contexts where soft information is more important. Industries dominated by Type II projects rely heavily on such soft information and therefore attract relatively little VC investment prior to HSR connection. In other words, many such projects remain effectively "hidden" from investors due to the prohibitive cost of acquiring the necessary soft information. Once connected to potential investors by HSR, the reduction in information costs allows these projects to be more easily identified and evaluated, leading to a disproportionate increase in VC activity in these industries. As a result, HSR connection should both expand the industry scope of VC investment and generate stronger effects in soft-information-intensive projects. Thus, we have the following theoretical prediction:

Hypothesis 2 *Direct HSR connection expands the industry scope of VC investment. Moreover, the effects of HSR on the number of investment projects and total investment amount are stronger for projects with greater reliance on soft information.*

The second mechanism is the management participation (or monitoring) channel. Beyond project selection, VC investors often engage in post-investment activities such as corporate governance, strategic guidance, operational oversight, and network support. These activities are inherently relationship-intensive and benefit tremendously from reductions in travel and coordination costs. HSR access allows investors to monitor portfolio firms more frequently and more effectively, thereby strengthening the value-added function of VC involvement.

Specifically, improved monitoring raises the probability of project success and can shift the entire distribution of project outcomes rightward. The statistically dominant probability distribution of the post-HSR investment project implies improved value distribution and yields the following two outcomes: First, higher predicted (and realized) value of projects justifies larger capital allocations, driving up the average investment size. Second, enhanced success probabilities raise the overall success rate across the investment portfolio. Furthermore, with the presence of the VC investor's management participation, the role of managerial expertise is magnified by the direct access to HSR, as the resulted lower travel costs facilitate more frequent on-site engagement. In other words, investors with stronger monitoring capabilities thus benefit disproportionately more from HSR access.

It is worth pointing out that these beneficial effects related to the monitoring channel will apply to both Type I and Type II projects. Given that soft information is indispensable for post-investment monitoring for both types of VC projects, HSR access brings benefits to Type I projects as well, which contrasts with the HSR benefit obtained through the monitoring channel that mostly impacts Type II projects.

Hypothesis 3 *When the management participation channel is present, HSR connection leads to higher average VC investment per project and higher success rates of VC projects, with stronger effects for investors possessing greater management ability.*

Given its short history and the potential lack of experiences, one may challenge the existence of the monitoring channel in the context of the Chinese VC industry. While our interviews with industry professionals provide support for the empirical importance of post-investment management participation for at least some VC investors in China (see Sect. 2.3), the empirical test of Hypothesis 3 would help to rigorously distinguish the role of the monitoring channel from that of the selection channel, providing supplementary evidence for the existence of VC management participation in China. When only the selection channel is at work, the impact of the HSR connection is merely to replicate the investment decisions originally made for Type I projects in the newly observable Type II projects, thus will have no effects on the average investment amount per project and the average success rate of VC investment projects.[7] But when the monitoring channel is also present, the investor's level of management participation will increase with the HSR connection, which will enhance the project's success rate, leading to a larger average amount of investment per project and a higher average success rate.

4 Data description and model specification

The remainder of the paper will empirically test the hypotheses outlined above. And in this section, we will describe the data sources and specify the estimation models for the empirical analysis.

4.1 Data sources and descriptive statistics

Multiple sources are used in the current study to provide data on venture capital (VC) investment and high-speed-rail (HSR) connection for the 2000–2016 period. Our primary VC data come from CVSource, a leading database in academic research on China's VC market (Humphery-Jenner & Suchard, 2013; Zhang & Zhang, 2016). To address the well-documented issue of incomplete coverage in single commercial databases (Chen, 2023; Da Rin et al., 2013), we followed the established practice in the literature of integrating multiple sources to enhance data accuracy and comprehensiveness (Brander et al., 2010; Da Rin et al., 2013; Dushnitsky & Yu, 2022). Accordingly, we supplemented and cross-verified the CVSource data with informa-

[7] The logic is that once Type II projects become visible, VCs will adopt their time-tested investment criteria, with the same profitability standards. Thus, while total VC investment increases post-HSR connection, the average investment size and success rates will not change, if the selection channel is the only mechanism of the HSR impact. The implicit assumption here is that the two types of projects face the same overall distribution (in average size and success rate). And our interviews with senior VC project managers have provided support for this assumption. See Sect. 2.3 for more detailed discussion.

tion from two other major platforms, Zero2IPO and ITjuzi,[8] which are also important data sources of VC investment in China (Chen, 2023; Dushnitsky & Yu, 2022). While our multi-source approach yields a more robust and representative sample of medium and large VC projects in China, it is important to note that the dataset may still underrepresent small, undisclosed transactions. Consequently, our findings are primarily indicative of medium and large VC projects. We note, however, that the economic logic of our hypotheses suggests that the effects we identify would, if anything, be even stronger for smaller VCs, which are likely to benefit more from reduced travel costs.

In addition, we manually collect and verify information on VC firms from the National Enterprise Credit Information Publicity System (NECIPS),[9] China's official national registry for enterprise registration and credit information. Operated by the State Administration for Market Regulation, the system provides authoritative and legally recognized data on firm registration locations and founding dates. These data allow us to identify the headquarter cities of VC firms and reconstruct their investment histories. The locations of the VC investment projects refer to the headquarter cities of the investing VC firms.

High-Speed Rail (HSR) lines in this study are defined as railway routes served by passenger trains of G-class (*Gaotie*, high-speed-rail in Chinese), D-class (*Dongche*, bullet train in Chinese) or C-class (*Chengji*, intercity train in Chinese). Once a pair of cities can be reached via an HSR line without any train transfer, we define a direct HSR connection as being established. The starting time for each direct HSR connection is collected from various editions of the "National Railway Passenger Timetables" (including those from July 2007, January 2008, April 2009, July 2010, January 2011, April 2012, July 2013, October 2014, July 2015 and June 2016), supplemented by the opening date information of HSR stations and train route history information.

Table 1 gives the descriptive statistics of the main variables used in the empirical analysis at the city-pair level and at the firm-project level, respectively. At the city-pair level, the mean value of HSR, the indicator for the availability of direct HSR connection shows that 3.3% of all city-pairs in the sample have direct HSR connection. The relatively large standard deviations of the VC investment variables point to substantial heterogeneity in VC investment activity across city pairs. At the firm-project level, the mean success rate implies that 35.2% of investments formed during 2000–2010 exited successfully over the period 2000–2016, with 24.0% exiting through IPOs. In addition, 18.4% of investments involve staged financing, and VC firms have an average investment history of 7.3 years, with a large standard deviation reflecting considerable variation in monitoring experience.

[8] See https://max.pedata.cn for the official website of Zero2IPO (accessed on Feb 14, 2026), and https://www.itjuzi.com/investevent for the official website of ITjuzi (accessed on Feb 14, 2026).

[9] See below for the official website: https://yn.gsxt.gov.cn/subPubSys-tel-100000.html (accessed on Feb 12, 2026).

Table 1 Descriptive statistics for main variables (2000–2016)

Variable	Mean	S.D
Panel A: City-pair level data (N = 1,936,402)		
Number of industries in host city invested by VC firms from source city (in logs)	0.0016	0.040
Total VC investment in host city made by VC investors from source city ($10,000, in logs)	0.012	0.274
Number of VC projects in host city made by VC investors from source city (in logs)	0.002	0.053
Average VC investment in host city made by VC investors from source city ($10,000, in logs)	0.010	0.227
HSR	0.033	0.179
Panel B: Firm-project level data (N = 3444)		
Success (= 1 if VC firm exits from the invested project, = 0 otherwise)	0.352	0.478
IPO (= 1 if VC firm exits from the invested project through IPO, = 0 otherwise)	0.240	0.427
Staging (= 1 if a project involves the staging strategy, = 0 otherwise)	0.184	0.387
Investment history (the year gap between the founding year of the VC firm and the year of the investment event)	7.311	10.068

Sources: CVSource, supplemented by information from Zero2IPO and ITjuzi

4.2 Estimation specifications

Our empirical setting follows a staggered difference-in-differences (DID) design, as different city pairs are connected by HSR at different times. In our benchmark specification, we employ a two-way fixed-effect (TWFE) model, which remains the standard method in both classical (Bernstein et al., 2016; Long et al., 2017) and recent (Fang & Li, 2025; Frey & Goldbach, 2025) literature, and the framework allows us to explore how direct HSR connection affects VC investment as well as how the effect may vary in different settings. At the city-pair level, we will study the impact on investment amount, while at the firm-project level, we will also examine how the VC project quality is affected. Thus, we adopt two estimation models, one for city-pair level analysis, and the other for firm-project level analysis, using the OLS estimation method (Angrist & Pischke, 2008).

4.2.1 City-pair level analysis

At the city-pair level, we use the following specification to conduct empirical analysis:

$$Y_{ijt} = \alpha_1 + \beta_1 HSR_{ijt} + \gamma_{ij} + \delta_{it} + \theta_{jt} + \varepsilon_{ijt}$$

where i refers to the city of the VC firm, j refers to the city of the VC project, t is the year, $HSR_{ijt} = 1$ if there is direct HSR connection between i and j in year t, and $HSR_{ijt} = 0$ otherwise, whereas Y_{ijt} is the outcome variable, measured by the total VC investment, the number of VC projects, the average per project investment or the number of industries with VC investment, in various estimations. In addition,

we control for city-pair fixed effects, $\gamma_{ij,}$ to account for unobservable characteristics at the city-pair level that do not vary over time, such as geographic distance and economic ties. Furthermore, we control for VC firm city*year fixed effects, δ_{it}, and VC project city*year fixed effects, θ_{jt}, to take into consideration of possible time trends in both cities, which could correlate with both direct HSR connection and VC investment between the two cities. Finally, we cluster the standard errors at the city-pair level to allow for potential correlation in the error term, ε_{ijt}. Robust standard errors are clustered at the city-pair level.

4.2.2 Firm-project level analysis

In line with the literature, we use whether a VC firm exits from an investment project through merger or IPO to infer the success of a VC project (Bernstein et al., 2016; Humphery-Jenner & Suchard, 2013). As more recent VC investment projects have less time to succeed, VC project exit data suffer from the issue of data truncation. To address this issue, we first examine the exit probability distribution of Chinese VC projects to find that the vast majority (over 95%) of exits occur within six years post investment (see Fig. 3 below). In other words, it is very unlikely that an exit will occur after seven years, so it is reasonable to presume an investment failure afterwards.

Thus, following Huang et al. (2017), we combine VC investment data for 2000–2010 with exit data for 2000–2016 to study the impact of direct HSR connection on VC investment success rate. And similarly, we drop the project from the sample the year after the VC exits from its investment. We use the following estimation model to explore how the VC investment success rate is affected:

$$Z_{vft} = \alpha_2 + \beta_2 HSR_{ijt} + \phi_{vf} + \delta_{it} + \theta_{jt} + \epsilon_{vft}$$

where v refers to the VC firm, f refers to the VC project, Z_{vft} is the VC investment performance, measured by whether the VC firm exits from the invested project ($Success_{vft}$), with the value of 1 if an exit occurs and 0 otherwise, or whether VC

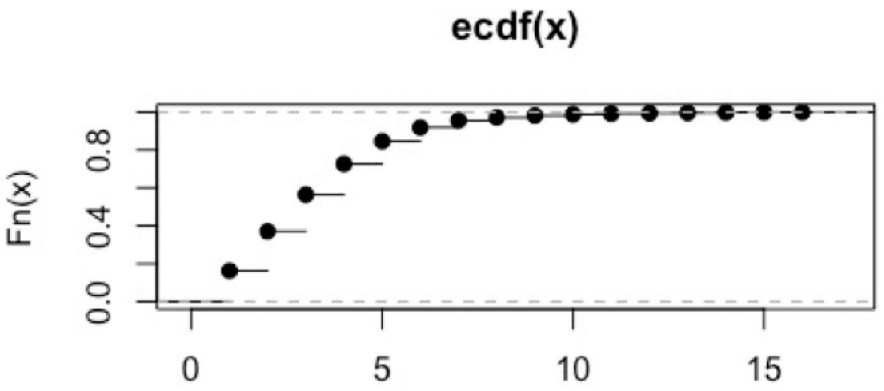


Fig. 3 Probability distribution for VC firm exits

firm exits from the invested project through IPO (IPO_{vft}), with the value of 1 if an IPO occurs and 0 otherwise. The main variable of interest is still HSR_{ijt}, and we also include firm-project pair fixed effects ϕ_{vf} as well as VC firm city*year fixed effects, δ_{it}, and VC project city*year fixed effects, θ_{jt}. The rich set of fixed effects included in the estimation models have allowed us to take into account time-invariant or time-variant city-level factors (such as city size, economic development, and relevant industrial policies), as well as persistent city-pair characteristics (including geographical and cultural distance), thus largely alleviating the concern of omitted variable bias.

5 Empirical results

In this section, we first explore the effect of HSR on quantity of VC investment, and then address the potential endogeneity concern and conduct a series of robustness tests.

5.1 HSR increases quantity of VC investment

Columns 1–2 in Table 2 show that a city-pair with direct HSR connection tends to see a significantly larger number of VC projects and a larger amount of total VC investment between the two cities. The estimation results imply an increase of 1% and 5% due to direct HSR connection, respectively, which are substantial, compared to the corresponding mean values of the dependent variables. The results from Table 2 are consistent with Hypothesis 1.

One possible explanation for the positive correlation between HSR connection and the increase in VC investment is that the construction of the HSR route itself between any pair of cities has brought about more investment opportunities in related

Table 2 HSR increases quantity of VC investment

	Whole sample		Sample excluding VC projects in the food and hotel industries	
	(1)	(2)	(3)	(4)
Variable	Number of VC projects (in logs)	Total VC investment (in logs)	Number of VC projects (in logs)	Total VC investment (in logs)
Mean of dependent variable	0.002	0.012	0.002	0.011
HSR	0.010***	0.050***	0.010***	0.050***
	(0.001)	(0.005)	(0.001)	(0.005)
City pair FE	Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes
Observations	1,936,402	1,936,402	1,936,402	1,936,402
Adj R-squared	0.497	0.353	0.496	0.352

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

industries, for example, the food and hotel industries. If so, it would be a temporary effect that could not last in the long run. To check this possibility, we re-estimate the baseline models after excluding VC projects in the food and hotel industries from our sample. As reported in columns 3–4 of Table 2, the results remain similar, implying that the increased VC investment is not merely a by-product of the HSR route construction activities, but rather a long-term impact of HSR connection.

Following Beck et al. (2010), we test the parallel trend assumption by examining the dynamic relationship between HSR construction and VC investment. Figure 4 presents the estimates with their 95% confidence intervals, where panels (a) and (b) show the effects of HSR connection on the number of VC projects and total investment, respectively. As the figures show, the estimations pass the parallel trend test, thus at least partially mitigating the endogeneity concern of sample selection, where city-pairs connected by HSR are different from the other city-pairs in their VC investment interactions even prior to the time of connection.

5.2 Robustness tests

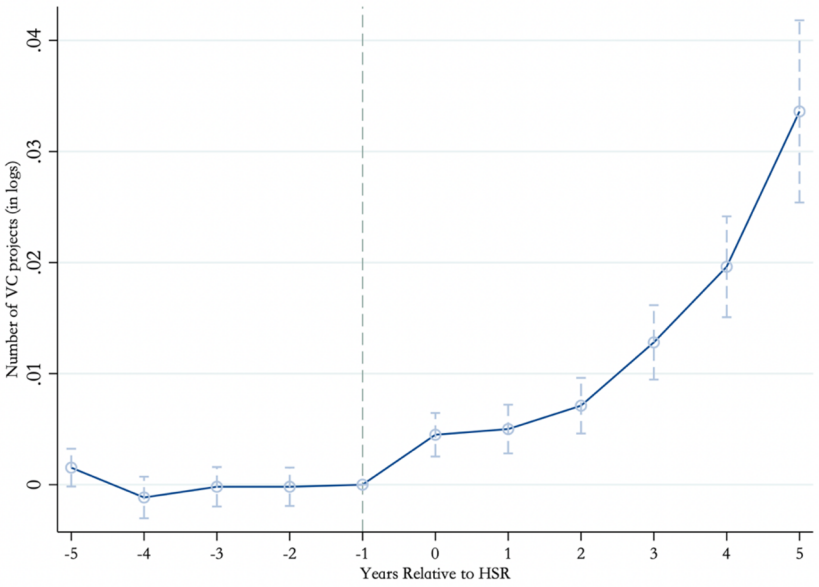
In this section, we further address the potential issue of endogeneity due to possible sample selection bias and omitted variable bias. We also provide other numerous robustness checks for the main empirical findings.

5.2.1 Addressing endogeneity

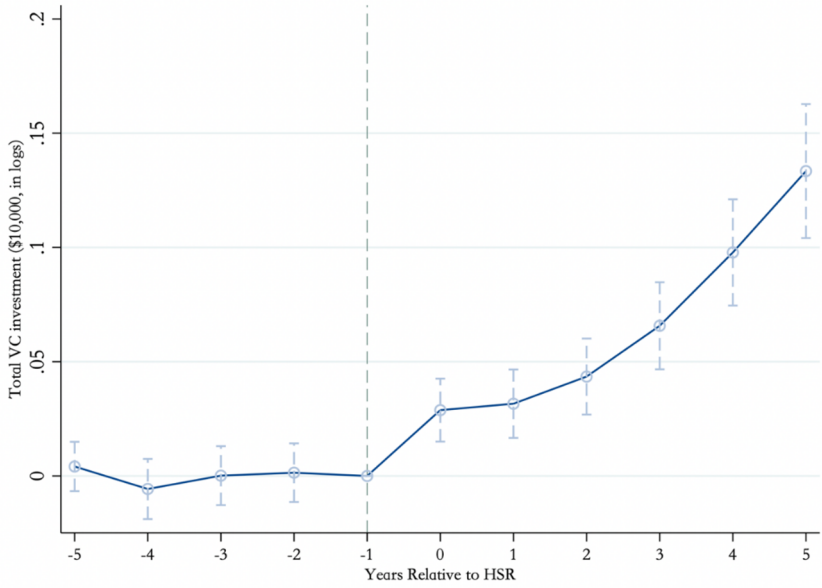
In addition to conducting the parallel trend test, we further address the potential endogeneity issue by using alternative samples and controlling for additional influencing factors.

5.2.1.1 Using alternative city samples To further mitigate the endogeneity concern related to sample selection, we restrict the sample to cities that had at least one HSR station in operation by 2016, the final year of the sample period, as this reduces the differences between the cities in and outside the sample. As shown in columns 1–2 of Table 3, the estimated effects HSR connection remain positive and significant, although their magnitudes are smaller.

5.2.1.2 Controlling for other means of transportation As HSR and other modes of transportation are potential substitutes, we further account for alternative means of passenger travel when examining the relationship between HSR and VC investment. In particular, air travel is a commonly used by VC managers to source new investment opportunities and monitor existing investment projects. Since air travel is better suited for longer-distance journeys, its substitutability with HSR is weaker for geographically distant city pairs. Consequently, the impact of HSR connection is expected to be larger for city pairs located at shorter distance. Accordingly, we include in our estimation an interaction term between HSR and an indicator for city-pairs with distances below 500 km. The results reported in columns 3–4 of Table 3



Panel (a): The dynamic impact of HSR connection on the number of VC projects



Panel (b): The dynamic impact of HSR connection on total VC investment

Fig. 4 The dynamic impact of HSR connection on VC investment

Table 3 Addressing endogeneity concerns

	Alternative city sample		Controlling for alternative means of transportation		Controlling for impact of HSR stations	
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Number of VC projects (in logs)	Total VC investment (in logs)	Number of VC projects (in logs)	Total VC investment (in logs)	Number of VC projects (in logs)	Total VC investment (in logs)
HSR	0.003***	0.021***	0.008***	0.040***	0.008***	0.042***
	(0.001)	(0.004)	(0.001)	(0.006)	(0.001)	(0.005)
HSR*(Distance < 500)			0.007*	0.039***		
			(0.004)	(0.015)		
Station					0.003***	0.018***
					(0.0005)	(0.002)
City pair FE	Yes	Yes	Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	649,740	649,740	1,936,402	1,936,402	1,936,402	1,936,402
Adj R-squared	0.544	0.408	0.497	0.353	0.497	0.353

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

are consistent with this prediction, showing larger HSR effects for geographically closer city pairs.

5.2.1.3 Controlling for impact of HSR stations To rule out the possibility that the presence of HSR stations may independently affect VC investment and thus confound the estimated effects of HSR connection, we include the indicator for the existence of HSR station in both cities as an additional explanatory variable. As shown in columns 5–6 of Table 3, the effects of HSR connection remain significant and largely unchanged in magnitude.

5.2.2 Conducting robustness tests

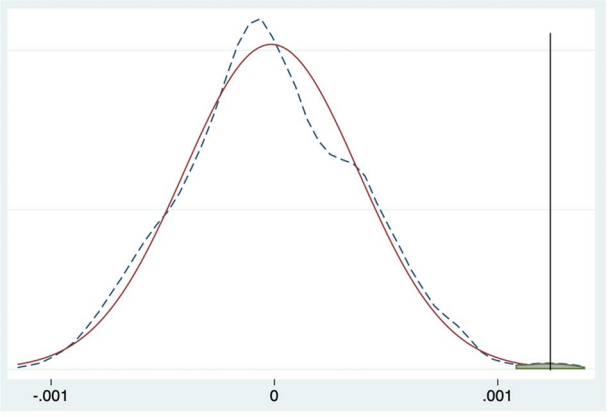
5.2.2.1 Conducting placebo test We further conduct a placebo test following La Ferrara et al. (2012). Specifically, we fix the number of new direct HSR connections in each year at their observed values, randomly select city-pairs as the treatment group, and then re-estimate the benchmark model. We repeated the procedure 500 times and store the estimation outcomes. The results, presented in columns 1–2 of Table 4 and Fig. 5, further support our main finding that HSR connection has significantly positive effects on various economic outcomes.

5.2.2.2 Addressing potential biases in TWFE estimation While TWFE estimators allow more flexible specifications and generally produce satisfactory estimates, recent studies suggest that in staggered DID settings the TWFE estimator may yield

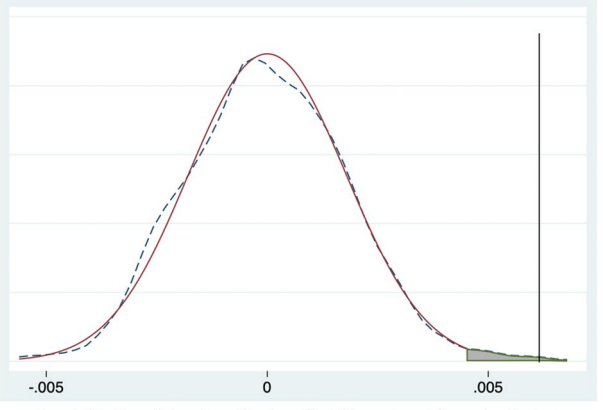
Table 4 Results from placebo test and TWFE estimation

	Placebo test		TWFE estimation	
	(1)	(2)	(3)	(4)
Variable	Number of VC projects (in logs)	Total VC investment (in logs)	Number of VC projects (in logs)	Total VC investment (in logs)
HSR	−0.00001	0.00001	0.015***	0.058***
	(0.0004)	(0.0017)	(0.002)	(0.008)
City pair FE	Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes
Observations	1,936,402	1,936,402	1,936,402	1,936,402
No. Simulations	500		500	

***$p<0.01$, **$p<0.05$, *$p<0.1$; The coefficients in columns 1–2 are the averages of the estimation outcomes from 500 simulations, while the standard deviations are in parentheses. The estimation is based on the benchmark model and standard errors are clustered at the city-pair level



Panel (a): Kernel density estimates of the number of VC projects from placebo test



Panel (b): Kernel density estimates of total investment from placebo test

Fig. 5 Kernel density estimates from placebo tests

biased estimates as it implicitly compares already-treated units with not-yet-treated ones and assumes homogeneous treatment effects (Callaway & Sant'Anna, 2021; Goodman-Bacon, 2021). To address this potential issue, we apply the estimator proposed by Callaway and Sant'Anna (2021) as a robustness check, where cohort-specific treatment effects are estimated using only the appropriate control groups and then aggregated across time to accommodate treatment effect heterogeneity. The results in columns 3–4 of Table 4 are consistent with our baseline TWFE results in both magnitude and significance, indicating that potential biases arising from heterogeneous treatment timing do not materially affect our conclusions. These results further reinforce the robustness and validity of our main findings regarding the effects of HSR connections on VC investment activities.

6 Mechanism analysis

While the findings presented above are in line with the existing literature in linking HSR access to increased VC investment in China, this section empirically investigates the specific mechanisms through which the positive impact is materialized. Section 6.1 tests the role of soft information, which provides the basis for the beneficial effects of HSR access on capital allocation, as outlined in Hypothesis 2. Section 6.2 examines the importance of the monitoring channel, which complements the widely accepted role of project selection in VC investment, as specified in Hypothesis 3. Finally, Sect. 6.3 presents supplementary evidence to further support the existence of VC management participation.

6.1 Role of soft information

We begin with the role of soft information in impacting the effects of HSR connection. To measure the degree of reliance on soft information, we employ two methods. First, we follow the literature to construct the divergence in analyst earnings forecasts for each industry (Lehavy et al., 2011). Specifically, we start with all Chinese listed firms and aggregate the firm-level earnings forecast divergence for the period of 2000–2016 to the industry level (CIC 1-digit level), which is used as the industry's degree of soft information reliance. If there is more publicly available financial information in an industry, then it will be easier for analysts to reach similar earnings forecasts. On the contrary, for industries involving a lot of information that needs to be collected locally through on-site investigations, it is more difficult to reach consensus in earnings forecasts. Thus, an industry's larger divergence in analysts' earnings forecasts will correspond to its higher reliance on soft information.

Using the median value for all industries in the period of 2000–2016 as the dividing line, we categorize industries into those with higher reliance on soft information and those with lower reliance on soft information. Consistent with expectation, the former group includes mineral, agriculture, forestry, animal husbandry and fisheries, commercial services, manufacturing, information transmission services, software and information technology services, whereas the latter group includes transportation,

warehousing and postal industry, cultural and sports entertainment industry, wholesale and retail trade, accommodation and catering industry, and electric, gas and water production and supply industry.[10] Clearly, the difficulty involved in measuring inputs and outputs in mineral and agriculture related sectors is well documented,[11] while the inclusion of high-tech industries into the former group is also in line with our interviews with the VC managers, who share the view that VC projects in technology-intensive industries tend to rely less on publicly available information such as accounting figures, because R&D input and output information is notoriously inaccurate and also tends to have long delays. Accordingly, we construct a dummy variable, "High dispersion forecast sector", to indicate whether a project belongs to an industry with a higher reliance on soft information. The interaction term between this variable and HSR connection is then incorporated into our baseline regression model.

Second, we can use the development stage information of VC projects to infer the importance of soft information. In general, for evaluating projects in their earlier stages of development, investors tend to rely more on non-quantifiable features rather than quantitative financial information. Based on this logic, we construct a dummy variable, "Early-stage projects," which equals one for projects in the start-up or seed stages that inherently require more soft information and is then interacted with the HSR connection indicator in our baseline model.

The results in Table 5 test Hypothesis 2, where column 1 presents results relating HSR connection to the number of industries with positive VC investment and columns 2–5 present the empirical results linking HSR effects with two measures of reliance on soft information. As shown in column 1, the establishment of HSR connection leads to a 0.78% increase in the industry scope of VC investment, which is economically meaningful relative to the sample mean of the dependent variable. Columns 2–5 show that HSR connection has larger boosting effects on the number of VC projects and total VC investment in industries and projects that rely more on soft information. The magnitudes of these interaction effects are also large compared to the corresponding sample means.

These results thus provide support for Hypothesis 2, which argues that soft information plays a key role in explaining how HSR improves financial efficiency. According to the well-received theory of project selection in VC investment, soft information is indispensable in explaining how HSR connection increases investment opportunities by making *visible* Type II projects that used to be “hidden” from investors due to long distance and high information cost. But the analysis in the next section will show that the importance of soft information also helps explain how HSR connection improves success rates of both Type I and Type II projects by rending all projects easier for management participation post-investment.

[10] We also use the 25th percentile and the 75th percentile as the alternative dividing line to categorize industries and have obtained robust results.

[11] See, for example, the accounting scandals related to Zhangzi Island, a Chinese aquaculture firm listed on the Shenzhen stock market (stock code 002069), where the company more than once posted a sudden loss due to the disappearance of millions of scallops. See http://topic.eastmoney.com/ZZDSBPL/ and http://finance.eastmoney.com/news/1354,20180131827679897.html, for related reports (accessed on April 9, 2022).

Table 5 Role of soft information

	(1)	(2)	(3)	(4)	(5)
Variable	Number of industries covered by VC investment (in logs)	Number of VC projects (in logs)		Total VC investment (in logs)	
Mean of dependent variable	0.0016	0.001	0.001	0.006	0.006
HSR	0.0078***	−0.008***	−0.006***	−0.040***	−0.023***
	(0.0008)	(0.001)	(0.001)	(0.003)	(0.003)
HSR*High dispersion forecast sector		0.026***		0.132***	
		(0.002)		(0.010)	
HSR*Early-stage projects			0.022***		0.107***
			(0.002)		(0.008)
City pair FE	Yes	Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,936,402	3,872,804	3,872,804	3,872,804	3,872,804
Adj R-squared	0.421	0.324	0.367	0.232	0.268

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

6.2 Existence of the monitoring channel

To explore the importance of the management participation channel, we first examine how HSR connection influences project size and quality and whether these effects vary with investors' monitoring abilities. Hypothesis 3 predicts that HSR connection will have a positive effect on both average VC investment and project success rate if there exists the monitoring channel. And more importantly, these effects will be stronger for VC firms with better monitoring abilities but they will be absent if only the project selection channel exists. To test the role of monitoring abilities, we use the age of the VC firm as a proxy for its monitoring ability, and categorize those with more than 5 years of VC investment experience (the median level of the sample) as firms with higher monitoring abilities, whereas those with 5 or fewer years of VC investment experience as ones with lower monitoring abilities.[12]

As shown in column 1 of Table 6, there is a significantly positive correlation between HSR connection and average VC investment. Column 2 of Table 6 produces

[12] "Active management is not simply a slogan; its value must ultimately be reflected in the healthy growth of portfolio companies and the establishment of a mature post-investment management team," according to a senior project manager of a successful VC firm located in Xiamen, who also claims that a venture capital firm's five-year investment history serves as a reliable indicator of its post-investment management capabilities. First, a VC with only one or two years of experience typically only possesses post-investment capabilities remain largely confined to PowerPoint presentations and verbal promises. In contrast, a VC with five years of history begins to show a track record of post-investment management achievements. Thus, the survival of five years effectively filters out opportunists, as only VCs with strong management capabilities can help companies achieve rapid business growth, navigate entrepreneurial crises, and deliver genuine oversight and support value. Second, post-investment management is not just sporadic assistance. A mature post-investment system requires time to build and develop, with five years of refinement necessary to establish a robust framework.

Table 6 Evidence for the existence of monitoring channel

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Average VC investment (in logs)		Success		IPO	
Mean of dependent variable	0.010	0.006	0.352	0.352	0.240	0.240
HSR	0.041***	0.019***	−0.006	−0.014	0.006	−0.0007
	(0.004)	(0.003)	(0.012)	(0.013)	(0.009)	(0.010)
HSR*(Investment history > 5)		0.015***		0.018*		0.014*
		(0.003)		(0.010)		(0.007)
City pair FE	Yes	Yes				
VC-project FE			Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,936,402	3,872,804	26,168	26,168	26,168	26,168
Adj R-squared	0.316	0.265	0.230	0.230	0.271	0.271

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

evidence that the HSR effect on the average VC investment is significantly larger for VC investors with longer investment history and thus greater monitoring abilities. Relative to the means of the dependent variables, both the marginal effect and the interaction effect are statistically and economically substantial. Columns 3 and 5 present the related estimation results for the whole sample of VC projects, while columns 4 and 6 examine the differential effects on VC firms with different investment histories. Overall, there is no significant impact of HSR connection on VC success rates, whether it is measured by all modes of exit or by IPO. But for VC firms with more investment experiences (i.e., an investment history of longer than 5 years or the median level of the whole sample), HSR connection has a significant boosting effect, and the moderation effects are non-negligible in magnitude.[13] The results thus provide support for the importance of the monitoring channel in China's VC market, as outlined in Hypothesis 3.

When compared against the predictions in Hypothesis 3, the findings in Table 6 show that VC investors with higher monitoring abilities can take more advantage of the management participation channel, and consequently they benefit more from HSR connection, resulting in larger HSR-induced effects on project success rate. In other words, although the results do not provide evidence that management participation is important for all VC projects in China, they do show that the monitoring channel is important for at least some VC investors, those with higher monitoring abilities. As such, these findings both imply substantial heterogeneity in the HSR effects across different VC projects and explain the lack of supporting evidence for the monitoring channel in the existing literature (Fu & Zhou, 2017).

[13] We note that the coefficient on the interaction term is only marginally significant, which thus calls for caution when interpreting this result.

6.3 Additional evidence for the monitoring channel

The estimation results in Table 6 have provided support for Hypothesis 3. To further corroborate the importance of the monitoring mechanism, we examine here how HSR influences differently the total number of VC projects and total investment amount for VCs with higher monitoring abilities. By reducing the costs of frequent communication and hands-on involvement, HSR allows VCs to expand their reliance on monitoring. Thus, more marginally viable projects—previously excluded due to high oversight costs—become fundable, thereby raising the total number of investment projects. Combined with the higher average investment per project thanks to better post-investment governance, the total investment amount is also expected to increase. And these effects are particularly pronounced for VCs with superior monitoring expertise, who can leverage HSR-induced accessibility gains more effectively, leading to disproportionately larger increases in both the number of projects and total capital deployed.

Results of Table 7 confirm that HSR connection leads to significantly larger increases in both the number of projects and total investment for VCs with longer investment histories—a proxy for monitoring capability. While the positive effect of the stand-alone HSR variable in both columns can also be accounted for by the selection channel (as in Table 2), the significant enhancing effects of the interaction term in the table undoubtedly highlight the critical role of the monitoring channel in China's VC market.

Another way to examine the existence of the monitoring channel is to focus on VC investors' use of the staging strategy. Instead of making the whole investment all at once, the staging strategy in venture capital involves multiple rounds of investment decisions, with each subsequent round contingent on ongoing monitoring and evaluation of the project. We refer to a project as involving the staging strategy if it has received additional rounds of investment from the same investor after the initial investment. The staging investment strategy was adopted in 18% of all VC projects in our sample, which is substantially lower by international standards. For example, Tian (2011) finds that over 75% of all VC projects in the U.S. during 1980–2006 involved multiple rounds of investment, implying some kind of staging strategy. As

Table 7 Management ability and HSR effect on aggregate VC investments

	(1)	(2)
Variable	Number of VC projects (in logs)	Total VC investment (in logs)
HSR	0.004***	0.023***
	(0.001)	(0.003)
HSR*(Investment history > 5)	0.005***	0.020***
	(0.001)	(0.004)
City pair FE	Yes	Yes
VC city*year FE	Yes	Yes
Project city*year FE	Yes	Yes
Observations	3,872,804	3,872,804
Adj R-squared	0.427	0.297

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

investment staging requires continuous monitoring, the adoption of the strategy is evidence for the important role of management participation in venture capital. The large disparity between U.S. and Chinese numbers quoted above is thus in line with the controversy over the importance of monitoring and management participation in China's VC industry.

Table 8 explores the impact of HSR connection on the effectiveness of stage financing in China. Columns 1–2 show that VC projects adopting a staging strategy experience significantly larger increases in success rates following HSR connection. In other words, projects using the staged financing strategy exhibit greater performance improvements in the presence of direct HSR connection, thus providing evidence for more monitoring and management participation post HSR connection. Columns 3–6 further indicate that these improvements in success rates associated with staged financing after HSR connection are observed only for more experienced VC investors, consistent with the expectation that investors with higher monitoring ability benefit more from infrastructure improvement.

While these findings are in support of the increasingly important role of the management channel in VC investment post HSR connection, first-hand data including the frequency of VC attendance at board meetings would help provide more direct empirical evidence of VC involvement in management. However, such direct metrics are extremely difficult to obtain. To address this challenge, we provide as anecdotal evidence a specific case concerning Leaguer Capital through online research. Following the HSR connection between Shenzhen and Zhuhai, Leaguer Capital in Shenzhen enhanced its oversight of its portfolio company Huajin Capital in Zhuhai. Compared to the earlier period, Leaguer's annual participation in Huajin's board meetings after the HSR launch increased by 3.7 times, with in-person board meetings rising significantly by 1.33 meetings per year. This example thus offers direct micro-level evidence of increased monitoring frequency, providing further support for the relevance of the monitoring channel in China's VC industry.

Table 8 Role of staging investment

	Whole sample		Investment history > 5		Investment history < = 5	
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Success	IPO	Success	IPO	Success	IPO
HSR	−0.015	−0.001	−0.003	−0.007	−0.015	0.007
	(0.013)	(0.010)	(0.019)	(0.015)	(0.019)	(0.014)
HSR*Staging	0.057***	0.041***	0.060***	0.043***	0.035	0.026
	(0.015)	(0.013)	(0.013)	(0.013)	(0.029)	(0.022)
VC-project FE	Yes	Yes	Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26,168	26,168	12,246	12,246	13,132	13,132
Adj R-squared	0.230	0.273	0.243	0.272	0.218	0.265

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

7 Extension studies

The section consists of two parts: First, we conduct a series of heterogeneity analyses to explore other factors that influence the impact of HSR on VC investment; Second, we discuss the broader implications of HSR connection for the national economy, addressing whether the observed positive effects are a reflection of local competition that diverts resources from other regions or an indication of improved financial allocation that generates net aggregate gains for the whole nation.

7.1 Heterogeneity analyses

While the empirical findings confirm the positive effects of HSR on VC investment in directly connected regions, this section performs heterogeneity analysis, examining which regions experience more active VC investment and which VC investors achieve higher returns after HSR connection.

7.1.1 Cities with higher level of financial development benefit more from HSR connection

While the results above provide evidence for positive effects of HSR connection, it is also worth exploring who benefit the most from such access to the HSR system. Given the crucial role of VC investment in the financial system, one dimension along which to examine this issue is to compare different regions according to their level of financial development. A better developed financial system tends to be better at nurturing experienced VC investors and creating new investment opportunities, thus allowing the region to benefit more from HSR connection induced information access improvement.

To measure the development of local financial institutions in cities, we employ the ratio of the total balance of loans and deposits of financial institutions to GDP to divide the cities into two groups: cities with high level of financial development and cities with low level of financial development. Table 9 shows that the level of financial development in the potential host city positively affects the HSR impact on VC

Table 9 Heterogeneous effect of local financial development in the host city of VC projects

Variable	(1)	(2)	(3)	(4)
	Number of VC projects (in logs)		Total VC investment (in logs)	
	High level cities	Low level cities	High level cities	Low level cities
HSR	0.0093***	0.0027***	0.0476***	0.0190***
	(0.001)	(0.001)	(0.006)	(0.005)
City pair FE	Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes
Observations	677,262	677,808	677,262	677,808
Adj R-squared	0.618	0.259	0.491	0.253

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

investment. As cities with higher levels of financial development imply better investment opportunities and better supporting institutions, these results provide support for the functioning of both the project selection channel and the project monitoring channel at the presence of HSR connection. On one hand, once information costs are lowered thanks to travel time reduction, regions with more "hidden" investment projects get to benefit more from the discovery of such projects. On the other hand, as lower information costs make post-investment monitoring less costly, cities with better supporting institutions can take more advantage of management involvement by VC investors, leading to larger increases in VC investment.

Table 10 reports the effects of financial development in the city of VC investors on the HSR impact, with the results indicating cities with higher levels of financial development also benefit more from HSR connections, as shown greater expansions in various venture capital activities. As cities with higher levels of financial development have more agglomeration of financial and professional services, which enhances both the selection and the monitoring capabilities of local VC firms, these same cities could gain more from HSR connections by resorting to both the selection and the management participation channel.

7.1.2 Foreign VCs benefit more from HSR connection

Given the importance of ownership reforms and opening-up policies in China, another dimension along which to explore the distribution effects of HSR impact is the ownership type of VC investors. Specifically, we examine the heterogeneous effects of HSR connection on investment success probability across different types of VC firms. As shown in Table 11, the impact of HSR connection is statistically significant only for projects backed by foreign VCs. As foreign VCs often possess stronger monitoring capabilities and more sophisticated governance practices, the improved accessibility brought by HSR enables them to engage more frequently and effectively in hands-on supervision and post-investment value-adding activities. Therefore, these results provide yet another piece of supporting evidence for the importance of the monitoring channel in China's VC landscape, although there is clear variation in which firms can fully utilize this channel.

Table 10 Heterogeneous effect of local financial development in the source city of VC investors

Variable	(1)	(2)	(3)	(4)
	Number of VC projects (in logs)		Total VC investment (in logs)	
	High level cities	Low level cities	High level cities	Low level cities
HSR	0.0107***	0.0005***	0.0578***	0.0039***
	(0.001)	(0.000)	(0.007)	(0.001)
City pair FE	Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes
Observations	677,262	677,808	677,262	677,808
Adj R-squared	0.582	0.137	0.435	0.137

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

Table 11 Heterogeneous effect of VC types

	Domestic VC		Joint VC		Foreign VC	
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Success	IPO	Success	IPO	Success	IPO
HSR	−0.016	0.006	−0.002	−0.005	0.036*	0.051***
	(0.018)	(0.015)	(0.022)	(0.013)	(0.019)	(0.010)
VC-project FE	Yes	Yes	Yes	Yes	Yes	Yes
VC city*year FE	Yes	Yes	Yes	Yes	Yes	Yes
Project city*year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,317	11,317	8658	8658	5331	5331
Adj R-squared	0.196	0.246	0.220	0.262	0.340	0.376

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city-pair level are included in parentheses

7.2 Evaluating the net effects at the national level

While the empirical findings so far have demonstrated the positive effects of HSR on venture capital investment in regions directly connected to its services, it is important to evaluate the net effects in the setting of the whole national economy. Are such positive effects the outcome of local competition that siphons away resources from other regions, or are they the result from better allocation of financial resources that create net gains for the whole country? We consider two alternative hypotheses in this section to address these questions.

7.2.1 Testing the competing-away hypothesis

A legitimate concern regarding the positive relationship between HSR connection and VC investment is that VC investors compete among good investment projects, resulting in a redistribution of VC projects among VC firms (with more matches between cities directly connected by HSR), but with no net increase in total investment for the whole economy.

To address this possibility, we explore the impact of a city's addition to the HSR network (measured by the opening of the HSR station in the city) on the VC investment received by the city (not just from cities that this city is directly connected to by HSR). As shown in Table 12, the total VC investment and the number of VC projects have both increased substantially in response to the HSR access, implying that the HSR-induced competition among VC firms from other cities for a city's VC projects, even if it exists, does not lead to a net decrease in the total investment received by the city. These results are also in line with previous findings in the literature (Long et al., 2017), which help mitigate the potential concern with the competition effects of HSR connection.

7.2.2 Testing the siphoning-off hypothesis

A second concern with the positive relationship between HSR connection and VC investment is that different VC projects compete for the same pool of VC investment, resulting in a redistribution of VC investment among VC projects (toward more

Table 12 Testing the VC project competition effect of HSR connection

Variable	(1)	(2)
	Number of VC projects (in logs)	Total VC investment (in logs)
HSR access	0.275***	0.628***
	(0.042)	(0.143)
City pair FE	Yes	Yes
VC city*year FE	Yes	Yes
Project city*year FE	Yes	Yes
Observations	5746	5746
Adj R-squared	0.773	0.561

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city level are included in parentheses. HSR access is the dummy variable that equals 1 if the city has at least one HSR station

Table 13 Testing the VC fund siphoning-off effect of HSR connection

Variable	(1)	(2)
	Number of VC projects (in logs)	Total VC investment (in logs)
HSR access	0.238***	0.671***
	(0.045)	(0.129)
City pair FE	Yes	Yes
VC city*year FE	Yes	Yes
Project city*year FE	Yes	Yes
Observations	5746	5746
Adj R-squared	0.826	0.732

***$p<0.01$, **$p<0.05$, *$p<0.1$; Robust standard errors clustered at the city level are included in parentheses. HSR access is the dummy variable that equals 1 if the city has at least one HSR station

matches between cities directly connected by HSR), but with no net increase in total investment for the whole economy.

To address this possibility, we explore how a city's addition to the HSR network (measured by the opening of the HSR station in the city) affects the VC investment made by the city (not just to cities that this city is directly connected to by HSR). As shown in Table 13, the total VC investment and the number of VC projects have both increased substantially in response to the HSR access, implying that the HSR-induced competition among VC projects from other cities for a city's VC funds, even if it exists, does not lead to a net decrease in the total investment made by the city. Again, these findings help ease the concern with the potential siphoning-off effects of HSR connection.

8 Conclusion

Using direct HSR connection data and VC investment data, we explore the relationship between infrastructure upgrading and financial investment in China. In addition to finding robust results showing positive effects of HSR expansion on VC investment, we also produce evidence supporting the importance of both project selection and management participation in China's VC industry.

As the findings are robust to various extension tests and multiple ways of addressing the endogeneity issue, and the positive effects remain after tackling the potential competition and siphoning-off effects, we argue that strong evidence has been found to support the positive impact of infrastructure development on financial efficiency. Such findings are of particular importance to China, a large developing economy that is transitioning from a manufacturing powerhouse to an economy driven by innovative capacity.

By showing that investors with better monitoring abilities gain more improvement in their investment projects' performance from infrastructure upgrading, we also highlight the key role of micro-economic agents' vitality in influencing the effectiveness of infrastructure building. Regions with higher financial development level and VC investors with longer investment experience stand to benefit more from infrastructural improvement, as they have more capacity to utilize the new opportunities made available by lowered information cost. In other words, it is not sufficient to construct the infrastructure and then expect economic growth to occur automatically. Systematic reforms aimed to improve the governance quality of regional institutions as well as those to bolster the incentive structures of economic agents are prerequisites for effective infrastructural upgrading in transition economies.

Appendix: Detailed information on field interviews of Chinese VC project managers

Interview questions

We conducted three interviews (both in-person and online) with two senior investors from two venture capital firms located in Xiamen and Shenzhen. Specifically, the Xiamen-based investor was interviewed twice—once in person on March 17, 2019 and the second time online on September 30, 2025—while the Shenzhen-based investor was interviewed online once on September 30, 2025. During these discussions, we started with the questions outlined below and expanded the conversation following the investors' responses to explore related topics. The interview questions are as follows:

Questions regarding VC investment strategies:

1. Please briefly describe your firm's basic investment strategies, such as investment stages (angel, early-stage, growth-stage), primary focus sectors (industries), and investment style.
2. Beyond business plans and financial projections, what key information or signals will make a project stand out among numerous alternatives?
3. How do you define "hard data" (e.g., financial metrics) versus "soft data" (e.g., corporate culture, founder characteristics) in your project evaluation, and what role do they play in your decision-making process?
4. Are there noticeable differences in the quality distribution of projects with varying information types across the market? Can distinctions be made based on

dimensions such as local vs. remote projects, high-tech vs. general industries, etc.?
5. In your view, do domestic Chinese venture capital firms fully recognize the value of post-investment management, and how has this perception evolved over time?
6. Describe your firm's core philosophy for post-investment management. Is it "proactive empowerment," "financial oversight," or somewhere in between?
7. What routine post-investment services does your firm provide to portfolio companies?
8. What do you consider the most distinctive characteristic of "excellent" post-investment management, and how can it be systematically evaluated?

Questions regarding the impact of high-speed rail (HSR) connection:

9. How has the expansion of high-speed rail (HSR) networks altered your firm's geographic investment scope and sector focus?
10. In what ways has high-speed rail (HSR) impacted your post-investment management practices, such as the frequency of visits and depth of involvement with portfolio companies?
11. In your view, does the "time–space compression" effect brought by high-speed rail (HSR) connection intensify competition in the venture capital industry, or does it open up more diverse project options and investment opportunities for VC institutions?

Background of interviewees and their VC firms

Interviewee 1: The interviewed individual is a senior investment manager at Xiamen Kingdom Capital Industrial Investment Fund Management Co., Ltd (Kingdom Capital). With 13 years of experience in the venture capital (VC) industry, he has managed multiple venture capital fund projects. His investment track record spans sectors including new energy vehicles, intelligent manufacturing, and healthcare, and multiple companies he supported have achieved successful IPOs.

Kingdom Capital is the first fund management company approved by the city of Xiamen, focusing on private equity (PE)/venture capital (VC) investment and industry integration opportunities in China's emerging strategic industries. Since establishment, Kingdom Capital has managed over thirty funds denominated in RMB, with the total assets under management over 10 billion RMB.

Interviewee 2: The interviewed individual has a working experience of 7 years with a venture capital (VC) firm headquartered in Shenzhen, which manages a fund with the total capital amount of approximately RMB 3 billion. The firm maintains a diversified investment portfolio spanning advanced manufacturing, artificial intelligence, frontier technology, local services, e-commerce, and consumer-oriented sectors. It has participated in several high-profile investment projects in robotics, intelligent equipment, and AI technologies, reflecting its commitment to supporting China's industrial upgrading and innovation-driven development. By combining early-stage and growth-stage investment projects, the firm has established itself as an

active contributor to both the country's technological innovation and the transformation of its traditional industries.

Excerpts of interview responses

We have compiled a selection of excerpts from the interviewees' responses to support the arguments in the main text. Below, we first present the relevant questions and their connections to the content of the text. Then, we provide the relevant excerpts of the interview responses.

Q3: How do you define "hard data" (e.g., financial metrics) versus "soft data" (e.g., corporate culture, founder characteristics) in project evaluation, and what role do they play in your decision-making process?

Interviewee 1: "My way of categorizing is simple: things like financial metrics, market share– anything that can be quantified and written into a report—that's 'hard data'. As for company culture and leadership—like whether the team can pull together through tough battles, whether the founder has the charisma to attract top talent to follow them, or the overall execution ability of the entire team—these fall under 'soft data'.

We often talk internally about how information costs vary greatly across different projects. For some B2B SaaS projects, the model is clear, the data is complete, and you can mostly complete the evaluation online—you might even be able to make a decision based on that. But for other projects we look at, like frontier tech or local lifestyle businesses, the business model itself is rapidly evolving—what it is today might change tomorrow. In those cases, how do you judge? You absolutely have to rely on offline interaction.

So, I totally agree with what my colleague said: assessing team chemistry, founder leadership, or getting a look at their actual operations in non-core business areas—these all require site visits. If you don't go in person to have a chat over tea with the founder, there's simply no way to feel confident. Of course, whether a project ultimately succeeds or not sometimes also depends on timing and luck."

Follow-up question to Interviewee 1: Frontier tech projects should require many patents, and the number of patents is an important hard metric. So why do frontier tech projects rely more on soft information?

Interviewee 1: "Of course, the number of patents is important, but often, it's just the "beginning of the story." There's a vast gap between a patent in the lab and turning it into a profitable product.

The very reason we say frontier tech projects rely more on soft information is precisely because those hard metrics are highly unreliable in the early stages. Take R&D investment—the money might all be spent on equipment and salaries, but could the technical path be ground-breaking tomorrow? As for R&D output information, there might be no sign of commercialization at all. This information is not only inaccurate but also suffers from significant time delays.

So, our focus in judgment has to shift elsewhere. We need to assess whether the team, especially the founder, has the ability and determination to navigate through uncertainty—that's the "soft information." In simple terms, we're betting on the per-

son who can turn patents into what the market needs, not just on the patent document itself."

Interviewee 2: "The way I define it, things like purchase orders and financial books—tangible things you can get a handle on—those are 'hard data'. As for 'team chemistry', the founder's vision and leadership, and the company's culture—those are 'soft data'. Information costs differ massively across projects. What does that mean? For example, with a high-end manufacturing project, the technical specs and customer lists might look great, and those are accessible online. However, some projects rely heavily on the entrepreneur's quick reaction and sharp insight into the market. If you want to know whether the team can hold up under pressure, just looking at documents is useless."

Q4: Are there noticeable differences in the quality distribution of projects with varying information types across the market? Can distinctions be made based on dimensions such as local vs. remote projects, high-tech vs. general industries, etc.?

Interviewee 1: "Hmm, that's a good question. Theoretically, one might think project quality distribution would vary significantly across different sectors and regions, right? But based on our internal review of our own portfolio, the reality is a bit more nuanced.

Whether it's advanced manufacturing projects or local services projects—even though one relies on technology innovation and the other on business models, one might be in the Yangtze River Delta while another in an inland city—if you rank them by return from high to low, the shape of that distribution curve is surprisingly similar. It basically follows the '80/20 rule'—a small number of star projects contribute the vast majority of returns. In other words, high-quality projects are scarce everywhere. Just because a project is in a hot industry or a core city doesn't mean the probability of it being outstanding is significantly higher. This helps us maintain a more balanced and objective mindset when evaluating projects from other regions or in non-mainstream sectors."

Interviewee 2: "From our own investment portfolio, we do observe certain patterns. For example, Shenzhen undoubtedly has a higher concentration of hardware projects. At first glance, different regions do have different industrial focuses. But my takeaway is that the distribution of success rates is actually quite similar across industries and regions. You can't assume a project has a natural advantage just because it's located in a hard tech hub, nor should you underestimate the potential of a project based in a second- or third-tier city."

Q5. In your view, do domestic Chinese venture capital firms fully recognize the value of post-investment management, and how has this perception evolved over time?

Interviewee 1: "To be honest, in the early days of the industry, everyone focused more on selecting projects, chasing hot trends, and picking companies closely focused on policy directions. They saw post-investment management as just periodically checking in on the company and reviewing reports to avoid any major risks.

But later on, we gradually realized that selecting good projects alone isn't enough—you also have to nurture them well. Post-investment management isn't simply about risk control; it's a process of value re-creation. Especially since we invest heavily in industries like advanced manufacturing and new energy that require long-

term commitment—if you don't continuously help them with strategic integration and customer resources, they might just get stuck in a bottleneck stage and never break through.

Nowadays the industry has become more homogenized. Good projects aren't short on capital; what they lack is 'smart money' that can genuinely help them."

Q8: What do you consider the most distinctive characteristic of "excellent" post-investment management, and how can its quality be systematically evaluated?

Interviewee 1: "Honestly, there's no one-size-fits-all answer to this question, because the post-investment management capabilities really do vary significantly across different firms. There's also a lack of unified evaluation data in the market.

But from our own experience, the most distinctive characteristic of excellent post-investment management is that it's not just a simple slogan. Its value must ultimately be reflected in the healthy growth of portfolio companies, and it needs to be systematically supported by a mature post-investment management team.

Here's a practical perspective I often share: look at the firm's five-year investment history. Why five years? Well, you see, a fund that's only been around for a year or two probably has post-investment capabilities that are still mostly confined to PowerPoint presentations and verbal promises. But an institution that has lasted five years has not only weathered complete market cycles—more importantly, it has accumulated a proven methodology for post-investment management. This time frame is sufficient to filter out the opportunists—because only institutions with genuinely strong management capabilities can help companies navigate crises and achieve growth.

Ultimately, post-investment management isn't about sporadic firefighting—it's a systematic program that requires long-term accumulation of skills and expertise. Those five years are precisely the crucial test of whether an institution can establish this mature system."

Q9: Has the expansion of high-speed rail networks significantly altered your firm's geographic investment scope or expanded your investment sectors?

Interviewee 1: "The impact of high-speed rail is quite direct. Previously, we mainly focused on projects in Xiamen and its surrounding areas. Now we can make round trips within a few days in both the Yangtze River Delta and the Pearl River Delta areas. The most noticeable change is the increased visit frequency—before, we might only have been able to see two projects in Shanghai in a single day. Now, we can meet a client in Suzhou in the morning, visit a factory in Changzhou at noon, and still make it back to Shanghai for an evening meeting. This kind of regional coordination truly creates more opportunities.

As we travel to more places, the types of projects we encounter naturally become more diverse. We previously focused mainly on B2B projects like advanced manufacturing, but now we've also started paying attention to fields like smart hardware and AI-enabled manufacturing that are closer to consumer-facing applications."

Interviewee 2: "High-speed rail has genuinely changed our operational radius. This convenience allows us to cover a much broader geographic scope. As our activity radius expands, our investment sectors are naturally extending as well. However, this kind of expansion in investment scope still depends heavily on the firm's awareness and positioning—the fund has its own investment themes, thus blindly expanding our range would be risky."

Q10: In what ways has high-speed rail impacted your post-investment management practices, such as the frequency of visits and depth of involvement with portfolio companies?

Interviewee 1: "Well, the impact of high-speed rail on post-investment management is quite similar to how it affects deal sourcing—it's significantly expanded our management radius. This convenience allows us to stay much more updated on the operational status of our portfolio companies.

That said, the depth of our involvement still depends on the investment type. For purely financial investments, even if we appoint a board director, our actual participation tends to be limited. But for projects where we seek controlling stakes, it becomes absolutely necessary to station our own people there—sometimes even having a dedicated management team locally stationed."

Interviewee 2: "High-speed rail has genuinely changed how we handle post-investment management. Though the improved accessibility is helpful, ultimately it comes down to how the firm allocates its resources—we still have to calculate the ROI properly. After all, you can only do as much as your team size allows, that's the fundamental rule."

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