

From “Super App” to “Super VC”: The Value-Added Effect of China’s Digital Platforms

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Highlights

- We study China’s big digital platforms’ value-added effect as venture capitalists.
- China’s big digital platform VCs positively affect their portfolio firms’ IPO performance, in terms of higher IPO valuation, lower underpricing, and shorter time to IPO.
- China’s big digital platform VCs add value by playing both certification and monitoring roles.
- The grandstanding hypothesis does not apply to China’s big digital platform VCs.

Abstract: This paper studies China’s big digital platforms’ value-added effect as venture capitalists, using a dataset of companies registered in China that eventually reach the initial public offering stage. We find that China’s digital platforms’ investments positively affect their portfolio firms’ IPO performance, in terms of higher IPO valuation, lower underpricing, and shorter time to reach the IPO stage, which is inconsistent with the grandstanding hypothesis. The plausible underlying channels are the certification and monitoring roles played by China’s digital platform. The results remain robust after addressing several concerns. Our study sheds new light on VCs’ characteristics and digital platforms’ activities.

Keywords: Digital platforms, New ventures, Venture capital, Value adding, IPO performance

JEL Classifications: G23, G24, G32, L26

1. Introduction

Digital platforms are an important part of digital infrastructure and an essential force driving economic development. Notably, China’s digital platforms’ involvement in venture capital (VC) activity is increasing. Alibaba and Tencent, two major Chinese digital platforms, account for 40%–50% of the overall VC flow in China’s market.¹ As Figure 1 shows, although Alibaba and Tencent began their investment activities later than Hillhouse and Sequoia, they are now emerging as strong competitors expected to remain engaged in VC activities. China’s large digital platforms also help the companies in which they invest to achieve high valuations in financial markets. By 2021, Alibaba and Tencent had captured more than a third of China’s unicorn businesses.² Despite this, VC investors with a digital platform background have received little research attention.

The digital platform is a hybrid with both organizational and market attributes, whose data network effect enables it to stand out from other companies and acquire ‘winner takes all’ abilities (Chen et al., 2022; Kretschmer et al., 2022). The effects of big digital platforms’ investment activities may also differ from those of traditional corporate VC and other VC modes. The question then arises as to whether big digital platforms’ ability to apply ‘winner takes all’ effects within their product markets will still apply as they enter the VC industry.

¹ “How Alibaba and Tencent became Chinese biggest dealmakers.” *Financial Times*, March 26, 2018. (<https://www.ft.com/content/38a54804-2238-11e8-9a70-08f715791301>)

² “Global Unicorn Index 2021”, *Hurun Research Institute*, December 20, 2021. (<https://www.hurun.net/en-US/Info/Detail?num=R18H7AJUWBIX>). Unicorn companies are privately owned startup companies valued at over USD 1 billion.

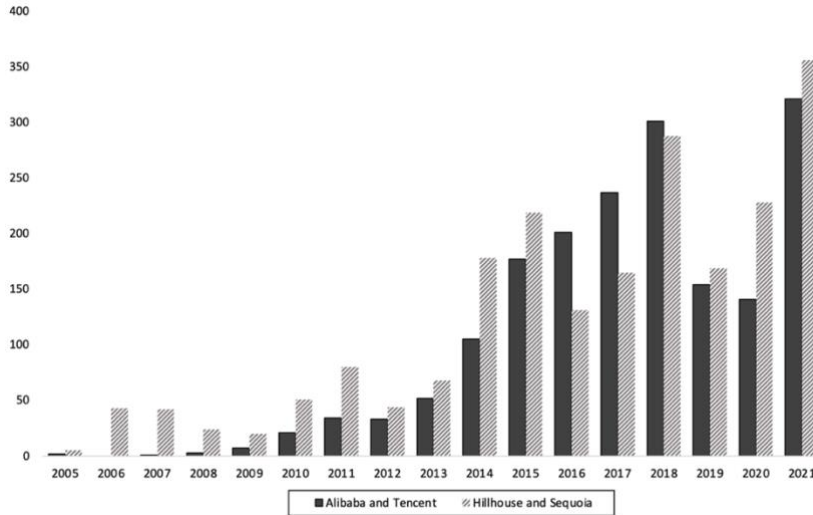


Figure 1. Comparison of venture capital vitality (data source: cnrds.com, ITjuzi.com).

The initial public offering (IPO) performance of portfolio companies offers an excellent way to assess VCs' value-adding capability. Four hypotheses relate to the phenomenon whereby VC-backed companies deliver better IPO performance in the financial markets—namely, screening, certifying, monitoring, and grandstanding hypotheses (Barry et al., 1990; Gompers, 1996; Lerner, 2002; Ueda, 2004). Drawing from the portfolios of Tencent and Alibaba as our sample,³ we conducted an exploratory analysis by testing these hypotheses in order to verify the value-added effect, and underlying mechanism, that the digital platform VCs deliver. However, the screening and value-added effects of VC may exist simultaneously (Chemmanur et al., 2011; Krishnan et al., 2011; Nahata, 2008), and the issue is difficult to fully address (James et al., 2014). Therefore, we adopt the propensity score matching (PSM) method to alleviate the screening effect as much as possible (Guo and Jiang, 2013). Our results indicate that China's big digital platform VC investments add value to their portfolio companies because they fulfil certification and monitoring roles, and grandstanding hypothesis does not apply to China's big digital platform VCs.

Our findings contribute to the literature in several ways. First, we identify the characteristics that distinguish digital platform VCs from other VC modes. Many studies have focused on the characteristics and impacts of independent VC, corporate VC, VC syndication, politically connected VC, and other VC modes. Drover et al. (2017) call on researchers to identify and study the sources of heterogeneity among equity investors. Identifying VC with different characteristics not only provides insights into practice changes but is also crucial in illuminating how theory and practice in the VC industry evolve together.

³ Small digital platforms in China are not engaged in venture capital. Although emerging digital platforms such as ByteDance have started to participate in venture capital activities frequently in recent years, they started these activities relatively late and their portfolio companies are not yet public; as a result, there are no data on the IPO performance of their investments.

Second, this paper reinforces the understanding of three hypotheses in VC research. The certification and the monitoring hypotheses focus on value transmission from VC investors to portfolio companies. The grandstanding hypothesis describes value transmission from portfolio companies to VC investors. Wang and Wu (2020) found that politically connected VCs play a certification role, but do not emphasize monitoring. Guerini and Quas (2016) found that governmental VCs are competent in both screening and certification. Instead of using a binary combination of hypotheses to identify VC characteristics, we compare whether these three hypotheses apply to digital platform VCs. Testing more hypotheses can provide a more holistic picture of the value transfer between VC investors and portfolio firms and more effectively identify the value-added paths of new types of VCs.

Third, the paper enriches the literature on the relationship between digital platforms and their stakeholders. One branch of this research investigates the interaction of digital platforms with complementors that fully depend on them (Chen et al., 2022; Cutolo and Kenney, 2021). Another branch addresses the impact of digital platforms on organizations that do not directly depend on them (Guo et al., 2019; Koo and Eesley, 2021). However, when digital platforms act as venture capitalists, the direct dependence of portfolio firms on digital platforms falls between these two conditions. This phenomenon differs from the relationship between the digital platform and its stakeholders described in the previous literature.

2. Theoretical Background and Hypothesis Development

2.1 Certification Hypothesis

The certification hypothesis suggests that the association between new ventures and venture capitalists represents the VC investors' endorsement of the new venture's value, which will enhance external investors' positive views of a pre-IPO company's value (Gomulya et al., 2019; Lerner, 2002). New ventures will have better IPO valuations when they have backing from venture capitalists with strong reputations (Chahine et al., 2021; Pollock et al., 2015). The reputation of VC investors is based on their resources, including social networks, connectedness, and industry experience (Hochberg et al., 2007; Hochberg et al., 2015; Lee et al., 2011). This paper argues that first, the data network effect enables big digital platforms to gain a dominant market share and a strong reputation in the industry (Gregory et al., 2021), helping them enjoy a better reputation than other VCs. Tencent and Alibaba are now among the top players in the IT and discretionary consumer sectors in China, and they also prefer to invest in those

fields (see Appendix C). When the industry expertise of a VC is closely aligned with that of its portfolio companies, VCs can provide their portfolio firms with more closely matched resources (Hsu, 2006; Lee et al., 2011). Therefore, big digital platforms' investment strategy of focusing on their own industry further strengthens the certification effect.

2.2 Monitoring Hypothesis

VC investors have strong incentives to play a role in monitoring new ventures, particularly when doing so can improve portfolio companies' ownership structure, sales growth, and reduce financial constraints (Guo and Jiang, 2013; Wang and Wu, 2020). These criteria will lead to better IPO performance; a portfolio firm's higher market valuation will result in a higher return on VCs' investment (Barry et al., 1990).

Big digital platforms' abundant resources and ability to orchestrate these resources enable them to have a stronger monitoring effect on new ventures than other VCs can, through diverse channels. First, Alibaba and Tencent have their own financial ecosystems, enabling them to more directly and flexibly bring more funding to new ventures. Second, large digital platforms offer an extremely rich user-generated content data resource to better understand users' purchasing behavior (Boudreau, 2012; Kwark et al., 2013; Ransbotham et al., 2012; Susarla et al., 2012). Data resources give new ventures a powerful advantage in realizing positive sales growth. Finally, large digital platforms can transfer the lessons of managing complex organizations to start-ups, helping them improve corporate governance and reduce ownership concentration.

Given the prominent reputation and business experience of digital platforms significantly affect the tendency of other investors to invest (Gu and Lu, 2014), other VC investments can also play a monitoring role with start-ups. We propose that with the characteristics we describe above being stronger than those of other VCs, big digital platforms may still exert a significant monitoring effect after excluding the effect of the number of participating VC investors.

2.3 Grandstanding Hypothesis

The grandstanding hypothesis suggests that VC investors are willing to list their portfolio companies earlier, at the cost of an offer price discount—i.e., underpricing—because VC investors establish a strong reputation in the VC industry when more of their portfolio firms achieve IPOs (Gompers, 1996; Lee and Wahal, 2004; Lin and Smith, 1998). Based on the above, we propose that a shorter IPO process and lower IPO underpricing for new ventures backed by digital platforms can further confirm the capability of digital platform VCs.

3. Data and Variables

The sample used in this paper comprises new ventures registered in China, backed by VC funding, that reached the IPO stage during the period 2005–2021. The dataset comprises private equity data and data obtained from the WIND Database. After data processing, we obtained 2,308 observations. Variable definitions and the dataset's descriptive statistics are provided in Appendix A and B. The IPO performance of a company can be reflected in its IPO valuation and the IPO underpricing. Our paper measures IPO valuation by using IPO premium and Tobin's Q (Chahine et al., 2019; Nelson, 2003; Rasheed et al., 1997). All control variables assisted in PSM. We chose the kernel-matching method because it has the smallest mean bias (4.2%), and therefore the matching effect is ideal (see Appendix C, D, and E).

4. Empirical Results

4.1 Participation by China's Digital Platform VCs and New Ventures' IPO Performance

Using the OLS estimation method and the matched sample, our results (see Table 1) revealed that for new ventures that Tencent and Alibaba backed, IPO premiums and Tobin's Q values were significantly higher, underpricing became significantly and progressively lower, and the IPO process took less time than for other listed VC-backed companies in the matched sample.

Table 1 Association between Tencent and Alibaba VCs and IPO performance of new ventures

	Panel A: IPO Value		Panel B: Underpricing				Panel C: IPO Speed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variables =	IPO Premium	Tobin's Q	IPO day	Day 5	Day 10	Day 30	IPO Speed
Tencent & Alibaba's VC	0.0908*** (0.029)	0.8252** (0.354)	0.7390 (6.200)	-7.7053** (3.378)	-15.5352** (6.274)	-20.4721** (9.788)	-0.6179*** (0.207)
Controls	YES	YES	YES	YES	YES	YES	YES
Stage Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Constant	1.4070*** (0.151)	5.9681*** (1.471)	27.0471 (34.256)	-32.9692* (17.304)	-19.1113 (35.273)	65.0153 (78.047)	3.0402*** (0.680)
Observations	718	718	718	718	718	718	718
R-squared	0.493	0.581	0.600	0.470	0.431	0.312	0.340

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

4.2 Value-Added Channels of China's Digital Platform VCs

Next, we conducted a sequential inspection of Tencent and Alibaba channels value-adding to new ventures. In

Table 2, column (1) reveals that the participation of digital platform VCs shows a positive and statistically significant

relationship with the numbers of investing VCs. Columns (2)–(4) show that VC investors attracted by digital

platform VCs had significant monitoring effects on new ventures. However, digital platform VCs have a stronger

statistical significance level association with all channels. Columns (5)–(8) reveal that the ownership concentration,

VC total investment amount, and sales growth have a significant impact on portfolio firms' IPO performance. The

result indicates that digital platforms play both certification and monitoring roles.

Table 2 Value-added channels of Tencent and Alibaba VCs

	Panel A: Mediators				Panel B: IPO Performance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variables =	NO. of investing VCs	Ownership Concentration	VC total investment amount	Sales Growth	IPO Premium	Tobin's Q	Day 5	IPO Speed
Tencent & Alibaba's VC	3.3190*** (1.011)	-4.0007* (2.253)	0.4864*** (0.082)	28.0512* (16.015)	0.0706** (0.029)	0.6494** (0.273)	-6.2500* (3.507)	-0.7850*** (0.207)
Ownership Concentration					-0.0001 (0.000)	0.0027 (0.004)	0.0995* (0.059)	-0.0077*** (0.002)
VC total investment amount					0.0133 (0.013)	0.4363*** (0.118)	-4.8660*** (1.597)	0.2245*** (0.058)
Sales Growth					0.0002** (0.000)	0.0016 (0.001)	-0.0381*** (0.012)	-0.0010*** (0.000)
NO. of investing VCs		-0.5050*** (0.089)	0.0377*** (0.004)	0.2044 (0.379)	0.0006 (0.001)	0.0069 (0.012)	0.3786** (0.169)	0.0063 (0.005)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Stage Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-19.3884*** (6.596)	58.4403*** (12.825)	-4.1509*** (0.576)	-22.6363 (65.170)	1.4316*** (0.143)	9.6088*** (1.679)	-56.4777*** (15.920)	4.9908*** (0.652)
Observations	718	707	718	687	677	677	677	677
R-squared	0.310	0.194	0.516	0.301	0.499	0.544	0.493	0.372

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

4.3 Value-Added Channels: Tencent and Alibaba versus Hillhouse and Sequoia

The above results show digital platform VCs adding value to portfolio companies via multiple channels, indicating the ecological richness and diversity of their resources. To better characterize the diversity of value-added paths of Tencent and Alibaba VCs to portfolio firms, we compared the value-added effects and paths of digital platform VCs with those of Sequoia and Hillhouse, who have long histories in the VC industry and enjoy excellent reputations. We remove the firms in which Tencent and Alibaba invested from the full sample, and use the same covariates and PSM method to obtain a newly matched sample. Table 3 shows that although Sequoia and Hillhouse have stronger value-added capabilities than other VCs, they have a limited value-added path, playing more of a certification role and failing to significantly reduce underpricing and shorten the IPO process.

Table 3 Value-added effect: Hillhouse & Sequoia versus other VC investors

Dependent variables =	Panel A: Mediators				Panel B: IPO Performance			
	(1) NO. of investing VCs	(2) Ownership Concentration	(3) VC total investment amount	(4) Sales Growth	(5) IPO Premium	(6) Tobin's Q	(7) Day5	(8) IPO Speed
Hillhouse & Sequoia's VC	2.3868** (0.972)	0.5208 (2.068)	0.2683*** (0.070)	6.6154 (13.390)	0.0500*** (0.018)	0.6889*** (0.242)	-4.6560 (3.565)	0.0417 (0.097)
Ownership Concentration					0.0003 (0.001)	0.0012 (0.007)	-0.0640 (0.102)	-0.0073*** (0.002)
VC total investment amount					0.0292 (0.022)	0.2905 (0.205)	-4.1696 (2.873)	0.1016 (0.092)
Sales Growth					0.0001 (0.000)	-0.0004 (0.001)	-0.0005 (0.016)	-0.0004 (0.000)
NO. of investing VCs		-0.4995*** (0.174)	0.0388*** (0.007)	0.6983 (1.020)	-0.0013 (0.003)	0.0287 (0.019)	-0.0009 (0.313)	0.0173*** (0.007)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Stage Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-21.0605** (9.036)	44.3991** (20.153)	-4.1337*** (0.822)	-70.2486 (94.918)	1.4816*** (0.215)	9.3446*** (2.002)	-10.5247 (29.254)	4.3433*** (0.891)
Observations	301	291	301	279	269	269	269	269
R-squared	0.367	0.220	0.546	0.261	0.480	0.535	0.427	0.479

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Then, we compared Hillhouse and Sequoia with digital platform VCs by merging the matched samples we obtained for them with those we obtained through matching Tencent and Alibaba. Table 4 shows that the certification and monitoring effects and monitoring channels diversity of digital platform VCs significantly surpass those of Hillhouse and Sequoia.

Table 4 Value-added effect: Tencent & Alibaba versus Hillhouse & Sequoia

Dependent variables =	Panel A: Mediators				Panel B: IPO Performance			
	(1) NO. of investing VCs	(2) Ownership Concentration	(3) VC total investment amount	(4) Sales Growth	(5) IPO Premium	(6) Tobin's Q	(7) Day5	(8) IPO Speed
Tencent & Alibaba's VC	3.2459*** (0.992)	-3.7962* (2.224)	0.4958*** (0.078)	21.9570** (10.902)	0.0838*** (0.029)	0.7427*** (0.267)	-6.8347** (3.379)	-0.7734*** (0.204)
Hillhouse & Sequoia's VC	1.6711* (0.945)	0.4669 (1.932)	0.2564*** (0.060)	0.1870 (9.202)	0.0656*** (0.018)	0.7888*** (0.229)	-4.5396 (3.267)	0.0693 (0.097)
Ownership Concentration					0.0000 (0.000)	0.0031 (0.004)	0.0680 (0.058)	-0.0077*** (0.002)
VC total investment amount					0.0142 (0.012)	0.4157*** (0.112)	-4.7240*** (1.558)	0.1793*** (0.055)
Sales Growth					0.0002** (0.000)	0.0013 (0.001)	-0.0150 (0.011)	-0.0008** (0.000)
NO. of investing VCs		-0.5141*** (0.083)	0.0378*** (0.004)	0.6544 (0.416)	0.0002 (0.001)	0.0093 (0.011)	0.0951 (0.164)	0.0094** (0.004)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Stage Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-24.2379*** (5.672)	38.6701*** (11.991)	-4.4254*** (0.475)	-60.3085 (50.399)	1.4916*** (0.142)	9.3482*** (1.259)	-44.7126** (17.432)	3.9456*** (0.615)
Observations	861	847	861	818	805	805	805	805
R-squared	0.315	0.193	0.533	0.286	0.492	0.549	0.398	0.378

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

4.4 Addressing Concerns

There are concerns that the above results may be due to the large difference in the number of investing VCs and the VC total investment amount between digital platform-invested firms and non-digital platform-invested firms. Therefore, we further filtered the matched sample of Table 2 among non-digital platform-invested firms, keeping new ventures with backing from more than three investors. The results in Table 5 demonstrate that digital platform VCs still show a strong ability to add value and diversity of value-added channels.

Table 5 Value-added effect: Tencent & Alibaba versus VC syndication

Dependent variables =	Panel A: Mediators				Panel B: IPO Performance			
	(1) NO. of investing VCs	(2) Ownership Concentration	(3) VC total investment amount	(4) Sales Growth	(5) IPO Premium	(6) Tobin's Q	(7) Day5	(8) IPO Speed
Tencent & Alibaba's VC	0.2864 (1.088)	-1.5517 (2.369)	0.2685*** (0.075)	24.3679* (13.603)	0.0628** (0.029)	0.5291 (0.342)	-6.0958* (3.597)	-0.8484*** (0.213)
Ownership Concentration					-0.0011 (0.001)	0.0101 (0.008)	0.1302 (0.098)	-0.0086** (0.004)
VC total investment amount					0.0393* (0.022)	0.9080*** (0.244)	-10.3343*** (2.969)	0.1658 (0.119)
Sales Growth					0.0002* (0.000)	0.0022 (0.001)	-0.0421*** (0.013)	-0.0009** (0.000)
NO. of investing VCs		-0.3873*** (0.097)	0.0173*** (0.003)	-0.1361 (0.619)	-0.0005 (0.002)	0.0029 (0.016)	0.2579 (0.185)	0.0051 (0.005)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Stage Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-18.6430 (11.776)	39.3333* (20.814)	-4.4169*** (0.513)	-68.6421 (91.394)	1.6611*** (0.240)	14.1310*** (2.487)	-84.1212*** (28.100)	6.1518*** (0.924)
Observations	377	370	377	353	347	347	347	347

R-squared	0.265	0.178	0.571	0.283	0.506	0.546	0.386	0.367
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Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Second, Tencent and Alibaba VCs, directly and indirectly, enabled investee firms to obtain a large amount of capital, which may become a factor driving sales growth and reducing ownership concentration. We rematched the data, adding the VC total investment amount to the existing matching criteria, and only keeping new ventures with backing from more than three VC investors among non-digital platform-invested firms. Appendix F shows no significant difference between the two groups in terms of the number of investors and the total investment amount.

Table 6 demonstrates that digital platform VCs still show a strong ability to add value, and the value-added channel sales growth still exists.

Table 6 Value-added effect of Tencent & Alibaba VCs: Excluding the impact of the number of investing VCs and VC total investment amount

	Panel A: Mediators				Panel B: IPO Performance			
	(1) NO. of investing VCs	(2) Ownership Concentration	(3) VC total investment amount	(4) Sales Growth	(5) IPO Premium	(6) Tobin's Q	(7) Day 5	(8) IPO Speed
Tencent & Alibaba's VC	0.4185 (1.447)	3.3648 (3.042)	0.0224 (0.057)	8.0032* (4.549)	0.0616* (0.036)	0.3204 (0.526)	-7.5496* (4.112)	-0.9721*** (0.277)
Ownership Concentration					0.0012 (0.001)	0.0111 (0.015)	0.0058 (0.172)	-0.0094 (0.006)
VC total investment amount					0.0625 (0.080)	1.5807** (0.770)	-4.0907 (8.796)	0.4725 (0.575)
Sales Growth					0.0014** (0.001)	0.0004 (0.008)	-0.1337* (0.076)	-0.0059* (0.004)
NO. of investing VCs		-0.4963*** (0.169)	0.0038 (0.003)	0.4783 (0.297)	0.0027 (0.003)	0.0076 (0.030)	0.0524 (0.292)	0.0202 (0.014)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Stage Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-32.7506* (17.770)	15.7257 (25.919)	0.3783 (0.397)	-48.8334 (50.266)	1.5129*** (0.353)	11.4394*** (4.272)	-37.4341 (37.663)	5.9617*** (2.255)
Observations	161	159	161	157	155	155	155	155
R-squared	0.326	0.326	0.452	0.350	0.541	0.586	0.284	0.389

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

We also conduct a battery of robustness checks using the OLS estimation method, the sample rematched via the coarsened exact matching method (Iacus et al., 2012), and the unmatched sample. The results of our additional robustness checks validate our main findings (see supplementary materials).

5. Conclusion and Discussion

Using Tencent and Alibaba as examples, this paper examines China's digital platform VCs that play the roles not only of certification but also monitoring through a variety of channels, enabling portfolio companies to achieve higher IPO valuation and faster IPO speed, which is inconsistent with the grandstanding hypothesis.

Furthermore, Tencent and Alibaba have only exited their investments five times since 2005. This indicates that Tencent and Alibaba are attempting to expand their business and resource ecology through investments in and cultivation of these firms, which will, in turn, provide more diverse resources for other new ventures in which Tencent and Alibaba subsequently invest, as Figure 2 shows.

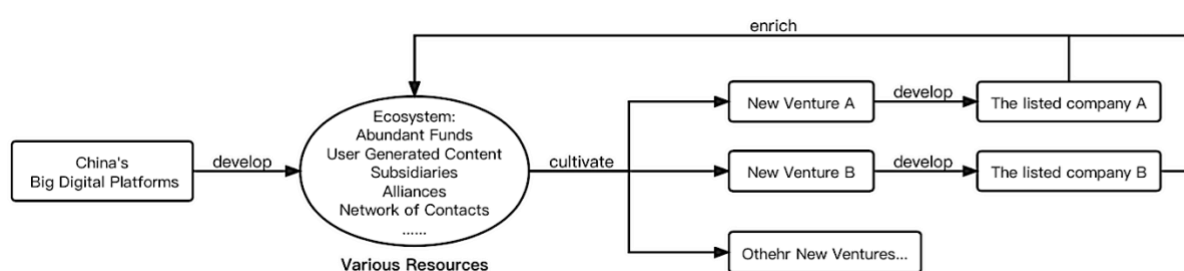


Figure 2. China's big digital platforms as venture capitalists (source: the figure is created by the authors)

The influence of digital platform VCs should not be underestimated. First, digital platform VCs still have long-term holdings in post-IPO portfolio companies. Second, digital platforms remain highly active in the VC industry and are expected to incubate more public companies, expanding to more industries in the future. Most importantly, with high-level influence and self-reinforcing ability in the product market, digital platforms can leverage a wide range of influence in both the product and financial markets, using a small activity as a fulcrum (Prado and Bauer, 2022). We believe that identifying characteristics of digital platforms as venture capitalists at their initial stage can offer some insights and implications.

In the VC industry, despite investors starting to see digital platforms' VC activities as a weathervane, other VCs can make a more rational choice between whether and how to compete with digital platforms or follow them by learning about their value-added effects and paths. Because digital platform VCs do not support the grandstanding hypothesis, VC investors should realize that instead of pursuing short-term reputation, they should actively manage portfolio companies to benefit from the value growth of those companies, fundamentally improve their long-term reputation and, in a more profound way, further enhance the efficiency of the VC industry. Regulators must carefully strive to keep the balance between innovation and order in the regulation of digital platforms, avoiding the 'short-termism' of long-term policies. This will significantly boost the confidence of market investors and promote the

healthy and sustainable development of digital platforms. Both new ventures and incumbents should choose to embrace digital ecosystems and engage in value-creating activities by integrating with digital platforms' networks to overcome liability and achieve faster growth with the digitalization of the economy.

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CRediT authorship contribution statement

Jiancheng Wang: Conceptualization, Writing – original draft, Funding acquisition, Supervision. **Xiaoye Li:** Conceptualization, Data curation, Writing – original draft, Writing – review & editing.

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Data availability

Data will be made available on request.

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Appendices

Appendix A. Variable definitions

Variables		Definition
Independent Variable	Tencent & Alibaba's VC	Whether the firm received venture capital funding from Tencent or Alibaba; if it did, it is assigned a value of 1, and if it was funded by other VCs, it is assigned a value of 0.
	Hillhouse & Sequoia's VC	Whether the firm received venture capital funding from Hillhouse or Sequoia; if it did, it is assigned a value of 1, and if it was funded by other VCs, it is assigned a value of 0.
Dependent Variables	IPO Performance	IPO Premium, Tobin's Q, Underpricing and IPO Speed.
	IPO Premium	The ratio of the difference between the offer price and the book value per share over the offer price.
	Tobin's Q	The ratio of market value to total assets.
	Underpricing	The difference between the first trading day's closing price and the IPO offer price. We also use the closing prices on the 5th, 10th, and 30th trading day after the IPO day for robustness testing and to establish the lagging effect on underpricing.
	IPO Speed	The logarithm of the number of days between the initial acceptance of VC investment and the IPO day of the new venture.
Mediating Variables	Ownership Concentration	The shareholding ratio of the largest shareholder of the new venture in the IPO year.
	VC Total Investment Amount	The natural logarithm of the sum of investment amount that the new venture received in each round.
	Sales Growth	The new venture's rate of sales growth in the IPO year.
	Number of Investing VCs	For startups backed by other VCs, measured as the number of VCs investing in focal firms; for startups backed by digital platform VCs, measured as the number of VCs investing in focal firms in the same round and after the round of Tencent and Alibaba.
Control Variables	Age	The logarithm of new venture's age in the IPO year.
	Size	The logarithm of new venture's net assets in the IPO year.
	Leverage	The ratio of new venture's total liabilities to total assets in the IPO year.
	Expansion	The growth rate of total assets.
	Price Revision	The difference between the offer price and the midpoint of the initial price range.
	IPO market	The number of IPO firms in the IPO market in which the firm is listed during the year of the IPO date.
	Stage	The development stage of the new venture is when the focal VC investment happens.
	Year	Year of IPO.
	Industry	Industry of the new venture.

Appendix B. Descriptive statistics

Panel A: Dependent variables

		Full sample	Tencent&Alibaba	Matched sample	VC Syndication	Hillhouse&Sequoia
IPO Performance						
IPO Premium	Obs	2292	54	666	325	79
	Mean	0.764	0.880	0.745	0.776	0.859
	Median	0.795	0.903	0.795	0.826	0.876
	Std.Dev	0.181	0.181	0.226	0.228	0.146
Tobin's Q	Obs	2298	54	666	325	79
	Mean	3.113	4.199	3.093	3.779	4.629
	Median	2.553	2.943	2.361	2.8	3.546
	Std.Dev	2.302	3.516	2.580	3.08	3.342
Underpricing IPO day	Obs	2300	54	666	325	79
	Mean	51.94	37.66	45.84	56.61	44.73

Day 5	Median	43.988	9.194	43.98	43.98	43.96
	Std.Dev	67.03	61.17	65.06	78.77	68.77
	Obs	2308	54	666	325	79
	Mean	21.61	2.298	20.79	16.51	12.93
Day 10	Median	9.552	-2.878	7.046	3.507	1.407
	Std.Dev	32.02	18.87	31.67	31.15	28.66
	Obs	2308	54	666	325	79
	Mean	44.05	3.217	42.18	34.51	32.68
Day 30	Median	10.497	-3.826	9.047	5.481	0.425
	Std.Dev	67.12	29.81	66.19	64.23	66.18
	Obs	2308	54	666	325	79
	Mean	62.10	3.554	62.15	54.61	50.3
IPO Speed	Median	11.514	-4.742	10.45	4.07	7.714
	Std.Dev	122.6	36.78	124.1	127.5	103.1
	Obs	2308	54	666	325	79
	Mean	7.112	6.565	7.216	7.452	7.336
NO. of investing VCs	Median	7.256	6.946	7.383	7.608	7.609
	Std.Dev	0.897	1.379	0.942	0.859	0.904
	Obs	2308	54	666	325	79
	Mean	5.044	11.52	6.164	10.72	9.114
Ownership Concentration	Median	3	9.5	3	7	6
	Std.Dev	6.674	8.925	7.399	8.430	8.380
	Obs	2285	54	655	318	75
	Mean	36.05	29.94	35.27	31.02	34.04
VC total investment amount	Median	34.200	26.410	32.55	29.08	29.86
	Std.Dev	15.08	15.48	16.04	14.01	17.69
	Obs	2230	54	666	325	79
	Mean	96.32	645.6	138.7	223.1	197.1
Sales Growth	Median	18.965	305.325	30.15	71.34	117.4
	Std.Dev	263.3	644.1	303.6	373	275.8
	Obs	2139	54	635	301	70
	Mean	30.75	84.53	36.60	47.19	59.16
	Median	17.711	51.971	19.86	24.34	29.3
	Std.Dev	65.29	118.7	72.98	88.87	91.18

Panel B: Control variables

		Full sample	Tencent&Alibaba	Matched sample	VC Syndication	Hillhouse&Sequoia
Age	Obs	2308	54	666	325	79
	Mean	2.783	2.086	2.470	2.394	2.42
	Median	2.944	2.079	2.639	2.485	2.565
	Std.Dev	0.504	0.559	0.612	0.606	0.6
Size	Obs	2298	54	652	325	79
	Mean	19.53	20.96	19.95	20.06	19.92
	Median	19.258	20.692	19.53	19.73	19.79
	Std.Dev	1.232	1.413	1.609	1.472	1.068
Leverage	Obs	2297	54	666	325	79
	Mean	29.85	39.86	35.61	34.26	26.33
	Median	25.060	31.813	29.60	28.73	19.6
	Std.Dev	20.16	27.32	24.02	23.29	20.01
Expansion	Obs	2297	54	666	325	79
	Mean	101.8	130.7	98.82	114.6	151.1
	Median	73.069	94.532	69.04	80.79	114.3
	Std.Dev	95.73	124.7	101.0	116.3	126.2
Pricerevision	Obs	2308	54	666	325	79
	Mean	-10.39	-12.16	-10.73	-15.12	-9.579
	Median	-4.500	-1.670	-3.195	-3.515	-4.35
	Std.Dev	18.65	27.93	23.08	28.5	14.02
Ipomarket	Obs	2308	54	666	325	79

Mean	129.4	261.8	248.7	271.9	273.1
Median	222	224	203	205	222
Std.Dev	2	156.3	145.2	157	165.9

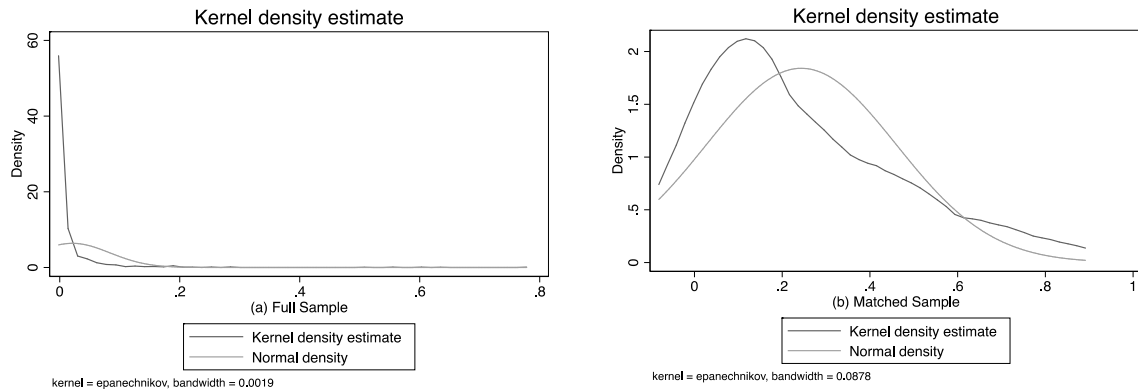
Appendix C. Sample selection and composition.

Panel A: Sample selection						
New ventures that were registered in China, received investment, and listed from 2005 to 2021						3901
Less: New ventures whose first VC funding is later than their initial public offering						(1061)
New ventures listed outside Shanghai Stock Exchange, Shenzhen Stock Exchange, Hong Kong Stock Exchange, New York Stock Exchange, and Nasdaq Stock Exchange markets						(53)
Observations with missing data in Wind						(479)
Final sample for tests						2308
Panel B: Sample composition based on VC type						
		Percent				#of firms
VC from Tencent&Alibaba		2.34%				54
VC from Hillhouse&Sequoia		4.68%				108
VC Syndicate		71.92%				1660
Other VC		27.73%				640
Full sample		100%				2308
Panel C: Industry distribution						
	Full sample	Percent	Tencent&Alibaba	Percent	Matched sample	Percent
Energy	9	0.39%	-	-	2	0.30%
Materials	291	12.61%	-	-	-	-
Industrials	726	31.46%	2	3.70%	52	7.81%
Consumer Discretionary	230	9.97%	18	33.33%	140	21.02%
Consumer Staples	110	4.77%	-	-	15	2.25%
Health Care	227	9.84%	1	1.85%	40	6.01%
Financials	97	4.20%	5	9.26%	61	9.16%
Information Technology	516	22.36%	24	44.44%	318	47.75%
Telecommunication Services	4	0.17%	-	-	2	0.30%
Utilities	50	2.17%	-	-	21	3.15%
Real Estate	48	2.08%	4	7.41%	15	2.25%
Total	2308	100%	54	100%	666	100%
Panel D: Development stage distribution						
	Full sample	Percent	Tencent&Alibaba	Percent	Matched sample	Percent
Expansion Stage	793	34.36%	4	7.41%	131	19.67%
Early Stage	1028	44.54%	19	35.19%	272	40.84%
Startup Stage	192	8.32%	10	18.52%	81	12.16%
Seed Stage	295	12.78%	21	38.89%	182	27.33%
Total	2308	100%	54	100%	666	100%

Appendix D. Propensity score matching

Panel A: PSM balance test			
	Pseudo R2	LR chi2	MeanBias(%)
Unmatched	0.398	197.52	38.9
Nearest Neighbor Matching(n=4)	0.028	3.99	6.9
Radius Matching (n=4 cal=0.01)	0.028	3.75	7.1
Kernel Matching	0.009	1.37	4.2
Panel B: PSM results of Kernel Matching			
	Off support	On support	Total
Untreated	1271	666	1937
Treated	2	52	54
Total	1273	718	1991

Appendix E. The distribution density of propensity scores before and after matching



Appendix F. Comparison between new ventures backed by Tencent and Alibaba VCs and those backed by other investors

		Tencent & Alibaba VCs		Other investors		Differences
Tencent & Alibaba <i>versus</i>	Variables	N	Mean	N	Mean	t-Value
Matched sample (In Table 1 and Table 2)	VC total investment amount	52	2.322	666	1.472	-8.173***
	NO. of investing VCs	52	10.692	666	6.164	-4.231***
Hillhouse & Sequoia (In Table 4)	VC total investment amount	52	2.322	79	1.472	-8.173***
	NO. of investing VCs	52	10.692	79	9.386	-0.908
VC Syndication (In Table 5)	VC total investment amount	52	2.322	325	1.894	-4.4281***
	NO. of investing VCs	52	10.692	325	10.717	0.020
Matched sample (In Table 6)	VC total investment amount	50	2.254	111	2.255	0.004
	NO. of investing VCs	50	10.038	111	10.271	0.242