Product Market Competition, Venture Capital, and the Success of Entrepreneurial Firms

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Abstract

We document a positive effect of product market competition (PMC) on venture capital (VC) staging with the increased information asymmetry and survival risk as two plausible underlying mechanisms. To address endogeneity concerns, we employ an empirical identification strategy, i.e., large tariff rate reductions as an exogenous shock to an increase in PMC and observe that large tariff reductions lead to a greater likelihood of staged financing and number of financing rounds. We further find that the positive impact of PMC on VC staging is more pronounced when entrepreneurial firms are younger, operate in high-tech industries, or receive investments from less reputable and inexperienced VCs. We also find a collective positive impact of PMC and VC staging on the short-term and the long-term success of entrepreneurial firms. Overall, our paper sheds new light on the role of VC staging as a complement to PMC on enhancing entrepreneurial firms' success.

Keywords: Product market competition; Venture capital staging; Monitoring; Success

JEL: G24, G34

1. Introduction

Entrepreneurial firms are important engines of economic growth. In the United States, they represent 99.9% of all firms, employ half of all private-sector employees, and produce 16 times more patents per employee than large patenting firms (Bettignies and Duchêne, 2015). The creation and growth of these private firms often requires various forms of support, especially from venture capitalists (VC).[1] As Hellmann and Puri (2002), Hsu (2004), and Gompers et al. (2020) highlight, venture capitalists are investors who not only provide capital but also govern firms closely and are generally well-informed about firms' prospects and investment opportunities. The importance of VC investors to the success of entrepreneurial firms are widely discussed in the literature (e.g., Gompers et al. 2020; Piacentio, 2019), but there is little knowledge about their roles in the presence of product market competition (PMC).

We define PMC as the rivalry between companies selling similar products and services with the goal of achieving revenue, profit, market share and growth. PMC increases when there are large number of companies in the same industry offering a similar product or service. We focus on PMC and its impact on VC involvement for several reasons. First, PMC is a defining characteristic of many microeconomic models and a major determinant of a firm's business decisions (Stiglitz, 1981).[2] Second, PMC

[1] In the United States, compared to VC's funding from bank debt, the average amount of funding from VC over 2004–2007 was five times larger, amounting to $1,162,898 (Robb and Robinson, 2012). Moreover, VC-financed firms helped create many successful companies, including Apple, Facebook, Intel, Federal Express, and Microsoft (Gompers et al. 2020) and VC-backed companies generate 5%–7% of employment in the United States (Puri and Zarutskie, 2012).

[2] Intensive competition is associated with lower investment efficiency (Stoughton et al. 2017), less investment in research and development (Gu, 2016), lower financial leverage (Xu, 2012) and higher cash holdings (Hoberg et al. 2014; Lyandres and Palazzo, 2016).

plays an important role in mitigating agency problems (Hart, 1983; Shleifer and Vishny, 1997) and acts as an external governance mechanism to replace incompetent managers (Alchian, 1950; Allen and Gale, 2000; Chhaochharia et al. 2017; Stigler, 1958). Third, there is an extensive evidence in the literature regarding the disciplinary effect of PMC and its relation to firm governance; yet, the focus is predominantly for listed firms, and their findings are also mixed. For example, Giroud and Mueller (2011) point to a substitution effect between PMC and corporate governance, while Ward et al. (2009) and Schepker and Oh (2013) document complementary association. Motivated by prior studies questioning whether PMC acts as a complement or a substitute to corporate governance and their predominant focus on listed firms (Bharath and Hertzel, 2019; Giroud and Mueller, 2010; 2011; Stoughton et al. 2017), our paper aims to examine the role of PMC on the governance (monitoring) role of VCs in the context of small and private firms in the United States that are characterized with great business uncertainty and information asymmetry problems (Piacentio, 2019).

We draw upon important strands of literature that document the theoretical links between industry-wide competition and the roles of VCs. Particularly, the literature offers several competing views regarding the relation between competition and VC roles. The disciplinary power of competition hypothesis predicts that competition acts as an effective tool to discipline managers such that they reduce wasteful expenditures and self-serving behaviours (e.g., Hart, 1983; Schmidt, 1997). To the extent that PMC may reduce the benefit of VC monitoring, we predict that firms will rely less VC monitoring upon increased competitive pressure. We term this *governance effect of competition* hypothesis.

Alternatively, PMC could drive down expected profits, performance and may reduce entrepreneurial firms' likelihood of successful exits. Firms in competitive markets are constantly struggling for customers and market share that increases uncertainty about their future performance and hence the riskiness of their business environments. VC investors may alleviate this adverse effect of competition on entrepreneurial firms by providing finance, management and their networks (Gompers and Lerner, 1999; Gompers et al. 2020). Indeed, when comparing the performance of VC backed and non-VC-backed firms, Hellmann and Puri (2015), Chemmanur et al. (2011) and Berstein et al. (2016) find that presence of VCs enhances firms' exit probability and long-term performance. Therefore, we expect a greater reliance on VC monitoring for entrepreneurial firms facing more intense competitive pressure because of intensified survival risk. We predict a positive association between VC monitoring and PMC under this *survival risk* hypothesis.

PMC could also exacerbate information asymmetry caused by the fear of giving away sensitive information to competitors (Dedman and Lennox, 2009). To the extent that competitive industries are characterized by product substitutability, the revelation of private information would be beneficial to rivals and harmful to entrepreneurial firms' competitive advantage, thus creating proprietary costs of disclosure (Verrecchia, 1983). VC investors could mitigate this competition-driven-information asymmetry through staging of their capital that affectively preserves VC investors the right to abandon if negative information about the entrepreneurs is revealed (Sahlman, 1990). The presence of experienced and reputable VCs could also certify the quality of the entrepreneurial firms, and thus reduce the information

asymmetries between the entrepreneurial firm and other investors (Piacentio, 2019; Tykvová, 2017). Taken together, the above theories suggest that entrepreneurial firms will rely more on VC monitoring when facing with greater information asymmetry in more competitive markets. We refer to this mechanism as the *information asymmetry* hypothesis.

In a nutshell, these conflicting views suggest that the relation between PMC and VC monitoring is positive (if the survival risk and information asymmetry increasing effect of competition is true) or negative (if the governance effect of competition is validated). In other words, whether firms rely more on VC monitoring in a more competitive market is an empirical question that we will explore in this paper.

To analyse the roles of VCs in a competitive market, we construct a large cross section of entrepreneurial firms receiving first-round investments from 1990 to 2012.[3] Our sample focuses on the lead VCs' investments. We use Herfindahl-Hirschman index (HHI) as an inverse indicator for PMC. We employ VC staging as a measure of VC's monitoring mechanism.[4] Intuitively, VC investors can monitor the firms before they make refinancing decisions. The information about the viability of a project acquired through such monitoring helps VCs avoid giving money to unpromising projects. It prevents losses from inefficient continuation and creates a potential exit option for VCs. The higher the risk of the project, the higher the value this option has

[3] Our analysis focus on VC monitoring strategy at the first-round investment. Hence, we end our sample period in 2012 as it takes portfolio companies at least 5-7 years from the first-round financing to the exit stage.

[4] As presented in Appendix Table A3, more than 75% of portfolio firms in our sample has staged financing in the first round. Hence, we employ staged financing as a main measure of VC monitoring. We also use VC syndication as alternative measure of VC monitoring mechanism and present their results in Table 9 of the manuscript.

for VCs. The option to leave the project is similar to debt in that it limits potential financial losses (Ewens et al. 2018; Gompers, 1995; Tian, 2011).

Our empirical evidence suggests that PMC significantly increases both the likelihood of staged financing and the number of VC financing rounds. We document robust evidence that VCs will allocate a smaller proportion of their investments to the first financing round when the product market becomes more competitive. We also consider VC syndication as an alternative mechanism to monitor entrepreneurial firms and show that PMC leads to a greater likelihood of syndicated investments. Our results continue to hold when we employ the sales ratio of top four companies with the largest sales and the import penetration ratio as alternative measures of PMC.

One possible concern of our result is that it may be driven by unobserved factors that could be simultaneously correlated with both VC staging and PMC. We address this concern by employing an exogenous shock to PMC, i.e., large tariff rate reductions, as the shock that radically increases competition (Frésard and Valta, 2015; Huang et al. 2017; Xu, 2012). Large tariff reductions provide a valid setting for several reasons. First, large tariff reductions substantially increase the number of imports that intensify PMC (Huang et al. 2017; Xu, 2012). Second, tariff reductions are governed mainly by bilateral and multilateral trade agreements that affect traded products (Huang et al. 2017). While domestic firms may influence trade policy through political contributions or direct lobbying, it is implausible that this effort is associated with VCs' decisions to provide staged financing. Third, tariff reductions occur in many different industries at different points in time. This ensures a staggering occurrence of events that can mitigate any possible concern of confounding events. Our estimation

results indicate significant increases in the likelihood of staged financing and the number of financing rounds after large tariff reductions.

We next investigate whether the positive association between VC staging and PMC is moderated by entrepreneurial firms' internal governance. We employ board size (Eisenberg et al. 1998), whether CEO is the chairman of the board (Goyal and Park, 2002) and whether CEO is the founder of the company (Adam et al. 2009) as proxies of firms' internal governance. The empirical evidence suggests that PMC does not have a significant impact on internal governance mechanisms, and the governance mechanisms do not explain the effect of PMC on VC staged financing. These results invalidate the *governance effect of competition* hypothesis (Hart, 1983; Schmidt, 1997) that competition enhances firm internal governance and thus reduces the benefits of VC monitoring.

We further find that VC staged financing increases when entrepreneurial firms face with higher information asymmetry in a more competitive market. Particularly, we show that the positive association between PMC and VC staged financing increases for those entrepreneurial firms that are younger, operate in high-tech industries, and receive financing from irreputable and inexperienced VCs. These findings are consistent with the existing literature (Carpenter and Petersen, 2002; Fama and French (2002); Piacentio (2019)). In summary, this evidence lends support to the *informational asymmetry* hypothesis that informational asymmetry intensifies the impact of PMC on the VC staging.

We then analyse the impact of VC staging on entrepreneurial firms' success in a competitive market. Our probit regression results show that PMC leads to a lower

likelihood of IPO exit, but such negative effect reduces when firms receive multiple rounds of financing. This finding supports our *survival risk* hypothesis and suggests the complementary effect between PMC and VC staged financing on enhancing entrepreneurial firms' probability of successful exit. We then investigate the joint impact of PMC and VC staged financing on the firms' long-term performance after going public. We first divide our sample into four groups based on PMC and VC staging. Following Krishnan et al. (2011), we use the long-term stock returns during post-IPO periods as the proxy for the long-term performance. We find that the group of firms receiving staged financing in a competitive market shows the highest long-term performance. Overall, the findings show that VC staged financing enhances entrepreneurial firms' short-term and long-term performance in a competitive market.

This paper contributes to the literature in several ways. First, it contributes to the literature on the association between PMC and other firm internal governance mechanisms in the context of young and private entrepreneurial firms with high information asymmetry and survival risk. Using sample of listed firms in the U.S., existing literature show that PMC and corporate governance are either substitutes (Chen et al. 2015; Giroud and Mueller, 2010; Giroud and Mueller, 2011; Guadalupe and Wulf, 2010) or complements (Schepker and Oh, 2013; Ward et al. 2009). Our study sheds new light to this literature by documenting the complementary roles between VC involvement and PMC. Furthermore, while other studies emphasize the role of the VC monitoring (Bernstein et al. 2016) and PMC (Bayar and Chemmanur, 2011; Chemmanur et al. 2018; Cumming, 2008) on entrepreneurial firms' exit choices separately, our findings contributing to the literature by showing that the joint impact

of PMC and VC monitoring enhances entrepreneurial firms' success and their long-term performance. To the best of our knowledge, our paper is the first to address this issue.

With respect to the literature on VC monitoring, this study adds new insight on the determinants of VC monitoring by looking beyond firm-level attributes such as firm size (Chemmanur et al. 2018), technology (Chemmanur et al. 2018), geographically dispersed firms (Gompers et al. 2020) or firm industry (Bayar et al. 2020). Specifically, we study how an industry-wide factor such as PMC impacts on VC monitoring activities, i.e., VC staging. Our findings are important because the aggregate industry competition is largely exogenous and outside the control of an entrepreneurial firms and cannot be easily managed (e.g., through capital budgeting), and/or diversify away (e.g., through acquiring different asset classes or engaging in various projects).

A further contribution of our paper is the explicit consideration of the different economic channels through which PMC affects VC staging. Bettignies and Duchêne (2015) find that entrepreneurial firms are more likely to switch from bank financing to VC financing when PMC increases. They, however, did not explain why firms switch to VC financing in the period of heightened PMC. Our study expands Bettignies and Duchêne (2015) by showing that VC financing (especially those that are staged) increases in a competitive product market because PMC intensifies entrepreneurial firms' information asymmetry problem and survival risk. More importantly, by mitigating information asymmetry and survival risk, our findings emphasize the role of VC monitoring on entrepreneurial firms' success and that with VC monitoring, VC

financing may be more important than those of traditional financial intermediaries such as banks.

The remainder of this manuscript proceeds as follows. Section 2 provides details on data collection and variable descriptions. Section 3 shows empirical strategy and discuss the main empirical findings. Section 4 discusses information asymmetry, corporate governance, and performance. Section 5 presents several robustness tests. Section 6 concludes the paper.

2. Data Collection and Descriptive Statistics

2.1. Data Collection

We collect data on round-by-round VC investments between 1990 and 2012 from the Thomson Reuters VentureXpert database, one of the most popular data sources for venture capital research. We select all venture-related deals and require VCs to disclose the amount of financing and information of their capital under management. Both VCs and portfolio firms are based in the U.S. We limit our sample to first-round investments. We end our sample period in 2012 as it takes time for portfolio companies to the exit stage from the first-round financing stage. In addition, for each portfolio firm, we keep only investments made by lead VC firms. Lead VCs are defined as those who engage in the first-round financing and have the largest investment in the firm. After excluding observations with missing information of variables needed to conduct main regression analyses, our final sample has 10,050 observations of portfolio firms receiving lead VCs' investments in the first round from 1990 to 2012.

2.2. Measurements of Main Variables

We follow Curry and George (1983) and Tirole (1987) to use the Herfindahl-Hirschman index (HHI) as a proxy for product market competition. HHI is measured as the sum of squared market shares, $HHI_{jt} = \sum_{i=1}^{N_j} s_{ijt}^2$, where s_{ijt} is the market share of firm i in industry j in year t. It is noted that we are not able to observe the market share of all firms because the sales information of private firms is not available. Our measurement of PMC relies on the sample of firms listed in Compustat. The firm's market share is computed as its total sales scaled by the total sales of all firms in the same industry year. The industry is defined based on the first three digits of SIC codes, following Stoughton et al. (2017). As smaller HHI implies higher competition,[5,6] we calculate product market competition, PMC, as one minus HHI.

We also follow the existing literature to measure VC staged financing, *STAGING*, as a binary variable equal to one if the number of financing rounds is greater than one and zero otherwise (e.g., Dai, 2011). We also use the natural logarithm of the number of financing rounds, $LN(N\_ROUNDS)$, as an alternative indicator of VC staging.

[5] The Herfindahl-Hirschman index is often used as a measure of product market competition (Bustamante and Donangelo, 2017; Gu, 2016). Researchers also use text-based industry classification (Hoberg and Phillips, 2016; Hoberg et al. 2014; Morellec and Zhdanov, 2019; Stoughton et al. 2017). However, industry classifications using the text-based analysis of a firm's product description in 10-K reports are not available for VC-backed firms. We are, thus, unable to use the text-based HHI index in this context.

[6] One important point of clarification here is that, throughout this paper, the term "competitive industry" does not imply that the industry is perfectly competitive. Rather, it represents a relatively more competitive industry within our sample. Similarly, the term "non-competitive industry" refers to a relatively less competitive industry within our sample.

2.3. Summary Statistics

Table 1 provides the frequency distribution of first-round investments by lead VCs between 1990 and 2012. Panel A shows the distribution by industry where industry classifications are based on Subgroup 1 industries in the VentureXpert database. In terms of frequency, the Computer Software industry has the largest number of investments, making up 27.1% of the whole sample. It is followed by Internet Specific and Medical/Health industries with 2,341 (23.3%) and 1,134 (11.3%) investments, respectively. Biotechnology and Communications rank fourth and fifth on the list, with 765 (7.6%) and 754 (7.5%) investments, respectively. The remaining industries in Panel A have fewer than 600 investments, accounting for 23.3% of the total sample. From the statistics, we can identify that new VC investments made during 1990 and 2012 come from the following top five industries (in ascending order): Computer Software, Internet Specific, Medical/Health, Biotechnology, and Communications.

Table 1, Panel B, presents the distribution of lead VCs' investments by year. As shown in the table, the frequency of investments varies substantially across the years, from 112 (1.1% of total investments) in 1991 to 959 (9.5% of total investments) in 2000. We observe a generally increasing trend in the number of firms receiving first-round investments from lead VCs from 1990 to 2000 (198 in 1990 to 959 in 2000). However, the frequency of investments drops sharply from 959 in 2000 to 367 in 2001. While we observe another generally increasing trend from 2001 to 2007 (367 in 2001 to 641 in 2007), the period from 2001 to 2012 sees a trend that is less stable than that of 1990 to 2000. More specifically, we observe lower (higher) magnitudes, lower (higher) rates,

less consistent, and shorter cycles of growth in the frequency of investments for the period 2001 to 2006 (2009 to 2012).

[Insert Table 1 here]

Table 2 provides the summary statistics for PMC, VC staging, and variables for VC and portfolio-firm characteristics used in our baseline regression. The mean of the main independent variable, *PMC,* equals 0.89 with a large standard deviation of 0.09. On average, 76.0% of firms receive more than one round of financing, suggesting that a large majority of portfolio firms experience staged financing. The mean natural logarithm of the number of rounds of financing equals 1.06 with a standard deviation of 0.77. When portfolio firms obtain their first-round investment, their average company age equals 3.83, and about half of them are more than one year old. In terms of location, 58% of ventures are found in New York, Texas, Massachusetts, or California. In terms of the timing of financing, 17.1% of firms receive the first round of financing when they are in the expansion stage, while only 7.1% of firms obtain financing in the later stages. VCs' average age equals 13.27, with about 50% having ten years or more experience. The natural logarithm of VC capital under management has a mean of 6.05 with a median of 6.43. In terms of firm type, 86% of VC firms are private equity firms, while only 3% are corporate VCs.

3. Main Empirical Results

3.1. Product Market Competition and Venture Capital Staging

We first examine the relationship between product market competition and VC staging. We employ the following regression equation:

$$VC\_STAGING_{i,t}$$

$$= \alpha + \beta PMC_{j,t} + \delta Firm\ characteristics_{i,t} + \gamma VC\ Characteristics_{i,t}$$

$$+ Year\ FE + Industry\ FE + \varepsilon_{i,t}, \quad (1)$$

where *VC_STAGING* is measured by either *STAGING* or *LN(N_ROUNDS*). *STAGING* (VC staged financing) is a dummy variable equal to one if the number of financing rounds is greater than one and zero otherwise. *LN(N_ROUNDS)* is the natural logarithm of the number of financing rounds. *i*, *j*, and *t* represent firm *i* in industry *j* at time *t*, respectively. *PMC* is an industry measure of market competition which equals one minus *HHI*. We control for characteristics of portfolio firms such as firm age (*COM_AGE*), firms operating in either of four states: New York, Texas, Massachusetts, and California (*NY, TX, MA, CA*), firms receiving their first financing round in the expansion stage (*EXPANSION*), or in the later stage (*LATER*).[7] We also control for VC characteristics: the age of VCs (*VC_AGE*), the natural logarithm of the VC's capital under management (*VC_CAPITAL*), and the dummy variables indicating whether VCs are private equity (*PE*) or corporate venture capital (*CVC*). We include year and industry fixed effects to account for variations over time associated with unobservable movements affecting VC staging. The standard errors are robust to heteroskedasticity. The estimation results of Equation (1) are reported in Table 3.

<Insert Table 3 here>

[7] According to the VentureXpert database, an expansion stage is when private firms have commercially available products and are taking in ample revenue, if not profit. Many companies that get expansion funding have been in business for two to three years. A later stage is when private firms are looking to exit, given that its products and services have found suitable traction. Firms received funding here can be used for mergers and acquisitions or financing them for IPO.

The coefficient of *PMC* in Column (1) equals 0.109 and is statistically significant at 5%, suggesting that higher *PMC* leads to a higher probability of having more than one financing round. In terms of economic significance, one standard deviation increase in PMC results in an increase of 0.98% in the likelihood of staged financing, *ceteris paribus.* In Column (2) of Table 3, we analyse the firm's number of financing rounds. The result suggests a large and positive association between *PMC* and the natural logarithm of the number of rounds, though it is not statistically at conventional levels.[8]

In addition, firm age is negatively associated with VC staging, consistent with the findings of Tian (2012) and Liu and Tian (2020). Firms that operate in one of the four venture states: New York, Texas, Massachusetts, and California have a 1.6% higher probability of staged financing than firms in other states. The number of financing rounds also increases 2.7% when firms belong to the four venture states. The coefficients of *EXPANSION* and *LATER* in both columns are negative and statistically significant at 1%, suggesting that firms in mature stages are less likely to receive staged financing than firms in early stages. The age of VCs is also positively related to the likelihood of staged financing and the number of financing rounds, suggesting more experienced (older) VCs tend to strengthen monitoring in entrepreneurial firms. In contrast, young VCs could reduce the number of financing rounds to take the firms public earlier to gain reputation and raise new funds (Gompers, 1995). We find that private equity VCs tend to split financing into multiple rounds, while corporate VCs

[8] We concern that this insignificant result may be due to the endogeneity issue in the relationship between PMC and VC financing. After we address the endogeneity issue (presented later in Section 3.2), we obtain a statically significant impact of PMC on VC staging at all conventional levels.

prefer a smaller number of rounds relative to other VCs. Specifically, the coefficient of *PE* is positive and statistically significant in both columns at 1%. The coefficient of *CVC* is negative in both columns, but it is only statistically significant at 5% in Column (2).

3.2. Large Tariff Reductions and Venture Capital Staging

Although our evidence thus far lends some support for the positive relation between PMC and VC staging, it may be biased due to endogeneity problems. For example, some omitted factors may simultaneously influence competitive pressure in the product market and the VCs' decision to provide staged financing, creating a spurious association between them. It is also possible that VCs avoid investing in portfolio firms as they predict an increase in PMC. To identify the causal effect of PMC on VC staging, we employ large reductions in U.S. import tariff rates as an exogenous shock to an increase in PMC.

Tariff reductions provide a valid setting for identification because of the following reasons. First, large tariff rate reductions substantially increase the amount of imports and intensify PMC faced by domestic companies in the U.S. product markets due to foreign firms that export to U.S. markets (Huang et al. 2017; Xu, 2012). Second, tariff reductions are more likely to be exogenous to VC decisions. As Huang et al. (2017) discuss, tariff reductions in the U.S. are influenced primarily by global economic and political forces and are governed mainly by bilateral and multilateral trade agreements that affect traded products. While domestic firms may influence trade policies through their participation in trade advisory committees or direct lobbying of legislators, it is unlikely that the effort is associated with VCs' financing

strategies. Third, tariff reductions occur in many different industries at different points in time, thus creating a staggering occurrence of events that offer a better identification than a single event to mitigate possible concerns of confounding events. We examine the effect of large tariff reductions on domestic VC staging as follows:

$$VC\_STAGING_{i,j,t} = \alpha + \beta POST\_REDUCTION_{j,t} + \gamma Firm\ characteristics_{i,t} + \delta VC\ Characteristics_{i,t} + Year\ FE + Industry\ FE + \varepsilon_{i,j,t} \quad (2)$$

Where the subscripts *i*, *j* and *t* refer to firm *i*, industry *j*, and year *t*, respectively. The dependent variable is *VC_STAGING* defined earlier in Equation (1) above. *POST_REDUCTION* is an indicator variable that equals one if industry *j* has experienced a large tariff reduction in year *t* and zero otherwise.[9] Other variables are defined earlier in Equation (1) above. The coefficient of interest is β which captures the change in VC staged financing after a large tariff reduction for firms in industries that experience the reduction (treatment group) relative to the change in VC staged financing for firms in industries that do not experience a reduction (control group) during the event year. The estimation results of Equation (2) are reported in Table 4 below.

<Insert Table 4 here>

As shown in Column (1) of Table 4, we find a positive and statistically significant coefficient of *POST_REDUCTION,* suggesting that firms in industries that experience a large tariff reduction are more likely to receive more rounds of financing.

[9] We employ Huang et al. (2017)'s Table 1 to identify industries that experience a major tariff reduction in a given year.

Specifically, the evidence indicates an increase of 3.4% in the likelihood of staging after the post-tariff reduction shock. In Column (2), the coefficient of *POST_REDUCTION* remains positive and statistically significant at 1% as the natural logarithm of the number of financing rounds is employed as the dependent variable. About the economic significance of the effect, the number of financing rounds increases by 7.5% after the large tariff reduction shock, *ceteris paribus*. The coefficients of other control variables are quantitatively similar to those in Table 3.

As a robustness test, we also perform a matched sample test using 1:1 propensity score matching method and present the results in Columns (3) and (4) of Table 4. Similar to Columns (1) and (2), we define firms that operate in industries experiencing a major tariff reduction in a given year as the treatment group.[10] From the set of non-treatment group, we construct a sample of control firms that are similar to those in the treatment group except that they do not experience a large tariff reduction. We match the two groups utilising both VC and portfolio firm characteristics as well as by their industry and year. Specifically, for each treatment portfolio company, we match based on the basis of the determinants of VC staged financing used in our baseline regression models, including age (*COM_AGE*), firms operating in either of four states: New York, Texas, Massachusetts, and California (*NY, TX, MA, CA*), firms receiving their first financing round in the expansion stage (*EXPANSION*), or in the later stage (*LATER*), the age of VCs (*VC_AGE*), the natural

[10] We employ Huang et al. (2017)'s Table 1 to identify industries that experience a major tariff reduction in a given year.

logarithm of the VC's capital under management (*VC_CAPITAL*), and the dummy variables indicating whether VCs are private equity (*PE*). [11]

We then run a sample comprising only treatment and 1:1 matched control firms. As shown in Columns (3) and (4) of Table 4, the results show that the coefficient of *POST_REDUCTION* is negative and statistically significant in both columns, highlighting the positive relationship between a large tariff reduction and VC staging. The effect is also more pronounced in Columns (3) and (4). The likelihood of having more than one financing round increases 9.3% in the post-tariff reduction period, while the number of financing rounds increases by 14.9%. Altogether, the findings are consistent with our hypothesis that that VC firms will provide more rounds of financing when the product market becomes more completive.

4. Information Asymmetry, Corporate Governance, and Performance Mechanisms

4.1 Product Market Competition, Information Asymmetry, Venture Capital Staging

Next, we investigate whether PMC increases VC staging by exacerbating the information asymmetry problem caused by the fear of giving away sensitive information to competitors (Dedman and Lennox, 2009). A growing body of literature establishes that PMC acts as a deterring force against transparency (Dedman and Lennox, 2009; Verrecchia, 1983; Verrecchia and Weber, 2006). Firms operating in competitive industries tend to obfuscate information available to maintain their competitive position. This is consistent with the existence of proprietary costs arising from the adverse impact of information disclosure (Verrecchia, 1983).

[11] We present the summary statistics for the treatment and control portfolio companies during the year that precedes the tariff reduction in Table A4. Overall, the treatment and control groups are very similar.

VC' monitoring through staged financing can mitigate information asymmetry in two ways. First, as a monitor of portfolio firms, VCs commit significant time and resources to learn and evaluate different aspects of the firms (i.e., management team, products, technology, and the industry in which it competes) before each financing round. Thus, they can access and evaluate private information that is not publicly available. Second, VC investors can certify the quality of the entrepreneurial firms (Piacentio, 2019; Tykvová, 2017). VCs tend to invest in promising firms, creating a certification effect that mitigates information frictions to (other) outside investors. Consequently, based on the "information asymmetry" hypothesis, we expect a greater reliance on venture capital staging in a competitive market when firms have greater information asymmetry.

To investigate the extent to which information asymmetry exacerbates the positive association between PMC and VC staged financing, we interact information asymmetry measures with PMC and employ the following regression equation:

$$STAGING_{i,t} = \alpha + \beta_1 PMC_{j,t} + \beta_2 PMC_{j,t} * IA_{i,t} + \beta_3 IA_{i,t} + \gamma Firm\ characteristics_{i,t} + \delta VC\ Characteristics_{i,t} + Year\ FE + Industry\ FE + \varepsilon_{i,t} \quad (3)$$

All variables are the same as Equation (1) except for *IA*, which stands for information asymmetry measures.[12] We first distinguish entrepreneurial firms' information asymmetry based on their age and their primary industry. According to Fama and French (2002), more mature firms with an established reputation and a track record in their primary industry tend to have less information asymmetry. Hence, all

[12] We also estimate Equation (3) using *LN(N_ROUNDS)* as the dependent variable instead. The results are qualitatively consistent with those presented in Table 5. For brevity, those results are not presented here and are available from corresponding author upon request.

else being equal, we predict that more matured firms are less likely to receive VC staging in a competitive market. Similarly, firms in high-tech industries have greater profit and cash flow uncertainty and often invest in projects that are difficult to evaluate. Thus, these firms are more prone to information asymmetry problems than firms in other industries (e.g., Carpenter and Petersen, 2002).

<Insert Table 5 here>

The regression results for the effect of PMC on VC staged financing conditional on firm age (*COM_AGE*) and high-tech industry (*HIGH_TECH*) are provided in Columns (1) and (2), Table 5, respectively. As expected, the coefficient on the interaction term (*PMC*IA*) is positive and statistically significant in Columns (1) to (2), confirming that *PMC* increases VC staged financing for portfolio firms with greater information asymmetry. Specifically, we document in Column (1) that the effect of PMC on VC staged financing is lower when the age of entrepreneurial firms is higher. The coefficient of *PMC*COM_AGE* is negative at -0.015 and statistically significant at 5%. In Column (2), the interaction term, *PMC*HIGH_TECH,* is positive and statistically significant at 1%, suggesting that the effect between PMC and VC staging is more pronounced when firms operate in high-tech industries.

We continue to analyse the effect of PMC on VC staging conditional on VC reputation and experience.[13] Reputable VCs tend to certify good portfolio firms, thereby creating a certification effect that mitigates information frictions to outside investors (Nahata, 2008; Piacentio, 2019). As a result, we predict that the effect of PMC

[13] Due to data unavailability, we are unable to obtain private firm's disclosure measure in the VentureXpert database.

on VC staged financing is less pronounced when VCs are reputable. Following Nahata (2008), we measure VC reputation (*REPUTATION*) as the lead VC's cumulative market capitalization of IPOs. The estimation results are presented in Column (3), Table 5. As shown, the effect of PMC on VC staged financing is positive at 0.135 and statistically significant at 5%, but it becomes small when VC reputation is high. Specifically, the interaction, *PMC*REPUTATION,* equals -0.041 and is statistically significant at 5%.

Similarly, experienced VCs may reveal the unobserved quality of entrepreneurial firms to the market, addressing the information asymmetry problem and increasing the firms' value (Gompers et al. 2008; Megginson and Weiss, 1991; Morten, 2007). We predict that the effect of product market competition on VC staging will be intensified when VCs have less experience. We follow Gompers et al. (2008) and measure VCs' experience. We define *OVERALL_EXP* as the natural logarithm of the total number of investments made by the VC firm before a given year plus one. We also generate *I_EXP is* the natural logarithm of the total of investments made by the VC in the entrepreneurial firm's industry before a given year plus one. Columns (4) to (5), Table 5, show the estimation results for the effect of PMC on VC staging conditional on VC experience, *OVERALL_EXP* (overall experience) and *I_EXP* (industry experience), respectively. Overall, the empirical evidence is consistent with our prediction. Specifically, the interaction term, *PMC*OVERALL_EXP*, is negative at -0.061 and statistically significant at 5%. The interaction term, *PMC*I_EXP*, equals -0.093, and is statistically significant at 1% in Column (5), indicating that VCs that are experienced are less likely to stage financing into multiple rounds in a competitive

product market. The coefficients of *OVERALL_EXP* and *I_EXP* are both positive and statistically significant at 5% and 1% in Columns (4) and (5), respectively, suggesting that experienced VC investors prefer more than one round of financing.

4.2 Product Market Competition, VC Staging, and Corporate Governance of Entrepreneurial Firms

In this section, we investigate whether entrepreneurial firms' internal governance moderates the positive association between PMC and VC staging. Intuitively, to the extent that PMC reduces firm profit margins, it may compel managers to run the firms more efficiently by avoiding self-serving activities or opportunistic behaviours (Hart, 1983; Schmidt, 1997). As a result, the firms' internal governance is improved. A growing body of empirical literature supports this notion, suggesting that competition acts as a complementary to firm internal governance (e.g., Giroud and Mueller, 2010, 2011; Chhaochharia et al. 2016). If the "governance effect of competition" hypothesis holds in entrepreneurial firms, we expect that firms operating in a competitive market will receive a smaller number of financing rounds from VCs because of having better internal governance.

To examine whether governance moderates the positive association between PMC and VC staging, we first investigate whether PMC increases firm internal governance; we employ the following regression equation:

$$INTER\_GOV_{i,t} = \alpha + \beta PMC_{j,t} + \gamma Firm\ characteristics_{i,t} + \delta VC\ Characteristics_{i,t} + Year\ FE + Industry\ FE + \varepsilon_{i,t} \quad (4)$$

All the variables are defined earlier in Equation (1), except for *INTER_GOV*, which is a measurement of firms' internal governance. We use the following three measures of firm internal governance: *CEO_CHAIRMAN*, which is a binary variable equal to one if the CEO is the chairman of the board, and zero otherwise (Goyal and Park, 2002), *CEO_FOUNDER* which is a binary variable equal to one if the CEO is the founder of the firm (Adam et al. 2009), and *BOARD_SIZE* which is the natural logarithm of the number of directors plus one (Eisenberg et al. 1998). The results presented in Table A2 suggest that PMC has no impact on entrepreneurial firms' internal governance.

<Insert Table 6 here>

We then interact *PMC* with governance measures (*INTER_GOV*PMC*) and employ the following regression model:

$$STAGING_{i,t} = \alpha + \beta_1 PMC_{j,t} + \beta_2 INTER\_GOV_{i,t} + \beta_3 INTER\_GOV_{i,t} * PMC_{j,t} + \gamma Firm\ characteristics_{i,t} + \delta VC\ Characteristics_{i,t} + Year\ FE + Industry\ FE + \varepsilon_{i,t} \quad (5)$$

The variable of interest is the interaction term, *INTER_GOV*PMC*, which captures the conditional effect of PMC on firm internal governance. [14] If entrepreneurial firms with stronger internal governance receive less staged financing from their VC investors when there is an increase in PMC, then the coefficient of the interaction (β_3) will be negative and statistically significant. However, the results

[14] We also estimate Equation 5 using *LN(N_ROUNDS)* as the dependent variable instead. The results are qualitatively consistent with those presented in Table 6 and for brevity, they are not presented and are available from corresponding author upon request.

reported in Table 6 fail to provide supportive evidence for this prediction. In particular, the coefficients on the interaction term across all three proxies of firm internal governance are statistically insignificant. The coefficient of *PMC* remains positive and statistically significant in Columns (1) and (2), but it becomes statistically insignificant in Column (3). Overall, the findings suggest that the entrepreneurial firms' governance does not explain the effect of PMC on VC staging.

4.3. Product Market Competition, VC Staging, and the Success of Entrepreneurial Firms

This section investigates the success of entrepreneurial firms when they receive VC staged financing in a competitive product market. We use IPO as an indicator of success as it is considered the most successful exit pathway in the existing literature (e.g., Cumming and MacIntosh, 2003). Following Nanda et al. (2020).[15] We employ the following probit model:

$$IPO_i = \alpha + \beta_1 PMC_{j,t} + \beta_2 PMC_{j,t} * STAGING_{i,t} + \beta_3 STAGING_{i,t} + \beta_4 SYNDICATION_{i,t} + \gamma Firm\ characteristics_{i,t} + \delta VC\ Characteristics_{i,t} + Year\ FE + \varepsilon_{i,t}, \quad (6)$$

where IPO is a binary variable equal to one if the entrepreneurial firm goes public (IPO) and zero otherwise. $STAGING$ is a binary variable equal to one if the entrepreneurial firm receives more than one financing round and zero otherwise. The coefficient of interest is *PMC*STAGING* which captures the collective impact of VC staging and PMC on the likelihood of going public. Following Tian (2012), we control VC syndication ($SYNDICATION$), a binary variable indicating one if the

[15] Exits through mergers and acquisitions (trades) are sometimes disguised and are mixed with distress asset sales. Hence, we exclude M&As from the measurement of success.

entrepreneurial firm receives financing from more than one VC, zero otherwise. Other variables are defined the same way as in Equation (1). The standard errors are robust to heteroskedasticity.

<Insert Table 7 here>

To interpret the estimation output of probit regressions conveniently, we report the average marginal effects in Table 7. Column (1), Table 7 controls year-fixed effects – the year firms receive their first-round investment. Column (2) controls for both year and industry fixed effects. As shown, the coefficient estimate of *PMC* is negative at -0.100 and statistically significant at 10% in Column (1), suggesting that entrepreneurial firms are less likely to go public when the product market is more competitive. The coefficient of *PMC*STAGING* is equal to 0.128 and statistically significant 10% in Column (1), suggesting that the effect of competition on the likelihood of going public increases when firms receive more than one round of financing. This conditional effect remains positive and statistically significant at 5% in Column (2) when we include both year and industry fixed effects. The coefficient of *PMC* becomes -0.077 and statistically insignificant. Overall, the findings suggest that firms are more successful when receiving staged financing in a competitive market, emphasizing the complementary effect between VC staging and product market competition.

In conclusion, the findings in this section suggest that PMC has no impact on entrepreneurial firms' internal governance, but it intensifies the survival risk and information asymmetry problem. The results do not support the strand of literature that shows a substitution effect between corporate governance and PMC in the U.S.

listed firms (Bharath and Hertzel, 2019; Giroud and Mueller, 2010, 2011; Stoughton et al. 2017). However, they support the complementary effect between VC staging and PMC in VC-backed firms that VC staging, as a monitoring mechanism by VCs, mitigates information asymmetry and enhances the success of entrepreneurial firms

4.4. Product Market Competition, VC Staging, and post-IPO Performance

In the previous section, we document a complementary effect between VC staging and PMC on the success (the likelihood of going public) of entrepreneurial firms. Noted that the studies of the long-term performance of portfolio firms after their successful exits through IPO or merger and acquisition are also well documented in the existing literature (Levis, 2011; Krishnan et al. 2011; Nguyen and Vu, 2021). Krishnan et al. (2011) show that more reputable VCs tend to be involved in their portfolio firms' corporate governance, which leads to better post-IPO performance in the long-term. These findings motivate us to investigate the collective impact between VC staged financing and PMC on entrepreneurial firms' long-term performance after they go public. We argue that VC staged financing resolves the concerns caused by competition in the product market, resulting in a better post-IPO performance. To test this hypothesis, we divide entrepreneurial firms that exit through IPO into four distinct groups according to their *ex-ante* VC staging status (staged financing or non-staged financing) and whether they operate in a competitive or non-competitive market. The market is defined as competitive (non-competitive) if PMC is higher (lower) than its sample median.

<Insert Table 8 here>

Following Peyer and Vermaelen (2009), we estimate monthly abnormal returns by constructing calendar time equally-weighted portfolios through a variety of models, including the five-factor model (Fama and French, 2015), six-factor model (Carhart, 1997), and seven-factor model (Pástor and Stambaugh, 2003). These models are presented as follows:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_1 MKTRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 RMW_t + \beta_5 CMA_t + e_t \quad (7)$$

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_1 MKTRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 RMW_t + \beta_5 CMA_t + \beta_6 UMD_t + e_t \quad (8)$$

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_1 MKTRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 RMW_t + \beta_5 CMA_t + \beta_6 UMD_t + \beta_7 LQ_t + e_t \quad (9)$$

In these models, the dependent variable, ($R_{p,t} - R_{f,t}$), is the portfolio's monthly excess returns. α is the average monthly abnormal return. *MKTRF* is the excess returns on the market portfolio. *SMB is* the difference in returns between small and large market capitalization stock portfolios. *HML* is the difference in returns between high book-to-market and low book-to-market stock portfolios. *RMW* is the difference between the returns on diversified portfolios of stocks with robust and weak profitability. *CMA* is the difference in returns between high and low investment stock portfolios; *LIQ* is the liquidity factor. *UMD* is the momentum factor. We use the weighted OLS estimation strategy and report results in Table 8.

We report the long-term performance (α) of entrepreneurial firms over 24, 36, and 60 calendar months after going public for each subsample of firms defined by VC staging and competition. Panel A, Table 8, shows the strongest evidence of positive average monthly abnormal returns over 24, 36, and 60 calendar months for the sample of IPO firms that receive *ex-ante* staged financing in a competitive market. Specifically,

the average monthly abnormal return (α) equals 1.3%, 1.5%, and 1.7% when 5-factor, 6-factor, and 7-factor models are used, respectively.

We also find some evidence of VC staged financing's positive contribution to the performance of entrepreneurial firms post-IPO in a non-competitive market over 36 and 60 calendar months, providing some support to the positive effect of VC staged financing as in Tian (2011). The average monthly abnormal returns are small and statistically insignificant when firms do not receive staged financing, and the product market is not competitive across the sample periods of 24, 36, and 60 calendar months. This evidence supports the complementary effect between VC staged financing and PMC on the long-term performance of entrepreneurial firms, contributing to the literature on the roles of VCs during the post-IPO period (e.g., Krishnan et al. 2011; Tian, 2012).

5. Additional analyses

5.1 Product Market Competition, VC First-round Financing Allocation, and VC Syndication

The main regression results in Tables 3 to 7 suggest that VCs' monitoring through staged financing addresses firms' information asymmetry problem and reduces survival risk. In this section, we continue to explore the robustness of the argument by employing alternative VC investment strategies related to VCs' monitoring in their portfolio firms.

First, we analyse the effect of PMC on the investment allocation to the first-round financing. We measure the first-round investment allocation, *FR_INVESTMENT*, as the ratio between the first round's amount and the firm's total

VC investment amount received. As the first financing round typically has the highest informational asymmetries (Gompers, 1995), we anticipate that VCs will strategically allocate a smaller proportion of their intended investment to the first round in a more competitive market. The regression results of the first-round investment allocation are presented in Column (1) of Table 9. As shown, the coefficient of *PMC* is negative and statistically significant at 1%, indicating that VCs allocate less financing to the first round when the product market is competitive. Specifically, the ratio between the the investment allocation ratio reduces by 1.45% when PMC increases by one standard deviation, *ceteris paribus*.

<Insert Table 9 here>

Second, we employ two VC syndication measures: *SYNDICATION* is a dummy indicator equal to one if the number of VC investors is greater than one, and *FR_SYNDICATION* is a dummy variable if the number of VCs in the first round is greater than one and zero otherwise. We provide regression results of VC syndication in Columns (2) and (3) of Table 9. Theoretically, VC syndication is a joint investment of two or more VC firms for an equity stake in a portfolio firm. Prior literature suggests that syndicate of VCs often provide oversight and value-added support to their investment companies (e.g., Bernstein et al. 2016; Gompers and Lerner, 1999; Tian, 2012). Thus, we predict that VC syndication will also increase when the product market becomes more competitive. The results in Columns (2) and (3) of Table 9, are consistent with our prediction. The coefficient of *PMC* is positive and statistically significant at 1%. Specifically, one standard deviation increase in *PMC* (0.09) leads to

an increase of 1.49% and 1.31% in the likelihood of having more than one investor in all rounds and having more than one investor in the first round, respectively,

5.2 Alternative Measurements of Product Market Competition

This section investigates whether the regression analyses of VC strategies are sensitive to an alternative measurement of product market competition. We first measure industry concentration as the ratio between the sum of the sales of the four firms with the highest sales in a given industry year and the industry's total sales.[16] We take the natural logarithm of this industry concentration ratio and multiply it -1 to construct *PMC4*. The higher value of *PMC4* indicates higher industry competition. Table 10 provides regression results of VC staged financing. As shown, the coefficient of *PMC4* is positive and statistically significant at 1% and 10% in Columns (1) and (2), respectively, supporting the positive relationship between PMC and the likelihood of receiving more than one financing round and the number of financing rounds.

<Insert Table 10 here>

Following Xu (2012), we further employ import penetration as alternative measure of product market competition across industries. We measure import penetration for each industry each year as:

$$Import\_pen_{j,t} = \frac{Import_{j,t}}{Import_{j,t} + Domestic\_Production_{j,t}}, \quad (10)$$

where *Import* is the total dollar value of imports into industry *j* in year *t* and *Domestic_Production* is the total gross domestic product (GDP) of

[16] The industry classification is based on the first three digits of SIC codes.

industry *j* in year *t*. Industries are defined at the three-digit SIC code level. The import data is obtained from Schott's International Economics Resource Page,[17] which provides information about the total value of imports into the United States across industries. The domestic production data are retrieved from the Bureau of Economic Analysis of the U.S. Department of Commerce. From the GDP-by-industry tables in the Bureau's Annual Industry Accounts, we match the gross output with the three-digit SIC code industry classification.

We then report estimation results of Equation (1) using import penetration as a proxy for PMC in Table 10, Columns (3) and (4). As shown in Column (3), the coefficient of *Import_pen* is positive at 0.211 and statistically significant at the 1% level, implying that one standard deviation increase in import penetration (0.113) leads to an increase of 2.38% in the likelihood of having more one financing round. In Column (4), the coefficient of *Import_pen* of 0.559 continues to support the positive relationship between product market competition and staging. Specifically, one standard deviation increase in *Import_pen* leads to a 6.32% increase in the number of financing rounds, *ceteris paribus*. Overall, our results are robust to alternative measurements of PMC.

6. Conclusion

This paper employs a large sample of first-round investments by lead VCs in entrepreneurial firms between 1990 and 2012 and documents a positive relationship between PMC and VC staging. Particularly, PMC leads to a higher likelihood of staged financing and a larger number of financing rounds. To identify the causal effect of

[17] https://faculty.som.yale.edu/peterschott/international-trade-data/

PMC on VC staging, we employ large reductions in the U.S. import tariff rates as an exogenous shock to increases in PMC and find supportive evidence. We then show that the relationship between PMC and VC staging is stronger among entrepreneurial firms with greater information asymmetry and that firms' internal corporate governance does not moderate the relationship. We then examine the impact of VC staging on entrepreneurial firms' success when the product market becomes more competitive. We find that firms are more likely to go public (IPO) when they receive staged financing in a more competitive market. In addition, the long-term stock returns of the IPO firms are highest when they receive staged financing, and the product market is highly competitive. Overall, the results support the complementary effect between VC staging and PMC on the success of entrepreneurial firms.

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Table 1: The Distribution of Venture Capital Investments by Industry and Year

This table provides the frequency distribution of first-round investments by lead VCs between 1990 and 2012. Panel A (B) shows the distribution by industry (year). The industry classification is based on Subgroup 1 industries in VentureXpert.

Panel A: The industry distribution of VC investments

	Freq.	Percent	Cum.
Computer Software	2,719	27.05	27.05
Internet Specific	2,341	23.29	50.34
Medical/Health	1,134	11.28	61.62
Biotechnology	765	7.61	69.23
Communications	754	7.5	76.73
Semiconductor/Electric	562	5.59	82.32
Computer Hardware	407	4.05	86.37
Industrial/Energy	387	3.85	90.22
Consumer Related	325	3.23	93.45
Financial Services	246	2.45	95.9
Business Services	191	1.9	97.8
Transportation	73	0.73	98.53
Manufacturing	72	0.72	99.25
Construction	26	0.26	99.51
Computer Other	16	0.16	99.67
Utilities	8	0.08	99.75
Agriculture/Forestry/Fish	7	0.07	99.82
Other	17	0.17	99.99
Total	10,050	100	

Panel B: The yearly industry distribution of VC investments

	Freq.	Percent	Cum.
1990	198	1.97	1.97
1991	112	1.11	3.08
1992	170	1.69	4.78
1993	166	1.65	6.43
1994	195	1.94	8.37
1995	322	3.2	11.57
1996	413	4.11	15.68
1997	498	4.96	20.64
1998	502	5	25.63
1999	779	7.75	33.38
2000	959	9.54	42.93
2001	367	3.65	46.58
2002	348	3.46	50.04
2003	332	3.3	53.34
2004	420	4.18	57.52
2005	474	4.72	62.24
2006	546	5.43	67.67
2007	641	6.38	74.05
2008	568	5.65	79.7
2009	342	3.4	83.1
2010	450	4.48	87.58
2011	629	6.26	93.84
2012	619	6.16	100

Table 2: Descriptive Statistics

This table provides summary statistics (the numbers of observations, mean, standard deviation, 25th, 50th, and 75th percentile) of all variables used in our baseline regression in Equation (1). The sample consists of 10,050 first-round investments by lead VCs during the period between 1990 and 2012. The definition of all variables is presented in Appendix Table A1.

	Obs.	Mean	Std.	P25	P50	P75
PMC	10,050	0.89	0.09	0.88	0.93	0.95
STAGING	10,050	0.76	0.43	1	1	1
LN(N_ROUNDS)	10,050	1.06	0.77	0.69	1.10	1.61
COM_AGE	10,050	3.83	8.10	0	1	4
NY, TX, MA, CA	10,050	0.58	0.49	0	1	1
EXPANSION	10,050	0.17	0.38	0	0	0
LATER	10,050	0.07	0.26	0	0	0
VC_AGE	10,050	13.27	12.03	5	10	19
VC_CAPITAL	10,050	6.05	2.12	4.61	6.43	7.74
PE	10,050	0.86	0.35	1	1	1
CVC	10,050	0.03	0.17	0	0	0

Table 3: Product Market Competition and Venture Capital Staging

This table reports the regression results of VC staging on product market competition. *PMC* is a variable indicating competition which equals one minus the Herfindahl-Hirschman index (*HHI*). *STAGING* is a binary variable equal to one if the number of financing rounds is greater than one and zero otherwise. *LN(N_ROUNDS)* is the natural logarithm of the number of rounds. The definition of all variables is presented in Appendix Table A1. Year and industry fixed effects are included in all models. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Linear Regressions of VC VC Staging	
	STAGING	*LN(N_ROUNDS)*
	(1)	(2)
PMC	0.109**	0.079
	(0.052)	(0.092)
COM_AGE	-0.004***	-0.011***
	(0.001)	(0.001)
NY, TX, MA, CA	0.016*	0.027*
	(0.009)	(0.016)
EXPANSION	-0.055***	-0.161***
	(0.012)	(0.020)
LATER	-0.068***	-0.141***
	(0.019)	(0.032)
VC_AGE	0.001***	0.001*
	(0.000)	(0.001)
VC_CAPITAL	0.004	0.006
	(0.002)	(0.004)
PE	0.087***	0.166***
	(0.016)	(0.026)
CVC	-0.034	-0.096**
	(0.031)	(0.047)
CONS	0.589***	0.079
	(0.055)	(0.092)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Obs.	10,050	10,050
R-Squared	0.05	0.07

Table 4: Large Tariff Reductions and Venture Capital Stagingd Financing

This table reports the regression results of VC staging on large tariff reductions (*POST_REDUCTION*). *STAGING* is a binary variable equal to one if the number of financing rounds is greater than one and zero otherwise. *LN(N_ROUNDS)* is the natural logarithm of the number of rounds. The definition of all variables is presented in Appendix Table A1. Year and industry fixed effects are included in all models. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Linear Regressions of VC Staging			
	Full sample		*Matched sample*	
	STAGING	*LN(N_ROUNDS)*	*STAGING*	*LN(N_ROUNDS)*
	(1)	(2)	(3)	(4)
POST_REDUCTION	0.034**	0.075***	0.093***	0.149***
	(0.015)	(0.027)	(0.028)	(0.051)
COM_AGE	-0.004***	-0.009***	0.001	-0.004
	(0.001)	(0.001)	(0.002)	(0.003)
NY, TX, MA, CA	0.016*	0.038**	0.049*	0.099*
	(0.009)	(0.016)	(0.029)	(0.054)
EXPANSION	-0.058***	-0.158***	-0.064	-0.177**
	(0.013)	(0.021)	(0.043)	(0.072)
LATER	-0.058***	-0.123***	0.003	-0.061
	(0.020)	(0.033)	(0.054)	(0.098)
VC_AGE	0.001***	0.001*	0.001	-0.001
	(0.000)	(0.001)	(0.001)	(0.002)
VC_CAPITAL	0.005*	0.007*	0.01	0.021
	(0.003)	(0.004)	(0.008)	(0.013)
PE	0.086***	0.168***	0.043	0.129
	(0.016)	(0.027)	(0.050)	(0.080)
CVC	-0.038	-0.102**	0.037	-0.011
	(0.031)	(0.047)	(0.087)	(0.137)
CONS	0.876***	0.986***	0.093***	0.149***
	(0.144)	(0.219)	(0.028)	(0.051)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
No. of Obs.	9,404	9,404	910	910
R-Squared	0.06	0.09	0.09	0.11

Table 4: Large Tariff Reductions and Venture Capital Staging

This table reports the regression results of VC staging on large tariff reductions (*POST_REDUCTION*). *STAGING* is a binary variable equal to one if the number of financing rounds is greater than one and zero otherwise. *LN(N_ROUNDS)* is the natural logarithm of the number of rounds. The definition of all variables is presented in Appendix Table A1. Year and industry fixed effects are included in all models. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Linear Regressions of VC Staging	
	STAGING	*LN(N_ROUNDS)*
	(1)	(2)
POST_REDUCTION	0.052*	0.123**
	(0.028)	(0.050)
COM_AGE	-0.006***	-0.013***
	(0.002)	(0.003)
NY, TX, MA, CA	0.006	0.038
	(0.021)	(0.038)
EXPANSION	-0.016	-0.135***
	(0.031)	(0.051)
LATER	0.026	0.03
	(0.041)	(0.070)
VC_AGE	0.001	0.002
	(0.001)	(0.002)
VC_CAPITAL	0.004	0.007
	(0.006)	(0.010)
PE	0.087***	0.182***
	(0.033)	(0.054)
CVC	-0.059	-0.137
	(0.073)	(0.107)
CONS	0.015	0.152
	(0.116)	(0.237)
Year FE	Yes	Yes
Industry FE	Yes	Yes
No. of Obs.	1,795	1,795
R-Squared	0.07	0.11

Table 5: Product Market Competition, Venture Capital Staged Financing, and Information Asymmetry

This table reports regression results for the association between product market competition, information asymmetry, and VC staged financing. *PMC* is a variable indicating competition which equals one minus *HHI*. *STAGING* is a binary variable equal to one if the number of financing rounds is greater than one and zero otherwise. *COM_AGE* is the company's age measured as the number of years between the company's founding date and the first-round date. *HIGH_TECH* is a dummy variable that equals one if the firm operates in a high-tech industry and zero otherwise. *REPUTATION* is defined as the cumulative market capitalization of the private firms taken public by the VC. *OVERALL_EXP* is the natural logarithm of the total number of investments made by the VC prior to a given year plus one. *I_EXP is* the natural logarithm of the total investment made by the VC in the entrepreneurial firm's industry prior to a given year plus one. In all models, we include both portfolio firms and VCs' characteristics. Year and industry fixed effects are included across all models. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Linear Regression of VC Staged Financing				
	(1)	(2)	(3)	(4)	(5)
*PMC*COM_AGE*	-0.015**				
	(0.002)				
*PMC*HIGH_TECH*		0.095***			
		(0.018)			
*PMC*REPUTATION*			-0.041**		
			(0.020)		
REPUTATION			0.033*		
			(0.017)		
*PMC*OVERALL_EXP*				-0.061**	
				(0.027)	
OVERALL_EXP				0.060**	
				(0.024)	
*PMC*I_EXP*					-0.093***
					(0.029)
I_EXP					0.095***
					(0.026)
PMC	0.169***	-0.012	0.135**	0.356***	0.272***
	(0.052)	(0.056)	(0.066)	(0.122)	(0.076)
Firm characteristics	Yes	Yes	Yes	Yes	Yes
VC characteristics	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
No. of Obs.	10,050	10,050	8,270	10,011	9,626
R-Squared	0.05	0.05	0.04	0.05	0.05

Table 6: Product Market Competition, Governance, and Venture Capital Staged Financing

This table reports the regression results for the association between product market competition, internal corporate governance, and VC staged financing. *PMC* is a variable indicating competition which equals one minus *HHI*. *CEO_CHAIRMAN* is a binary variable that equals one if the CEO is the board's chairman and zero otherwise. *CEO_FOUNDER* is a binary variable that equals one if the CEO is the founder of the company. *BOARD_SIZE* is the natural logarithm of the number of directors plus one. *STAGING* is a binary variable equal to one if the number of financing rounds is greater than one and zero otherwise. Across all models, we include both portfolio firms' and VC characteristics. Year and industry fixed effects are included in all models. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Linear Regression of VC Staged Financing		
	(1)	(2)	(3)
*CEO_CHAIRMAN*PMC*	0.161		
	(0.290)		
CEO_CHAIRMAN	-0.148		
	(0.259)		
*CEO_FOUNDER*PMC*		0.202	
		(0.523)	
CEO_FOUNDER		-0.213	
		(0.478)	
*BOAD_SIZE*PMC*			-0.048
			(0.094)
BOARD_SIZE			0.094
			(0.084)
PMC	0.137*	0.144**	0.178
	(0.073)	(0.073)	(0.115)
CONS	0.671***	0.667***	0.611***
	(0.073)	(0.073)	(0.106)
Port. firm characteristics	Yes	Yes	Yes
VC characteristics	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
No. of Obs.	3,585	2,475	3,585
R-Squared	0.08	0.09	0.08

Table 7: Product market Competition, Venture Capital Staged Financing, and the Success of Entrepreneurial Firms

This table reports the average marginal effects for probit regressions of entrepreneurial firms' success on Venture Capital staged financing and product market competition. *IPO* is a binary variable that equals one if the firm exits successfully through IPO, 0 otherwise. *PMC* is a variable indicating competition which equals one minus *HHI*. *STAGING* is a binary variable equal to one if the number of financing rounds is greater than one and zero otherwise. The definition of all variables is presented in Appendix Table A1. Year fixed effects are included across all models, and industry fixed effects are included in Column (2). Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Probit regression of IPO	
	(1)	(2)
*PMC*STAGING*	0.128*	0.132**
	(0.068)	(0.067)
PMC	-0.100*	-0.077
	(0.053)	(0.054)
STAGING	-0.122**	-0.123**
	(0.060)	(0.060)
SYNDICATION	0.012	0.011
	(0.010)	(0.009)
COM_AGE	0.002***	0.002***
	(0.000)	(0.000)
NY, TX, MA, CA	0.005	0.007
	(0.006)	(0.006)
EXPANSION	-0.021**	-0.016**
	(0.008)	(0.008)
LATER	0.003	0.002
	(0.012)	(0.012)
VC_AGE	0.000*	0.000
	(0.000)	(0.000)
VC_CAPITAL	0.010***	0.010***
	(0.002)	(0.002)
PE	-0.006	-0.005
	(0.010)	(0.010)
CVC	0.024	0.023
	(0.019	(0.019)
CONS	-0.487	-0.779**
	(0.298)	(0.308)
Year FE	Yes	Yes
Industry FE	No	Yes
No. of Obs.	10,050	10,043
Pseudo R2	0.12	0.13

Table 8: Product Market Competition, Venture Capital Staging, and the Long-term IPO performance

This table reports monthly average abnormal returns (α) of a calendar time equally-weighted portfolios using factor models: five-factor model (Fama and French, 2015), six-factor model (Carhart, 1997), seven-factor model (Pástor and Stambaugh, 2003). We report α for the period of 24, 36, and 60 months after VC-backed IPOs, and we run regressions separately for four different groups according to VC staging and product market competition. Specifically, Panel A presents the results for firms that operate in a competitive market (i.e., *PMC* is greater than the sample median) and receive staged financing. The results for those that operate in a competitive market and do not receive VC staged financing are reported in Panel B. The results for those firms that receive staged financing and operate in the non-competitive market are presented in Panel C, while the results for those in the non-competitive market and do not receive VC staged financing are outlined in Panel D. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Models	5-factor	6-factor	7-factor
Panel A: Competitive and Staging			
24 months	0.005	0.007	0.011*
36 months	0.012*	0.014**	0.017***
60 months	0.013***	0.015***	0.016***
Panel B: Competitive and Not-Staging			
24 months	0.007	0.011	0.008
36 months	0.007	0.011	0.009
60 months	0.004	0.008	0.007
Panel C: Not competitive and staging			
24 months	0.004	0.004	0.005
36 months	0.007	0.009**	0.012**
60 months	0.009**	0.012***	0.013***
Panel D: Not competitive and Not staging			
24 months	-0.002	0.001	0.001
36 months	0.000	0.003	0.005
60 months	0.002	0.005	0.005

Table 9: Product Market Competition, First Round Financing Allocation, and Venture Capital Syndication

This table reports results for the regressions of first round financing allocation and VC syndication on product market competition. *FR_INVESTMENT* is the ratio between the first round's amount and the company's total investment. *SYNDICATION* is a dummy indicator equal to one if the number of VC investors is greater than one, zero otherwise. *FR_SYNDICATION* is a dummy variable that equals one if the number of VC firms in the first round is greater than one and zero otherwise. *PMC* is a variable indicating competition which equals one minus *HHI*. The definition of all other variables is presented in Appendix Table A1. Year and industry fixed effects are included in all models. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Linear Regression of First-round Financing Allocation and VC Syndication		
	FR_INVESTMENT	*SYNDICATION*	*FR_SYNDICATION*
	(1)	(2)	(3)
PMC	-0.161***	0.165***	0.146***
	(0.046)	(0.046)	(0.055)
COM_AGE	0.008***	-0.005***	-0.002***
	(0.001)	(0.001)	(0.001)
NY, TX, MA, CA	-0.043***	0.044***	0.057***
	(0.008)	(0.007)	(0.009)
EXPANSION	0.116***	-0.024**	-0.02
	(0.010)	(0.009)	(0.012)
LATER	0.102***	-0.036**	-0.042**
	(0.016)	(0.016)	(0.019)
VC_AGE	-0.001**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)
VC_CAPITAL	0.001	0.005***	0.019***
	(0.002)	(0.002)	(0.002)
PE	-0.057***	0.075***	0.117***
	(0.014)	(0.014)	(0.016)
CVC	0.062**	0.121***	0.144***
	(0.025)	(0.019)	(0.028)
CONS	0.614***	0.546***	0.331***
	(0.034)	(0.049)	(0.057)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
No. of Obs.	10,050	10,050	10,050
R-Squared	0.10	0.06	0.06

Table 10: Alternative Measures of Product Market Competition

This table reports results for the regressions of VC staging the alternative measurements of product market competition. *PMC4* equals minus 1 multiplied with the natural logarithm of the ratio between the sum of the sales of the four firms with highest sales in each industry year and the industry's total sales. *IMPORT_PEN* is the ratio of the total dollar value of imports and the total gross domestic product (GDP) of each industry in each year. *STAGING* is a binary variable equal to one if the numbers of financing rounds is greater than one, and zero otherwise. *LN(N_ROUNDS)* is the natural logarithm of the number of rounds. The definition of all other variables is presented in Appendix Table A 1. Year and industry fixed effects are included in all models. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Linear Regressions of VC Staging			
	STAGING	*LN(N_ROUNDS)*	*STAGING*	*LN(N_ROUNDS)*
	(1)	(2)	(3)	(4)
PMC4	0.005***	0.004*		
	(0.001)	(0.002)		
IMPORT_PEN			0.211***	0.559***
			(0.078)	(0.126)
COM_AGE	-0.004***	-0.011***	-0.005***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.002)
NY, TX, MA, CA	0.013	0.021	0.011	0.03
	(0.009)	(0.016)	(0.010)	(0.018)
EXPANSION	-0.054***	-0.160***	-0.043***	-0.151***
	(0.012)	(0.020)	(0.014)	(0.024)
LATER	-0.068***	-0.145***	-0.052**	-0.126***
	(0.020)	(0.032)	(0.023)	(0.038)
VC_AGE	0.001***	0.001*	0.001***	0.001*
	(0.000)	(0.001)	(0.000)	(0.001)
VC_CAPITAL	0.004	0.006	0.003	0.006
	(0.002)	(0.004)	(0.003)	(0.005)
PE	0.085***	0.162***	0.082***	0.162***
	(0.016)	(0.026)	(0.018)	(0.031)
CVC	-0.038	-0.106**	-0.047	-0.123**
	(0.031)	(0.047)	(0.035)	(0.053)
CONS	0.614***	0.885***	0.647**	0.882*
	(0.040)	(0.071)	(0.266)	(0.450)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
No. of Obs.	9,918	9,918	7,409	7,409
R-Squared	0.05	0.07	0.06	0.09

Appendix

Table A1: The definition of variable and sources of data

Variable name	Definition	Sources of data
STAGING	A binary variable that equals one if the number of rounds is greater than one, zero otherwise.	VentureXpert
LN(N_ROUNDS)	The natural logarithm of the number of rounds of financing.	VentureXpert
FR_INVESTMENT	The ratio between the first round's investment amount and the firm's total VC investment.	VentureXpert
SYNDICATION	A dummy indicator equal to one if the number of VC investors is greater than one, zero otherwise	VentureXpert
FR_SYNDICATION	A dummy variable that equals one if the number of VC firms in the first round is greater than one, and zero otherwise	VentureXpert
IPO	A binary variable that equals one if the firm exits successfully through IPO, zero otherwise.	VentureXpert
PMC	A binary variable indicating that competition equals one minus *HHI*.	Compustat
PMC4	Minus one multiplied with industry concentration ratio. The concentration ratio between the sum of the sales of the four firms with the highest sales in a given industry year and the industry's total sales.	Compustat
HHI	The Herfindahl-Hirschman index equals the total of squared market shares: $HHI_{jt} = \sum_{i=1}^{N_k} s_{ijt}^2$, where s_{ijt} is the market share of firm i in industry j at year t. Specifically, s_{ijt} is measured as the firm's total sales scaled by the total sales of all firms in the same industry each year. Industry classification is based on the first three digits of the SIC code.	Compustat
POST_REDUCTION	Defined as Huang *et al.* (2016)'s paper using U.S. import data for the period 1994-2011 from Peter Schott's website (see: http://faculty.som.yale.edu/peterschott/). The tariff reductions for each industry each year are identified as the tariff rate decreases relative to the previous year by more than three times the median tariff rate reduction during the sample period.	Huang *et al.* (2017)

COM_AGE	The company's age is measured as the number of years between the company's founding date and the first-round investment date.	VentureXpert
NY, TX, MA, CA	A binary variable equals one if the company operates in four states: New York, Texas, Massachusetts, and California, and zero otherwise.	VentureXpert
EXPANSION	A binary variable equals one if the company stage at the first round is expansion, zero otherwise.	VentureXpert
LATER	A binary variable equals one if the company stage at the first round is later, zero otherwise.	VentureXpert
VC_AGE	The age of lead VCs measured as the number of years between the VCs' founding date and the first-round date.	VentureXpert
VC_CAPITAL	The natural logarithm of the VC's capital under management.	VentureXpert
PE	A binary variable equals one if the VC is a private equity firm, zero otherwise.	VentureXpert
CVC	A binary variable equals one if the VC is a corporate venture capital firm, zero otherwise.	VentureXpert
IMPORT_PEN	The ratio of the total dollar value of imports and the total gross domestic product (GDP) of each industry in each year.	Schott's International Economics Resource Page; Bureau of Economic Analysis.
CEO_CHAIRMAN	A binary variable that equals one if the CEO is the board's chairman and zero otherwise.	VentureXpert
CEO_FOUNDER	A binary variable that equals one if the CEO is the founder of the company.	VentureXpert
BOARD_SIZE	The natural logarithm of the number of directors plus one	VentureXpert
HIGH_TECH	A dummy variable that equals one if the firm operates in a high-tech industry and zero otherwise.	VentureXpert
REPUTATION	The cumulative market capitalization of the private firms taken public by the VC	VentureXpert
OVERALL_EXP	The natural logarithm of the total number of investments made by the VC prior to a given year plus one.	VentureXpert

I_EXP	The natural logarithm of the total investment made by the VC in the entrepreneurial firm's industry prior to a given year plus one	VentureXpert

Table A2: Product Market Competition and Governance

This table reports the regression results for the association between product market competition and firm internal governance. *PMC* is a variable indicating competition which equals one minus HHI. *CEO_CHAIRMAN* is a binary variable that equals one if the CEO is the board's chairman, zero otherwise. *CEO_FOUNDER* is a binary variable that equals one if the CEO is the founder of the company. *BOARD_SIZE* is the natural logarithm of the number of directors plus one. The definition of all other variables is presented in Appendix A1. Year and industry fixed effects are included in all models. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	CEO_CHAIRMAN	*CEO_FOUNDER*	*BOARD_SIZE*
	(1)	(2)	(3)
PMC	0.011	0.023	0.233
	(0.048)	(0.029)	(0.132)
COM_AGE	-0.001	-0.001***	-0.003*
	(0.001)	(0.000)	(0.002)
NY, TX, MA, CA	-0.004	0.011*	0.084***
	(0.010)	(0.007)	(0.024)
EXPANSION	0.027**	0.006	-0.128***
	(0.014)	(0.009)	(0.030)
LATER	0.029	0.01	-0.126***
	(0.018)	(0.014)	(0.045)
VC_AGE	0.000	-0.000*	0.001
	(0.000)	(0.000)	(0.001)
VC_CAPITAL	0.006**	-0.002	0.025***
	(0.003)	(0.002)	(0.006)
PE	-0.044***	-0.016	0.053
	(0.016)	(0.013)	(0.035)
CVC	-0.036	-0.019	0.063
	(0.035)	(0.025)	(0.088)
CONS	0.026	0.017	0.307**
	(0.045)	(0.028)	(0.136)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Obs.	3,585	3,585	3,585
R-Squared	0.04	0.06	0.17

Table A3 Yearly Frequency Distribution of VC Staging

This table provides yearly frequencies distribution for VC staged financing between 1990 and 2012.

Year	Numbers of portfolio firms	%	% staging
1990	210	2.1%	77.6%
1991	130	1.3%	80.8%
1992	192	1.9%	82.3%
1993	169	1.7%	81.1%
1994	199	1.9%	88.9%
1995	331	3.2%	79.8%
1996	428	4.2%	82.9%
1997	507	5.0%	80.3%
1998	517	5.0%	78.7%
1999	793	7.7%	82.1%
2000	976	9.5%	70.9%
2001	373	3.6%	78.8%
2002	351	3.4%	81.2%
2003	333	3.3%	78.4%
2004	428	4.2%	82.2%
2005	481	4.7%	81.9%
2006	557	5.4%	72.2%
2007	649	6.3%	68.6%
2008	573	5.6%	69.8%
2009	342	3.3%	70.8%
2010	452	4.4%	70.1%
2011	629	6.1%	69.3%
2012	621	6%	66.7%
Total	10,241	100%	75.8%

Table A4: Descriptive statistics for propensity score matched samples

This table presents the firm characteristics of the treatment and control samples used to generate the results presented in Table 4. Firms are matched by age (*COM_AGE*), firms operating in either of four states: New York, Texas, Massachusetts, and California (*NY, TX, MA, CA*), firms receiving their first financing round in the expansion stage (*EXPANSION*), or in the later stage (*LATER*), the age of VCs (*VC_AGE*), the natural logarithm of the VC's capital under management (*VC_CAPITAL*), and the dummy variables indicating whether VCs are private equity (*PE*) or corporate venture capital (*CVC*).

		Obs.	Mean	Std.	P25	P50	P75
STAGING	Treatment	455	0.798	0.402	1.000	1.000	1.000
	Control	455	0.708	0.455	0.000	1.000	1.000
COM_AGE	Treatment	455	5.029	10.19	1.000	2.000	5.000
	Control	455	4.699	10.88	0.000	2.000	4.000
NY, TX, MA, CA	Treatment	455	0.505	0.501	0.000	1.000	1.000
	Control	455	0.556	0.497	0.000	1.000	1.000
EXPANSION	Treatment	455	0.152	0.359	0.000	0.000	0.000
	Control	455	0.16	0.367	0.000	0.000	0.000
LATER	Treatment	455	0.101	0.302	0.000	0.000	0.000
	Control	455	0.0835	0.277	0.000	0.000	0.000
VC_AGE	Treatment	455	13.15	11.34	5.000	11.000	18.000
	Treatment	455	13.76	12.78	5.000	11.000	20.000
VC_CAPITAL	Control	455	5.684	2.16	4.124	5.855	7.378
	Treatment	455	5.76	2.099	4.382	5.753	7.438
PE	Control	455	0.824	0.381	1.000	1.000	1.000
	Treatment	455	0.826	0.379	1.000	1.000	1.000
CVC	Control	455	0.0418	0.2	0.000	0.000	0.000
	Treatment	455	0.0308	0.173	0.000	0.000	0.000