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THE EFFECTS OF PRIVATE EQUITY AND VENTURE CAPITAL ON SALES AND EMPLOYMENT GROWTH IN SMALL AND MEDIUM-SIZED BUSINESSES

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ABSTRACT

We study the effects private equity (PE) and venture capital (VC) financing have on small and mid-sized single entity business establishments from 1995-2009. We focus on single entity establishments to cleanly examine the impact of PE and VC financing on establishments' organic growth. This study reveals that PE and VC financing have positive impacts on single entity business establishments' net sales and employment growth. The impact of PE financing on establishments' growth is slower and smaller than VC financing. However, we find that the benefit of PE financing lasts longer than VC financing. We also find that ethnic minority, female, and foreign business owners are less likely to receive PE and VC financing. Finally, we find evidence

that although establishments with government contracts are more likely to receive PE and VC financing, those contracts fail to produce marginal post-funding growth and employment benefits.

I.   Introduction

Private equity, and to a larger extent, venture capital funds are often criticized for not producing sufficient returns to limited partners. Venture capital has returned just a 6.07% average annual return for the 10-year period ended September 30, 2012, while private equity averaged 13.71%.[2] Meanwhile, over the same time frame, the NASDAQ averaged 10.27% per year. Despite the weak performance, the number of private equity funds has grown considerably. Given the generally weak returns, one may wonder if private equity and venture capital investing play significant roles to provide capital to privately owned businesses to grow. Do private equity and venture capital provide capital for diverse groups of business owners? Do they contribute to increased revenue and employment? Recent studies have examined the relationships between private equity leveraged buyouts and job creation/destruction (Davis, Haltiwanger, Jarmin, Lerner, and Miranda, 2011; Amess and Wright, 2012) and offer somewhat mixed views. However, these studies are focused on large firms where the opportunities for cost cutting are significant and access to capital, mostly via public sources where costs are relatively cheap, is almost guaranteed. Existing studies also fail to examine organic growth as they do not utilize single entity establishment level data.

This study takes a closer look at two main roles of private equity (PE) and venture capital (VC) financing: (1) What types of business owners' characteristics are more likely to receive PE and VC financing? (2) What is the differential impact of private equity (PE) and venture capital (VC) financing on small and medium-sized business establishments' net sales and employment growth? We focus on single entity establishments to closely examine the impact of PE and VC

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[2] Cambridge Associates LLC U.S. Venture Capital Index and Selected Benchmark Statistics, September 30, 2012. http://www.cambridgeassociates.com/pdf/Venture%20Capital%20Index.pdf. And Cambridge Associates LLC U.S. Private Equity Index and Selected Benchmark Statistics, September 30, 2012. http://www.cambridgeassociates.com/pdf/Private%20Equity%20Index.pdf.

financing on business establishments' organic growth. By examining data at the single establishment level, we are better able to isolate the impacts of receiving capital on the single business entity that is the beneficiary of such financing. This approach reduces the confounding noise associated with investigating acquisition and divestiture activities within a corporate entity with multiple business units and aggregated firm level data. This differentiates our study from other research in this area. For example, compared to Davis, Haltiwanger, Jarmin, Lerner, and Miranda (2011), our study examines the impact of both PE and VC on single entity establishment sales growth in addition to employment growth. Compare to Puri and Zarutskie (2012) as well as Chemmanur, Krishnan and Nandy (2011), our study covers smaller business entities with lower numbers of employees and smaller revenues. Relative to Guo, Hotchkiss and Song (2011), our business establishments are significantly smaller than $100 million. Furthermore, our sample covers more recent private equity transactions--those occurring after 2006. More importantly, our study compares the timing and long lasting impact of PE and VC financing on net sales and employment growth at the single entity establishments level.

Neumark, Wall and Zhang (2011) find that small businesses create more jobs than the rest of their sample. Still, the benefits of private equity investment in small and mid-sized businesses are not completely understood, in part because access to private equity capital for most small and mid-sized businesses is elusive and, as a result, data are sparse.[3] In fact, according to a recent report by the *Pepperdine Private Capital Markets Project*, just 15% of businesses that attempted to tap private equity in the second quarter of 2012 were successful.[4] For small and mid-sized companies, obtaining capital from private equity and venture capital

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[3] The Small Business Association defines small and mid-sized businesses as businesses with the average annual sales of $12 million with less than 500 employees. http://www.sba.gov/content/table-small-business-size-standards.
[4] Private Capital Access Survey Responses, Q2 2012.
http://bschool.pepperdine.edu/appliedresearch/research/pcmsurvey/content/Q2_2012_PCA.pdf.

often determines whether or not these business establishments survive. The consequences to those not successful raising capital are often severe. Citing the same Pepperdine research, for those businesses seeking capital, a failed attempt is expected to yield the following results: slower revenue growth (71%); hiring fewer employees than planned (54%); and reducing the number of employees (23%). These data suggest that private equity and venture capital play more important roles regarding growth and job creation in the small and medium-sized business space than for large businesses.

Several studies report on the impacts of venture capital (VC) financing on firms' growth and efficiency. Engel and Keilbach (2002), Davila, Foster, and Gupta (2003), and Alemany and Marti (2005) empirically show that VC-backed firms have significantly higher revenues and employment growth rates than non-VC-backed firms. Chemmanur, Krishnan and Nandy (2011) also find that VC-backed firms have higher operating efficiency than non-VC-backed firms due to screening and monitoring. Puri and Zarutskie (2012) report a performance gap between VC and non-VC financed firms. However, little is known about the scarce allocation of venture capital among various types of business owners. According to the *Pepperdine Private Capital Markets Project*, just 9% of businesses that attempted to tap into venture capital in the second quarter of 2012 were successful.[5]

In this study, we utilize the Institute for Exceptional Growth Companies (IEGC) or National Establishment Time-Series (NETS) database, which includes employment time series data on over 44 million business establishments during 1990-2009. The NETS database is coupled with private equity and venture capital transaction information from the Pitchbook database, as well as financial data from Dun & Bradstreet from 1995-2009. Because our research

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[5] Private Capital Access Survey Responses, Q2 2012.
http://bschool.pepperdine.edu/appliedresearch/research/pcmsurvey/content/Q2_2012_PCA.pdf.

focuses on the establishment level, these databases allow us to clearly investigate the impacts of

PE and VC on organic growth of small and mid-sized businesses, which are vital to the

economy.[6] To better understand their roles, our study investigates two relationships: 1) The

owners' characteristics displayed that result in increased rates of successfully securing PE or VC

financing; and 2) The revenue and employment growth (or destruction) that occurs with PE

versus VC financing at these establishments.

In order to investigate, we begin by constructing matched pair samples between single

entity establishments that received PE or VC financing with those that never received PE or VC

financing (control group). We further refine our sample by selecting single entity establishments

that have only grown organically. That is, our sample excludes those businesses that have

engaged in acquisitions or divestitures. We also analyze and present the results for

establishments that received only one round of PE or VC financing instead of those with multiple

rounds of financing. We find consistent evidence that minority (non-Caucasian), women, and

foreign business owners' establishments are significantly less likely to receive PE and VC

financing. This finding is consistent with the existing literature (Carter and Allen, 1997; Robb

and Fairlie, 2007; Cole and Mehran, 2011).

We also find that PE financing is not immediately impactful, either negatively or

positively, in affecting the establishments' sales and employment growth rates in the year of

financing. However, we do find that PE financing increases establishments' sales and

employment growth rates for three consecutive years after funding. This finding suggests it takes

some time to develop and execute on new strategies. By contrast, we find that VC financing

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[6] Small businesses represent 63% of net new private-sector jobs, 48.5% of private sector employment, and 46% of private-sector output. SBA Office of Advocacy, Frequently Asked Question, March 2014. http://www.sba.gov/sites/default/files/FAQ_March_2014_0.pdf..

immediately increases establishments' sales and employment growth rates indicating that a VC capital infusion is crucial for these businesses to execute their strategies. These findings indicate that PE and VC financing provide different impacts in terms of timing and sustainability of growth for small and mid-sized single entity business establishments. Our analysis also shows that business establishments with the government contracts are more likely to secure PE or VC financing. However, establishments with government contracts do not necessarily have higher sales and employment growth. While government contracts provide certifications and stable cash flows that allow business owners to secure funding from PE or VC, government contracts themselves do not provide growth. Our findings are robust throughout all additional tests.

The rest of this paper is organized as follows. In section II, we discuss existing literature that is relevant to our study. Section III describes the database comprised of IEGC (NETS), Dun & Bradstreet (D&B), and Pitchbook data, matching process, sample distribution, and univariate analysis. Section IV explains the methodology of regression estimations, hypotheses, and structural regression models. Section V discusses the first stage and second stage regression results. We examine the results from additional tests and robustness checks in section VI. Finally, section VII concludes with a summary of the main contributions of this study.

II.   Literature review

Several studies have examined the impact of business owners' access to capital and demographics on firms' growth. Although the growth of women- and minority-owned businesses are increasing at a rapid rate, it has been shown that both demographics are less likely to access venture capital. Each demographic group experiences their own set of complications that has fostered varying ideologies on their competency, affected their firms' leverage, and has further altered their confidence in their ability to secure external financing.

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Bates and Bradford (2008) report that minority-owned firms are capital constrained, which could be attributed to their differential treatment in financial markets. Robb (2012) reports minority-owned businesses experience higher loan denial probabilities and pay higher interest rates than non-minority-owned businesses. Hedge and Tumlinson (2011) identifies that VCs on average are more likely to invest in a startup when the VC and company have top level personnel of the same ethnicity, and co-ethnicity's predictive power is highest for early-round investments. Interestingly, Hedge and Tumlinson (2011) also finds that VCs tend to invest in geographically close companies, because collocation, like co-ethnicity, arguably facilitates superior monitoring and management of investments (Lerner 1995; Sorenson and Stuart 2005). The tendency of individuals to associate with others based on similar ascriptive characteristics is frequently referred to as homophily (Becker-Blease and Sohl 2007). These facts further reveal the disadvantage that minorities experience when seeking external financing. However, these financial restraints are not restricted to minorities only, but affect women entrepreneurs as well.

Women-owned businesses faced greater credit constraints than did similar startups owned by men and were slightly less likely to have high credit scores, compared with men (Robb 2012). Cole and Mehran (2011) further explain this in their findings that female business owners' firms are more likely to be credit constrained because they are more likely to be discouraged from applying for credit and more likely to be denied credit when they do apply. After conducting a study on the availability of credit to entrepreneurs of both genders, Marlow and Patton (2005) determined that women reported fewer problems with bank finance because they were less inclined to apply for such funding in the first instance as they presupposed failure.

Becker, Blease, and Sohl (2007) determine that women business owners are more likely to use angel capital financing rather than venture capital, but still receive a smaller amount of

external financing than their male colleagues. Unlike venture capital transactions, PE backed buyouts are much less likely to involve multiple rounds of financing (Valkama et al., 2013). This could further explain why women and minorities receive less capital to start and manage their ventures.

Studies have correlated the potential success of a start-up with the amount of equity financing it secures during the early stages of the process (Becker-Blease and Sohl, 2007). Robb (2012) establishes that Blacks and Hispanics start their firms with about half the capital that Whites use and women start their firms with a little over half of what men invest. Fairlie and Robb (2009) find that women-owned businesses prove to be less successful because they have less startup capital, less business human capital, and less prior work experience. If women are actively discriminated against or, due to lack of business experience or bargaining acumen, are in inherently weaker bargaining positions, women-owned businesses may receive capital investments at relatively unattractive rates compared to male-owned businesses (Becker-Blease and Sohl, 2007). Carter elaborates upon this argument to suggest that female-owned firms underperform in almost every respect in comparison to those owned by men and this can be linked directly to the issue of undercapitalization (Marlow and Patton 2005). This implies that the demand for external capital is higher for women and ethnic minority business owners. However, they are facing greater constraints to obtain external financing.

Lower levels of access to start-up capital frequently results in lower sales and profits, less employment, and higher business failure rates. In the first several years after receiving VC, VC-financed firms typically grow rapidly in terms of employment and sales relative to non-VC-financed firms and have lower failure rates relative to matched non-VC-financed firms (Puri and Zarutskie 2012). Carter and Allen (1997) find that the focus on the financial aspects of the

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business amount and effort required to obtain financial resources overwhelms the women entrepreneurs' lifestyle intentions and, thus, their chances for growth.

Based on the strand of these existing studies, we expect that owners' demographic characteristics significantly influence the likelihood of a business establishment to secure funding from VC and PE. In the first stage, our study examines the likelihood of female, ethnic minority, and business owners with foreign status[7] to successfully obtain PE or VC financing. Unlike other studies, however, we investigate at the establishment level.

The literature on the role of private equity continues to evolve with growth in the industry. Much of the research concerns performance, governance and ownership structure, operations, and value; however, more recently there has been increased focus on the intersection of jobs and financing, in part because of more plentiful data for analysis. Guo, Hotchkiss and Song (2011) examine 192 leveraged buyouts (LBOs) transactions with at least $100 million from 1990 to 2006 and compare it with the buyouts in the 1980s. They find that recent LBOs are more conservatively priced and use less leverage. They also find that LBOs provide significantly higher pre- and post-buyout returns while the impact on firms' operating performance is somewhat positive. Amess and Wright (2012) examine a data set of 533 LBOs from 1993-2004 and conclude that LBOs have no net employment effects. However, these LBO studies mostly focus on large firms and do not examine the impact of PE financing at the establishment level. A recent study by Davis, Haltiwanger, Jarmin, Lerner, and Miranda (2011) (DHJLM 2011 hereafter) examined this topic more thoroughly by analyzing 3,200 targets and their 150,000 establishments from Capital IQ, Dealogic, Thomson Reuters SDC, VentureXpert, and the

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[7] Existing literature has been salient about the ability of small business owners with foreign status to raise capital. Because business owners with foreign status face greater regulatory scrutiny, we believe that foreign business owners also face constraints when raising capital from PE or VC.

Longitudinal Business Database (LBD) at the U.S. Census Bureau. They conclude that LBOs result in significant job creation and destruction, which ultimately creates a loss of less than one percent of initial employment. However, their study does not examine the impact of LBOs on establishments' net sales growth.

Boucly, Sraer, Thesmar (2011) examine the impacts of LBOs on French firms and find that corporate behavior is affected. Targets become more profitable and grow faster than their peer group. They also increase capital expenditures. This research contrasts with previous studies that report less investment and/or downsizing. Tykvova and Borell (2012) examine a sample of European companies and report that LBO targets operate at reasonable debt limits, suggesting capacity for increased capital expenditures and growth opportunities. Lerner, Sorensen, and Stromberg (2011) investigate whether LBOs affect the firm's focus on long-term innovations. They find that patents applied for by firms in private equity transactions are more cited and show no significant shifts in the fundamental growth of innovations.

The literature on venture capital (VC) is largely concentrated on the role of the VC to generate information and to act as an intermediary between business owners and external investors. Puri and Zarutskie (2012) discern that venture capitalists might push their companies hard to grow quickly, deciding relatively rapidly which firms have the best chance of achieving a successful exit and terminating those that do not in the interest of allocating more capital to the likely winners in their portfolios. Gompers and Lerner (1999a) examine the role of venture capital firms on certifying initial public offerings (IPOs) of firms in which they invest. The role of venture capitalists is to generate information about these privately held firms prior to going public.[8] Existing studies also examine the role of VC on corporate governance of the firms

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[8] Gompers and Lerner (1999b) and Metrick (2007) provide complete coverage of characteristics, investment behavior, and roles venture capitalists play in private firms. Lerner and Schoar (2004) investigate the liquidity of

beyond its traditional financial intermediary role. Hellmann and Puri (2002) indicate that VCs play an important role in firms' management including replacing founder CEOs with external CEOs. Kaplan and Stromberg (2003) show that VCs set extensive corporate governance and incentive structures at the time of their initial investments. Recent studies on venture capital (VC) financing focus on the impact of VCs on firms' growth and operating performance. Chemanur, Krishnan, and Nandy (2011) find that venture capitalists contribute to firms' efficiency by screening the firms with higher efficiency prior to financing and by monitoring the firms during VC financing. They find that efficiency gains come from both increase in sales and lower production costs. Puri and Zarutskie (2012) find that VC-financed firms have lower failure rates and are larger but not more profitable than non-VC firms. However, these studies have not examined the impact of VC financing at the establishments level.

A few studies examine the role of VC on firms' sales and employment growth. Engel and Keilbach (2002) find that German firms that receive venture capital (VC) financing display higher sales growth rates. They find that VC helps business owners commercialize their products rather than to foster new innovations. Davila, Foster, and Gupta (2003) examine 193 VC-backed firms and compare them with 301 non-VC-backed U.S. firms and discover the positive impact of VC financing on firms' subsequent valuation and employment growth. Alemany and Marti (2005) examine the role of VC on small businesses in Spain and find that employment, sales, gross margin, total assets, intangible assets, and corporate taxes grow faster in VC-backed firms than non-VC-backed firms over three consecutive years. Puri and Zarutskie (2012) studied this

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private equity and venture capital investments. Phalippou and Gottschalg (2009) point out that private equity funds underperform the S&P 500 by 3%. Metrick and Yasuda (2010) contrast the performance and fee structure in private equity funds from buyouts versus venture capital. Lerner (2011) indicates a declining trend of private equity in recent years. Ivashina and Kovner (2011) find that firms that received private equity financing also receive favorable loan terms. Demiroglu and James (2010) find that the reputation of the private equity group determines the success of LBO transactions.

further and found that after VC financing, companies saw a very rapid growth in the employment of VC-financed firms relative to non-VC-financed firms. While VC-financed and non-VC-financed firms are matched at an average of 26 employees each, three years later VC-financed firms have on average 55 employees while non-VC-financed firms have 38 employees (Puri and Zarutskie 2012). Therefore, growth in variables such as sales, gross margin, and employment should be related to the increase in assets that results from both VC funding and an easier access to other external sources of funds (Martí, Menéndez-Requejo, and Rottke 2013).

Beck, Demirgüç-Kunt, and Maksimovic (2008) report that firms that undergo more financial obstacles tend to use more external financing. Commonly, this results in a cycle of more financial obstacles and the need for more external financing. With a study conducted in 48 countries, Beck et al. (2008) concluded that firm size, financial development, and property rights protection were important factors in explaining the observed variation in financing patterns. By comparison, larger firms are able to rely on different sources of external financing in order to increase capital with more ease than small firms.

Overall, the existing literature indicates that the impact of both PE and VC on firms' growth and operating performance is still mixed. More importantly, the literature has not made a direct comparison between the timing and long lasting impact of PE versus VC financing on the single entity establishment level for small and mid-sized businesses. Therefore, there still exists a significant knowledge gap with regard to understanding the role of private equity and venture capital on small and mid-sized establishments' growth and employment where access to capital is unlikely for most. Our research fills this gap.

III.   Sample data

This study utilizes the Institute for Exceptional Growth Companies (IEGC) database, which includes the National Establishment Time-Series (NETS) data provided from Walls & Associates.[9] Walls & Associates in collaboration with Dun & Bradstreet (D&B) marketing information created the entire NETS database, which contains 350 longitudinal data variables such as annual net sales, employment, business owners' demographic, and geographic locations for 44,241,504 business establishments between January 1990 and January 2010.[10] Several studies have utilized and have validated the accuracy of the NETS database (Neumark, Wall, and Zhang, 2011; Toffel and Short, 2011; Levine and Toffel, 2010).[11] We compare the NETS database with U.S. Census data. Panel A of Appendix A presents a comparison of total employment from the Business Dynamic Statistics data from the U.S. Census with the NETS database. We find that NETS contains a higher number of establishments and therefore reports larger employment numbers from 1995 to 2010.[12] Neumark, Wall, and Zhang (2011) explain that employment from the NETS database is larger than U.S. Census data because NETS counts each job in each business establishment and the NETS has better coverage of small business owners than the U.S. Census.

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[9] Information for the NETS database variables is available online from the Institute for Exceptional Growth Companies (IEGC) at http://143.235.14.134/downloads/NETSDatabaseDescription2013.pdf.

[10] Walls & Associates estimates establishment sales by using the firm-level reported sales (when available) and employment to allocate sales to all of the firm's establishments (even though some may be "intermediate production and distribution facilities"). The point is that these establishments will not directly have sales; but the estimates are intended to capture their overall contribution to revenue of the firm. Employment for each establishment in the NETS database is an actual number of employees rather than an estimated number of employees. January 1990 represents 1989 calendar year data and January 2010 represents 2009 calendar year data.

[11] See http://143.235.14.134/insights.iegc for a complete list of existing studies that utilize the NETS and D&B database.

[12] The Business Dynamic Statistics data from the U.S. Census is compiled every mid-March while the NETS database is compiled every January.

We also compare the total net sales receipts between the Statistics of U.S. Businesses and NETS for 1997, 2002, and 2007.[13] Panel B of Appendix A shows that the total sales receipts from NETS is smaller than sales receipts from the Statistics of U.S. Businesses despite NETS containing more establishments. These findings suggest that the NETS database may overestimate the numbers of employment and/or it may underestimate the net sales receipt per establishment. To address these concerns, we conduct two additional robustness tests to verify our results in Section IV.

The IEGC merged the NETS database with data from Pitchbook, which contains information on whether these establishments received private equity (PE) or venture capital (VC) investment, was acquired by other firms, or is in the process of going public.[14] The Pitchbook data consists of private financing deals on over 35,000 establishments during 1995 to 2009 and it indicates whether a business establishment receives PE or VC financing (see Appendix B).

The Pitchbook and NETS merged ("POF" data) is provided directly from the Institute for Exceptional Growth Companies (IEGC).[15] It consists of 26,838 observations across 16,482 establishments because some establishments received multiple rounds of financing (see Panel A of Table 1). We find 16,802 observations are financed from private equity and 7,555 observations are financed from venture capital from 1995 to 2009. The rest of the 2,481 observations are either acquired or are in the process of going public. Panel B of Table 1

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[13] The Statistics of U.S. Businesses collects total sales receipts every 5 years. The first year collected relevant to our study is 1992.

[14] Information for the Pitchbook data is available at http://pitchbook.com/PitchBook_Research.html.

[15] Walls and Associates merged NETS and Pitchbook data based on the establishment name, location, and HQDUNS (headquarter DUNS number). They also matched based on the timing of the NETS and Pitchbook data (i.e. January 1996 NETS data is merged with 1995 year-end Pitchbook data since the NETS data is updated every January and the Pitchbook data is updated at the end of the calendar year). The merging process is explained and available at http://growtheconomy.org/data.lasso and http://growtheconomy.org/faq.lasso.

indicates that over 57% of these establishments are privately held companies and 23% were acquired or merged with other firms.

3.1 Matching process

We merge the POF data back to the IEGC data to find matched establishments (control establishments) for these 16,802 establishments that received PE financing and 7,555 establishments that received VC financing. We select single entity business establishments that never engaged in acquisitions and/or sales or purchases of business entities, over the entire sample periods. We define single entity business establishments as establishments with no branches, subsidiaries, or establishments in other locations.[16] To be included, the control (matching) establishments must not have received PE or VC financing during the entire period of 1995 to 2009. Therefore, the control establishments are not found in the Pitchbook database. The control establishments also never engaged in acquisitions, sale, or purchase of business entities, and also meet our criteria as single entity establishments. The matching process is conducted each year at the establishment level rather than at the parent companies level given both the NETS and Pitchbook data are at the establishment level. DHJLM (2011) indicate that the establishment level data provides a clean analysis for organic job creation or destruction at each business establishment by separating it from the acquisitions and sale of operating units. The matching process is conducted with replacements because the control establishments have similar opportunities to obtain PE or VC financing as the PE or VC-financed establishments.

We create matches for the PE-financed establishments with the control establishments based on the 2-digit Standard Industrial Classification (SIC) code, annual net sales, and number

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[16] The NETS (IEGC) database contains information regarding subsidiaries (Subsidiary) and number of establishments (Kids). We define single entity establishments as establishments with zero Subsidiary and zero Kids.

of employees during the same corresponding years when the establishments received PE financing. We match-pair the VC financing establishments with non-VC financing (control) establishments based on the 2-digit SIC code, annual net sales, number of employees, and state where establishments are located during the same corresponding years when establishments received VC financing. We include states as one of the matching criteria for VC because VC-investment portfolio companies and similar technologies are usually regionally confined while PE portfolio companies are more likely to be distributed nationwide. We require both PE and VC control establishments to have different D-U-N-S headquarters numbers indicating that the control establishments are different from the PE and VC-financed establishments. This produces our match-pair sample.

[Insert Table 1 here]

Table 1 indicates that we find 13,538 (80%) matches for PE financing and 6,800 (90%) for VC financing. However, 40% of PE matches and 53% of VC matches have missing data such as net sales, number of employees, and other important variables. We also applied a 1% right tail truncation due to outliers from annual sales growth and employment growth. There are 4,138 of PE matches with multiple establishments and 811 VC matches with multiple establishments. Since we restrict our sample based on our definition of single entity establishments to cleanly examine the impact of PE and VC financing on establishments' organic growth and other sample selection criteria stated above, the final sample consists of 3,874 establishments that received PE financing and 3,074 of these establishments received only one round of PE financing. These establishments that received PE financing also never received VC financing. Similarly, we find

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2,291 establishments received VC financing and 756 of these establishments received VC

financing once. These establishments never received PE financing. In panel D of Table 1, we

show that over 31% of establishments received multiple rounds of PE and over 69% of

establishments received multiple rounds of VC financing. This implies that VC tends to provide

more rounds of financing to these establishments than PE.

[Insert Table 2 here]

3.2 Sample distribution

Table 2 provides a description of our final match-pair sample and 44,241,504 business

establishments from the whole IEGC (NETS) database across 48 Fama-French industry

classifications (Fama and French, 1997). The majority of establishments that received PE and

VC financing are classified under business services (SIC 73)[17] and wholesale (SIC 50) industries,

which is consistent with the entire IEGC database. Private equity tends to finance wholesale,

retail, transportation, and other establishments that generate consistent cash flows and produce

machinery while venture capital tends to finance establishments that produce new innovations

such as computers, computer chips, and medical equipment. Business establishments from the

IEGC (NETS) database are also highly concentrated in business services (SIC 73).

Table 3 indicates that there is geographic clustering for most establishments that received

PE or VC financing. The highest concentrations of establishments that received PE financing are

located in California (12.85%), Texas (9.19%), New York (7.49%), and Florida (5.63%).

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[17] SIC 73 is defined as establishments that primarily engaged in rendering services to business establishments on a contract or fee basis, such as advertising, credit reporting, collection of claims, mailing, reproduction, stenographic, news syndicates, computer programming, photocopying, duplicating, data processing, services to buildings, and supply services.

Similarly, establishments from the entire IEGC (NETS) database are also concentrated in California, Texas, Florida, and New York. Most establishments that received VC financing reside in California (43.13%), Massachusetts (12.53%), Texas (4.89%), and New York (5.06%). Overall, the match-pair sample for both PE and VC-financed are consistent with the IEGC (NETS) database.

[Insert Table 3 here]

Table 4 presents the Pearson correlation coefficients among variables that are relevant in this study for the match-pair sample. The correlation coefficients are examined for both establishments that received financing and their corresponding control establishments that never received financing. Panel A of Table 4 presents the correlations for PE financing establishments relative to their corresponding control establishments. We find that there is positive and significant correlations between receiving PE financing (PEFUNDED) and annual employment growth on the corresponding year (EMPGR0) and sales growth (SALEGR0).We find business owners who are considered minority (non-Caucasian), female gender, and foreign status are negatively correlated with PE financing. We also find that a decrease in Dun & Bradstreet credit rating (CHGDBR-) increases the likelihood of PE financing and vice versa. This evidence suggests that there may be a substitution effect between bank loans and PE financing. The Dun & Bradstreet change in maximum Paydex scores (CHGPAYDEX) are positively related with receiving PE financing indicating that establishments with slower payments are less likely to obtain PE financing. We also find that higher levels of unemployment rates in the county (UNEMP) where the establishment resides is negatively related to PE financing. We find

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establishments with government contracts (GCONTRACT) are positively related with PE financing while establishments with a legal status of a corporation (CORP) and older establishments (FIRMAGE) are negatively related with PE financing. We find no significant correlations for PE financing across different major states, except Texas.

[Insert Table 4 here]

Panel B of Table 4 presents the correlations for VC financing establishments relative to their corresponding control establishments. We find a positive and significant correlation between receiving VC financing (VCFUNDED) and annual sales (SALEGR0) and employment growth (EMPGR0) on the corresponding year. We also find that business owners who are considered minority (non-Caucasian), female gender, and foreign status are negatively correlated with obtaining VC financing. We find that the previous year changes in establishments' net sales and employment are positively related with receiving VC financing. This indicates that VCs are searching for establishments with high growth in the prior year. We also find that the higher level of unemployment rate in the county where the establishment resides is negatively related with VC financing. We find establishment with government contracts and corporations are positively related to VC financing while older establishments are negatively related with VC funding. VC financing is positively correlated with California and Massachusetts (CA and MA) and negatively related with New York and Texas (NY and TX). We also do not find significantly high correlations among the independent variables that are used in our regressions for both PE and VC. Therefore, we do not expect multicollinearity issues on our analysis.

[Insert Table 5 here]

3.3 Univariate analysis

Table 5 provides the univariate analysis for establishments that received PE or VC financing compared to their corresponding control group that never received PE or VC financing. Panel A of Table 5 indicates that PE financing is less likely to be accessed by minority owners, female owners, and owners with foreign status. Establishments with PE financing have a larger reduction in their Paydex score than their control group. We also find establishments with PE financing have the change in their D&B rating toward lower ratings suggesting PE financing may act as a substitute for bank loans. We find that establishments with PE financing reside in the counties with lower unemployment rates than their control group. Corporations and older establishments have a lower likelihood of obtaining PE financing while establishments with government contracts tend to have a higher likelihood of PE funding.

Prior to a financing event, the annual net sales and number of employees are not statistically significant, which indicates that our matching process yields a very close control entity for each establishment that received PE financing. On average, the annual net sales of our sample companies with PE financing are $8.96 million and the average number of employees is 95.[18] Comparing our sample with DHJLM (2011), we find that our sample firms have a significantly lower numbers of employees.[19] This difference in firms' sizes between our sample and DHJLM (2011) yields different results when we compare our results with theirs.

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[18] The untabulated median annual net sales is only $3.5 million and the median for number of employees is only 40 employees.

[19] Figure 4 of Davis et al. (2011) shows that over 90% of private equity target firms' buyouts have 500+ employees.

Panel B of Table 5 presents the univariate analysis for VC financing versus establishments that never received any financing from PE or VC. VC financing is less likely to be given to minority owners, female owners, and foreign owners. We also find establishments with VC financing have a change in their D&B rating toward lower rating suggesting VC financing may act as a substitute for bank loans. We find that the change in annual net sales and the change in number of employees in one year prior to VC financing are higher than the control group. This indicates that VCs are funding establishments with higher growth in the year prior to their financing. We find that most establishments with VC financing are corporations, younger, and those with government contracts. The untabulated average annual sales on the VC sample are $6 million (median $2.9 million) and the average number of employees is 45 (median 30) employees.

We also compare the samples of PE and VC-funded establishments with all establishments in the NETS (IEGC) database. The third column of Table 5 presents the summary statistics for all establishments in the NETS database. We find that owners' demographics of our PE-funded sample are not statistically different from the entire NETS database, except for the percentage of women CEOs (WCEO). We find that NETS has a higher average of WCEO than our PE-funded sample. We find the VC-funded sample has significantly lower percentages of foreign owners (FOREIGN) and women CEOs (WCEO) compared to NETS. We also find that the VC-funded sample has a larger change in employment (CHGEMP) than NETS. We find that there are significant differences in the percentage of corporations (CORP), firm age (FIRMAGE), and percentage of government contracts (GCONTRACT) between PE and VC-funded samples within the entire NETS database. Therefore, we advise readers to interpret and to generalize our results with caution.

Table 6 presents the univariate analysis for differences-in-differences to examine the impact of PE and VC financing on establishments' annual sales and employment during one year prior versus one year after financing and compares those establishments with the control establishments that never received PE or VC financing during the same periods. We find that the change in annual net sales for establishments with PE financing is $1.443 million higher than those without PE financing during the year prior to one year after financing. We also find that establishments with PE financing create five more employees during one year prior to one year after financing compared to their control group. Compared to PE financing, VC financing has a smaller impact on the establishment change in net sales ($1.167 million), but a higher impact on change in employment (15 employees). Overall, we find that the change in net sales and the change in employment for those establishments with PE or VC financing are significantly higher than their control group during post-PE or VC financing relative to the pre-financing period.

We trace the impact of PE financing on the level of annual net sales (inflation adjusted to 1984 dollars) and number of employees starting from five years *prior* to five years *after* receiving financing. Figure 1 presents the average annual net sales for establishments that received PE or VC financing relative to their control establishments. The average net sales for establishments that receive PE financing are lower than their control establishments during five

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years *prior* to receiving financing. However, net sales for establishments that receive PE financing surpass their control establishments during the period over which they are PE-backed. The average increase in net sales for establishments with PE financing during the entire five years after financing is approximately $8.4 million compared to a $6.4 million increase in sales for control establishments without PE financing. This implies that establishments with PE financing achieve 31% more net sales growth than their control establishments over the 5-year period following a PE investment.

The average net sales for establishments with VC financing for five years prior to financing is lower than their control establishments. However, net sales for establishments that receive VC financing surpass their control establishments during the VC financing period. During the five-year period after a financing event, establishments with VC financing experience an average increase of $11.5 million in their net sales compared to an average increase of $5.2 million for their control establishments. Establishments with VC financing have approximately $6.3 million higher annual net sales per establishment relative to their control establishments five years after their financing event. The result for VC is as expected as the growth trajectories of smaller firms, particularly with funding, are higher than other firms. VC funds typically target start-up or early-stage businesses that are engaged in the development and production of new technologies and medical advances. New investments in these establishments often accelerate commercialization and growth opportunities. These aggressive ramp-ups, which often involve significant jobs and revenue increases, build on relatively small asset bases as compared to the targets of PE firms. Thus, VC investment is more impactful than PE investment. Overall, this highlights the role of PE and VC financing for small and medium-sized establishments to generate higher annual net sales.

Figure 2 presents the number of employees for establishments that received PE or VC financing relative to their control establishments from five years prior to five years after financing. We find that the number of employees for both PE and VC-funded samples during 5 to 3 years prior to PE and VC financing (-5 to -3 periods) stay relatively constant. Therefore, we focus our analysis to the period beginning 2 years prior to the financing event. Similar to annual net sales, the average employment for establishments that receive PE financing is approximately the same as their control establishments during one and two years prior to receiving financing. However, employment for establishments that received PE financing surpassed their control establishments during the PE financing inception period. Five years after a PE financing event, establishments with PE financing have 48 more employees on average as compared to 42 more employees for their control establishments. This implies that establishments with PE financing have 14% more jobs growth than their control establishments over the five years after a PE financing event. At the end of five years following the financing event, establishments with PE financing employ 6 more employees per establishment than their control establishments.

[Insert Figure 2 here]

The average number of employees for establishments with VC financing during two years and one year prior to financing is lower than their control establishments. However, employment for establishments that received VC financing surpassed their control establishments in three years after the VC financing inception period. Establishments with VC financing have over 57 more employees per establishment compared to their control establishments at the end of five years after the financing event. Consistent with the result for

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revenues, a financing event accelerates the growth prospects in greater magnitude for VC-backed firms than for those PE-backed firms. Figure 2 displays the critical role PE and VC financing plays to provide significantly higher employment opportunities in the economy for small and medium-sized single entity establishments.

IV.   Multivariate regressions

There is a potential self-selection bias inherent for establishments with certain business owners' characteristics such as non-minority, domestic, and male owners that may affect the likelihood of receiving funding from PE or VC. There are also some potential unobservable factors such as the amount of competing business proposals received by PE and VC funds, owners' initial capital, owners' family support, and so forth. In order to examine the impact of PE and VC financing on establishments growth, first, we examine the impact of business owners' demographics on the likelihood of a business establishment to receive PE or VC funding using the probit regression. Then, in the second stage, we examine the impact of PE and VC funding on the establishments' subsequent growth rates, measured by inflation adjusted annual sales and employment, using the differences-on-differences regression between the pre- and the post-financing periods. We also correct for a potential self-selection bias using the Heckman correction technique by including the inverse-Mills ratio obtained from the first stage probit regression into the second stage differences-on-differences regression (Heckman 1979; Heckman and Robb, 1985).

4.1. Hypothesis and structural models

Several existing studies have found that owners' demographics significantly influence the likelihood of securing external funding successfully. Becker, Blease, and Sohl (2007) find that women business owners receive significantly smaller funding from angel capital than male owners. Robb (2012) finds that women business owners face greater credit constraints due to lower credit scores than men. Fairlie and Robb (2009) show that women business owners are capital constrained due to less startup capital, less human capital, and less prior work experience. Carter and Allen (1997) find that women's efforts to obtain external capital are constrained by their lifestyle intentions. Bates and Bradford (2008) also demonstrate that ethnic minority business owners are also capital constrained. Robb (2012) reports that minority-owned businesses encounter higher rejection rates on their loan applications and pay higher interest rates than non-minority groups. Furthermore, she reports that minority business owners have lower initial capital that hinders them from raising external capital. Based on these prior studies, we hypothesize that owner characteristics, namely gender and ethnicity, significantly influence the likelihood of establishments to secure funding from PE or VC. Additionally, we also believe that business owners with foreign status face similar funding prospects as women and ethnic minorities. Therefore, we also include foreign status as one of the factors that influences the likelihood of securing PE or VC financing. Thus, our first hypothesis is stated as the following:

H1: The likelihood of a business establishment to receive PE or VC funding is dependent on the owners' demographics (i.e. minority, women, and foreign owners) of the corresponding establishment.

We control for gender of establishments' CEOs (WCEO) because establishments' leadership gender may also affect the likelihood of PE or VC financing. We control for changes in the Dun & Bradstreet's Paydex scores (CHGPAYDEX) and credit rating decreases (CHGDBR-) and increases (CHGDBR+) as a measure of the ability to pay their short-term obligations and credit worthiness to obtain bank loans. Previous studies have indicated that PE and VC are able to select private businesses that exhibit higher growth prior to funding decisions (Gompers and Lerner, 1999b). Therefore, we control for the change in business establishments' net sales (CHGSALE) and change in employment (CHGEMP) during one year prior to PE or VC funding. We also control for the establishments' ages (FIRMAGE), business form (CORP), and whether the establishments have existing government contracts or not (GCONTRACT). Because we do not have a measure of business owners' wealth and local employment from the NETS database, we use the county level unemployment rate (UNEMP) from the Local Area Unemployment Statistics published by the Bureau of Labor Statistics as a proxy of business owners' wealth and employment in the county at which a business establishment is currently located. We include indicator variables for state, industry, and year. The structural models for the first stage regression are described as the following:

$$Probability\ (PE\ financing)_{it} = \alpha_0 + \alpha_1\ MINORITY_{it} + \alpha_2\ WOWNER_{it} + \alpha_3\ FOREIGN_{it} + \alpha_4\ WCEO_{it}$$

$$+ \alpha_5\ CHGPAYDEX_{it} + \alpha_6\ CHGDBR\text{-}_{it} + \alpha_7\ CHGDBR\text{+}_{it} + \alpha_8\ CHGSALE_{it\text{-}1} + \alpha_9\ CHGEMP_{it\text{-}1}$$

$$+ \alpha_{10}\ FIRMAGE_{it} + \alpha_{11}\ CORP_{it} + \alpha_{12}\ GCONTRACT_{it} + \alpha_{12}\ UNEMP_{it} + \sum \beta_k\ States\ Dummies_{it}$$

$$+ \sum \gamma_m\ Industries\ Dummies_{it} + \sum \delta_n\ Year\ Dummies_{it} + \sum_{it} \qquad (1)$$

$$\textit{Probability (VC financing)}_{it} = \alpha_0 + \alpha_1 \textit{MINORITY}_{it} + \alpha_2 \textit{WOWNER}_{it} + \alpha_3 \textit{FOREIGN}_{it} + \alpha_4 \textit{WCEO}_{it}$$

$$+ \alpha_5 \textit{CHGPAYDEX}_{it} + \alpha_6 \textit{CHGDBR-}_{it} + \alpha_7 \textit{CHGDBR+}_{it} + \alpha_8 \textit{CHGSALE}_{it-1} + \alpha_9 \textit{CHGEMP}_{it-1}$$

$$+ \alpha_{10} \textit{FIRMAGE}_{it} + \alpha_{11} \textit{CORP}_{it} + \alpha_{12} \textit{GCONTRACT}_{it} + \alpha_{12} \textit{UNEMP}_{it} + \sum \beta_k \textit{States Dummies}_{it}$$

$$+ \sum \gamma_m \textit{Industries Dummies}_{it} + \sum \delta_n \textit{Year Dummies}_{it} + \sum_{it} \qquad (2)$$

where $\sum_{it}$ is the probability regression error term. We estimate the first stage regression using the

probit regression with heteroskedasticity correction and we estimate the standard errors from the

establishment level clustering.

Guo, Hotchkiss, and Song (2011) show that PE buyouts create gains in operating

performance, in terms of profitability and net cash flows, during post buyout periods.

Chemmanur, Krishnan, and Nandy (2011) find that VC-backed firms experience greater

improvement in their total factor productivity during post-VC periods. Similarly, Puri and

Zarutskie (2012) also find that VC-backed firms experience larger increases in their net sales and

employment during post-VC period. Thus, on the second stage, we hypothesize that the

establishment's subsequent growth rates, measured by annual sales and annual employment

growth rates, are affected by the establishment's ability to secure funding from PE or VC after

controlling for the endogeneity of the likelihood for PE or VC financing. Thus, our second

hypothesis is stated as the following:

H2: PE or VC funding has positive impacts on business establishment sales and employment
growth during the post financing period.

We measure the impact of PE or VC funding on establishment growth using differences-in-differences (Card, Katz, and Krueger, 1994; Bertrand, Duflo, and Mullainathan, 2004). We set up three dummy variables to indicate: (1) the establishments that received PE or VC financing (PE/VC FUNDED), (2) the establishments after the post-financing period for both those that received funding and their control group (POST PE/VC), (3) the establishment that received PE or VC financing during the post-funding period (PE/VC FUNDED x POST PE/VC). Our H2 hypothesis specifically tests whether the establishment that received PE or VC financing during the post funding period (PE/VC FUNDED x POST PE/VC) has significantly higher net sales and higher employment growth.[20]

In this second stage regression, we also include the one year lag of sales and employment growth. We include establishment leadership gender (WCEO) as a proxy for risk taking behavior. We include the change in Paydex score (CHGPAYDEX) and credit score decrease (DBR-) and increase (DBR+) as measures of establishments' ability to secure funding from their creditors that may affect their growth. We also include firm age (FIRMAGE), business form (CORP), and whether establishments have existing government contracts or not (GCONTRACT). Bates and Bradford (2008) find that VCs that focus on minority business enterprises (MBEs) earn returns that are consistent with mainstream funds. This indicates that MBEs are not inferior compared to the non-MBEs even though they are capital constrained. Therefore, we do not include the owners' demographics on our second stage regression model. We include indicator variables for state, industry, and year. The structural models for the second

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[20] We also regress all the control variables on net sales and employment growth, obtain the residuals from 3 years before and 3 years after PE or VC funding, and run the regression of PE/VC FUNDED, POST PE/VC and PE/VC FUNDED x POST PE/VC on these residuals. The results are consistent with reported results.

stage regression for establishment annual sales growth (SALEGR) and employment growth (EMPGR) are described as the following:

$$SALEGR_{it} \text{ or } EMPGRW_{it} = \beta_0 + \beta_1 \, PEFUNDED_{it} + \beta_2 \, POSTPE_{it} + \beta_3 \, PEFUNDED_{it} \times POSTPE_{it}$$
$$+ \beta_4 \, LAGSALEGRW_{it-1} + \beta_5 \, WCEO_{it} + \beta_5 \, CHGPAYDEX_{it} + \beta_5 \, CHGDBR_{-it} + \beta_5 \, CHGDBR_{+it} + \beta_5$$
$$FIRMAGE_{it} + \beta_5 \, CORP_{it} + \beta_5 \, GCONTRACT_{it} + \lambda \, INVERSE\text{-}MILL_{it} + \sum \gamma_k \, States \; Dummies_{it} +$$
$$\sum \delta_m \, Industries \; Dummies_{it} + \sum \theta_n \, Year \; Dummies_{it} + \sum_{it} \qquad (3)$$

$$SALEGR_{it} \text{ or } EMPGRW_{it} = \beta_0 + \beta_1 \, VCFUNDED_{it} + \beta_2 \, POSTVC_{it} + \beta_3 \, VCFUNDED_{it} \times POSTVC_{it}$$
$$+ \beta_4 \, LAGSALEGRW_{it-1} + \beta_5 \, WCEO_{it} + \beta_5 \, CHGPAYDEX_{it} + \beta_5 \, CHGDBR_{-it} + \beta_5 \, CHGDBR_{+it} + \beta_5$$
$$FIRMAGE_{it} + \beta_5 \, CORP_{it} + \beta_5 \, GCONTRACT_{it} + \lambda \, INVERSE\text{-}MILL_{it} + \sum \gamma_k \, States \; Dummies_{it} +$$
$$\sum \delta_m \, Industries \; Dummies_{it} + \sum \theta_n \, Year \; Dummies_{it} + \sum_{it} \quad (4)$$

where, λ is the slope of inverse-Mill's ratio and $\sum_{it}$ is the regression error term. We estimate the second stage regression using the ordinary least square (OLS) regression with a heteroskedasticity correction and we estimate the standard errors from both establishment and year clustering.

V. Regression results

5.1 First stage probit regression

Table 7 presents the probit regression results for the first stage regression to examine characteristics that influence business establishments' likelihood of receiving PE or VC

funding.[21] The reported slope coefficients are stated as the marginal impact for each

corresponding independent variable and the robust and establishment clustered z-ratios are

presented in parenthesis under the slope coefficients.

[Insert Table 7 here]

The first two columns of Table 7 present the probit regression results for PE funding and

the last 2 columns present the results for VC funding.[22] In the first column we include single

entity establishments with multiple rounds of PE financing, and in the second column we only

examine single entity establishments that receive PE financing once (single round). We focus our

discussions on establishments with a single round of PE financing (second column) and find that

owners who are considered as minority, female, and foreign are 21.7%, 2.6%, and 8.8% less

likely to receive PE funding, respectively. These results are statistically and economically

significant. Thus we find evidence to support our first hypothesis *H1*. This is also consistent with

existing literature that finds ethnic minorities, women, and foreign business owners are facing

capital constraints.

We do not find evidence that woman CEO status has a significant impact on the

likelihood of obtaining PE financing. Additionally, we do not find strong evidence that the

change in Paydex score affects the likelihood of PE financing. Establishments that experience a

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[21] The NETS (IEGC) database contains the establishments' owners' demographics in the most recent year only. We verified that there is no change in establishment ownership for our sample and control group and also confirmed with the NETS data provider to ensure that there is no change in ownership. Because there is no change in ownership and we choose single establishments that never experience a sale or combination of assets, mergers or acquisitions, then our owners' demographics from the NETS represent the owners' demographics for the entire period of our study.

[22] The first stage probit regressions for both PE and VC funded are conducted using the original cross sectional data from NETS (IEGC). We conduct a robustness check by estimating the probit regressions in a panel data procedure (cross sectional and time series) and the results remain robust.

decrease in their Dun & Bradstreet credit ratings are 6% more likely to get PE financing while establishments with increases are 4% less likely to get PE financing. This indicates that PE financing is acting as a substitute for bank loans when business establishments are experiencing changes in their credit ratings. We do not find evidence that the change in net sales and the change in employment during one year prior to financing affect the likelihood of PE financing. This implies that private equity does not necessarily select their investments based on establishments' recent past growth differentials.

We find that older establishments demonstrate less likelihood of receiving PE financing. We believe that older establishments exhibit better reputations and transparency, and therefore have better access to less expensive capital such as bank loans. We find that establishments with corporation status are also less likely to receive PE financing. We find establishments with government contracts are 10% more likely to receive PE financing. Government contracts are likely to produce stable cash flows and provide a certification benefit. We find that establishments located in higher unemployment counties are 2% less likely to receive PE financing. We believe that our findings support the existing literature that owners' wealth, measured by local unemployment rate, has significant impacts on the likelihood of PE financing. There is evidence that Florida and New York states are less likely to receive PE financing.

We find similar evidence for the likelihood of VC financing. Again we focus our discussion on the single round of VC sample (fourth column) since it represents the cleanest comparison. We find that minority, women, and foreign business owners are 22.2%, 18.7%, and 17.9% less likely to receive VC financing, respectively. This supports our hypothesis *H1* and is also consistent with the literature. We also find that for establishments that experience a decline in their Dun & Bradstreet credit rating VC financing is 8.6% more likely while establishments

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with increases are 14% less likely to get VC financing. Thus VC financing and access to credit may serve as substitutes. We find that those establishments with government contracts are 15.3% more likely to receive VC financing. Thus, government contracts provide certification and stable cash flows that are attractive to VC. We find that establishments located in higher unemployment counties are 4% less likely to receive VC financing. We believe that owners' wealth, measured by local unemployment rates, also has a significant impact on the likelihood of VC financing. We find that establishments in California and Massachusetts are more likely to get VC financing. This implies that VC funding tends to agglomerate in certain states where new innovations are more likely to occur.

[Insert Table 8 here]

5.2 Second stage growth rates regression

In the second stage regressions, we examine the impacts of receiving PE or VC financing on establishments' annual net sales and employment growth. We examine during three years prior to and three years after financing using the differences-in-differences method. First, we examine whether establishments that received PE or VC financing once in any year during 1995 to 2009 have significantly higher growth than their control groups in both prior to and after financing events. This is represented by the PE/VC FUNDED variable.

Table 8 shows that establishments with PE funding have over 2% (2.63% to 2.9%) higher sales growth than their control group. Second, we test whether establishments with PE and their control group are experiencing higher growth during the year PE financing events occurred and

thereafter. This is represented by POSTPE variable.[23] We do not find that establishments' growth is significantly higher during post-PE periods compared to pre-PE periods. More importantly, we find that establishments with PE financing are experiencing an additional 2% (2.08% to 2.48%) higher sales growth than their control group during the post-financing period (PEFUNDED x POSTPE), thus supports our second hypothesis *H2.[24]*

We do not find that the lag of sales growth is significantly related to current period sales growth. This implies that there is no serial correlation between past growth and current growth during three years prior to and three years after financing. We find that women CEOs tend to have 2% lower sales growth. This is consistent with existing literature that women executives tend to be more conservative and less overconfident than male executives (Huang and Kisgen, 2012). We also find that older establishments tend to have lower sales growth rates. This implies that older firms have less opportunity to grow since they are reaching their mature stage. We do not find any evidence that government contracts alone contributes to business establishments' growth.

We find similar results for the impact of VC financing on establishment growth during three years after relative to three years prior to financing events. However, the magnitude of slope coefficients of VC funding on establishments' sales growth is significantly larger than PE funding. We find VC-funded establishments (VCFUNDED) generally have higher sales growth than their control group.[25] More importantly, we find evidence that these establishments with VC

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[23] POSTPE is a dummy variable equal to one if an establishment receives PE funding during the year of funding and thereafter or zero otherwise.

[24] PEFUNDED x POSTPE is a dummy interaction between PEFUNDED and POSTPE. It captures the structural difference between establishments that received PE funding relative to their control group during the year of PE funding and thereafter.

[25] VCFUNDED is a dummy variable equal to one if an establishment receives VC funding once in any year during 1995 to 2009 or zero otherwise.

funding are experiencing over 22% additional sales growth after they received VC financing (POSTVC).[26]

[Insert Table 9 here]

Next, we examine the impact of PE and VC financing on establishments' employment growth during three years after relative to three years prior to financing. Table 9 presents the results of this analysis. We find that PE financing has positive and significant impact on establishment employment growth during the post period relative to pre-financing period. On average, the establishments with PE financing are experiencing 3% (2.94% to 3.03%) increase in employment growth during three years after relative to three years prior to financing events. Again, this evidence supports our hypothesis *H2*. We find that older establishments have lower employment growth since older firms have less opportunity to grow as they reach their mature stage.

We find establishments with VC financing (VC FUNDED) generally have higher employment growth relative to their control group. Moreover, we still find strong evidence that establishments with VC financing are still experiencing over 32% further employment growth during three years after their financing events (VCFUNDED x POSTVC).[27] This supports our hypothesis *H2* that VC financing has significant and positive impact on establishments' employment growth during post-financing periods.

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[26] POSTVC is a dummy variable equal to one if an establishment receives VC funding during the year of funding and thereafter or zero otherwise.

[27] VCFUNDED x POSTVC is a dummy interaction between VCFUNDED and POSTVC. It captures the structural difference between establishments that received VC funding relative to their control group during the year of VC funding and thereafter.

We find evidence that the one-year lag of employment growth significantly affects current employment growth for VC financing. This implies that the employment growth is serially correlated from one period to the next. Again, we do not find any evidence that government contracts alone contributes to business establishments' growth for the VC sample. Overall, we find that both PE and VC financing have significant and positive impact on establishments' net sales and employment growth relative to their control groups. Furthermore, the magnitudes of VC financing on establishment growth are larger than the magnitudes of PE financing.

[Insert Table 10 here]

Finally, we examine the long-lasting impact of PE or VC financing on establishments net sales and employment growth during the contemporaneous period until 3 years after the financing events. We use the growth during two years prior to financing events as a reference point to examine the impact of PE or VC financing on establishments' net sales and employment growth during the contemporaneous period until three years after the financing events. We include one-year prior to financing event in our sample to represent the pre-financing period. Panel A of Table 10 shows that the impact of PE financing on both net sales and employment growth during the contemporaneous period of financing is insignificant.[28] This indicates that it

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[28] Sales and employment growth rates in year 0 are measured as the percentage change of annual sales and employment from the beginning of the year to the end of the year when an establishment just receives PE or VC financing (year 0). The beginning of the year sales and employment in period 0 are basically the end of year sales and employment in one year prior to receiving PE/VC financing (period -1). We use the same method to calculate sales growth and employment growth rates for years 1, 2, and 3. Then we calculate the difference in sales and employment growth rates in years 1, 2, and 3 relative to sales and employment growth rates two years prior to PE or VC financing year (year -2) as our measures of SALEGR1, EMPGR1, SALEGR2, EMPGR2, SALEGR3, and EMPGR3 on Table 10.

takes some time for PE to execute their strategies to enhance establishments' growth since PE financing involves changes in ownership and management. Once changes take place, the impact on establishment growth is significantly large in the first year after financing and it persists for three consecutive years.

Panel B of Table 10 presents the impact of VC financing on business establishments' sales and employment growth during the contemporaneous year and three years after financing. We find that the impact of VC financing on both net sales and employment growth is immediate. This implies that venture capital is able to capitalize the business establishments' growth immediately after they deploy their capital into the establishments. However, the impact of VC financing on establishments' growth only lasts for two consecutive years after the financing events. Thus, the impact of VC financing is shorter than the impact of PE financing. Overall, we find evidence to support our hypothesis *H2* that both PE and VC financing significantly increase the establishment growth during post financing periods.

VI. Additional robustness tests

We conduct additional robustness tests for our results by examining the impact of PE and VC financing on establishment growth using the propensity matching method (Rosenbaum and Rubin, 1983). We focus on the single round of PE or VC-financed establishments by deleting the establishments that received multiple rounds of PE or VC financing to clearly examine the impact of PC or VC financing on establishments' organic growth.

The propensity scoring method has been used in finance and accounting literature (Tucker, 2010; Lennox, Francis, and Wang, 2012) and is appropriate for our analysis since we only observe establishments that successfully obtained PE or VC financing. The goal of

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propensity scoring is to construct probabilities of successfully obtaining PE or VC financing for establishments that did not receive PE or VC financing. First, we conduct the probit regression for the entire IEGC sample to estimate the probability of each establishment of receiving PE or VC financing. This probit regression is similar to the first stage regression that is reported in Table 7 for the entire IEGC (NETS). Then, we construct matched-pair establishments that receive PE financing with establishments that never received PE or VC financing based on the closest estimated probabilities (propensity scores) of receiving PE financing in each year. We construct similar match-pair establishments based on the propensity scores for receiving VC financing and name it as the propensity scoring VC sample.

Our untabulated results from the propensity matching samples are similar to our matched-pair results. PE financing does not have an immediate impact on establishments' growth rates. However, it significantly and positively affects their net sales and employment growth rates for three consecutive years after financing. We also find similar results that VC financing immediately and positively increases establishments' growth rates. We find that the impact of VC financing on net sales and employment growth rates remains positive and significant during two consecutive years after financing. Overall, our results remain robust using the samples from the propensity score method.

The NETS (IEGC) database is presented as cross sectional data. We reshape the original NETS data into a panel (cross sectional and time series) data and conduct robustness checks on our results presented in Tables 7, 8, 9, and 10. Our unreported regression results using the panel data are consistent with the results presented in our Tables 7, 8, 9, and 10. Therefore, we believe that our results are robust.

VII. Conclusions

Academics, business owners, and policy makers have put a significant amount of attention on the topic of impact of private equity (PE) and venture capital (VC) financing on firms' revenue and employment growth. While most of the existing studies focus on the impact of leveraged buyouts (LBOs) by private equity firms on job creation and destructions, the literature on the impacts of PE and VC financing on subsequent growth for small to mid-sized single entity establishments is still underdeveloped. Furthermore, examining the clean impact of PE or VC financing on firms' organic growth is challenging in that data are often aggregated across business operating units or influenced by corporate combinations. Our study directly compares the impact of PE and VC financing on single entity establishments' subsequent net sales and employment growth rates for small and mid-sized establishments that are free from acquisitions, sale of business divisions, and combinations. Our study also focuses on establishments that receive a singular round of PE or VC financing. The first contribution of our study is made by examining the pure impact of a single round of PE or VC financing on single entity business establishments sales and employment organic growth rates. Our second contribution is yielded by comparing the impact of PE financing with VC financing during the post financing periods. Most of the existing studies only examine either PE financing or VC financing but not both.

Using the Institute for Exceptional Growth Companies (IEGC or NETS) database, this study is able to cleanly examine the impact of a single round of PE or VC financing on business establishments' net sales and employment organic growth rates. Because we focus on single entity business establishments, the sizes of these establishments are significantly smaller than the sizes of firms that are examined in the previous studies. Using NETS, D&B, and Pitchbook data

during 1995 to 2009, we construct matched-pair samples for establishments that received

funding from PE or VC with those who never received financing from both PE and VC (control

groups). We also carefully select single entity business establishments for the control group such

that we can precisely compare the establishments with PE or VC financing with their

corresponding control groups.

Our results indicate that minorities, women, and foreign owned establishments are

significantly less likely to receive private equity (PE) funding. These groups are even less likely

to receive funding from venture capital (VC). Policy makers put forth significant efforts to foster

equal opportunity for both minorities and women to have equal access to capital (Hinson, 2010).

Our paper provides evidence that the likelihood of successfully obtaining funding from PE and

VC for minorities, women, and foreign owned establishments is still lower than the white-male

group.

After controlling for endogeneity and self-selection biases for probabilities of obtaining

capital from PE or VC, we find that PE or VC financing significantly and positively affect the

establishments' net sales and employment growth rates. Furthermore, we find that immediate

impact of PE financing on establishments' growth is insignificant. This is likely the result of a

potentially considerable gap in time between implementing strategic changes and realizing the

results. We find that PE financing increases establishments' growth rates for three years after

their PE financing event, however. In contrast, we find that the impact of VC financing on

establishments' growth is immediate and larger than PE financing. However, the impact of VC

financing on establishments growth only lasts for one additional year after the financing year.

Thus it is shorter than the impact of PE financing.

Our findings are relevant for policymakers, capital providers, and business owners. First, these magnitudes of demographics on the likelihood of receiving PE and VC funding indicate that minority, women, and foreign-owned establishments are still facing significant challenges to obtain PE and VC funding to grow their businesses. Second, both PE and VC financing sources are very important for these establishments to grow their businesses and to create employment opportunities. These financing events therefore have a positive impact on economic growth.

We also find that there are significant benefits to having government contracts in place when seeking PE or VC financing. The probabilities of successfully raising capital when government contracts are in place are sizable and significant. However, these contracts appear to lack any significant influence on sales and employment growth after the financing event occurs. Further work needs to be done in this area to understand why.

The NETS database has limited information regarding business owners' wealth, education, and experience which are important factors that influence the demand for PE and VC financing. We augment the NETS data with the county level unemployment rate at which these business establishments reside as a proxy for owners' wealth and education. We also recognize that the NETS database may overestimate the employment numbers and underestimate the net sales receipts. However, because both the establishments with PE and VC funding and their control establishments are drawn from the same database, we believe that both the funded establishments and their control groups exhibit the same biases. We conduct robustness checks using the propensity matching and reshaping the NETS data into a panel data and we find that our results remain robust.

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Appendix A

Comparison between NETS database and U.S. Census data

Panel A. Aggregate employment from Business Dynamics Statistics and NETS

	Business Dynamics Statistics		National Establishment Time-Series (NETS)	
Year	# Establishments	# Employees	# Establishments	# Employees
1995	5,839,774	98,519,864	12,179,705	144,895,620
1996	5,933,926	100,380,503	12,385,686	145,260,373
1997	6,043,242	103,203,936	13,090,106	149,713,844
1998	6,108,927	106,268,299	13,573,482	154,267,365
1999	6,174,381	109,060,036	13,699,191	156,118,765
2000	6,219,280	112,624,575	13,658,564	160,220,069
2001	6,348,830	114,349,926	14,267,011	167,211,842
2002	6,399,351	112,123,655	16,071,016	173,173,276
2003	6,460,594	112,720,028	17,192,608	169,037,299
2004	6,542,356	114,002,472	17,365,470	165,715,082
2005	6,679,753	115,520,906	18,054,411	164,486,072
2006	6,781,915	118,921,117	19,710,914	167,984,002
2007	6,888,393	119,913,218	20,550,939	169,757,863
2008	6,862,476	120,083,046	22,325,361	169,478,700
2009	6,678,469	113,900,772	22,617,871	171,922,743
2010	6,619,139	111,175,010	22,015,210	161,957,103

Note: Business Dynamics Statistics is updated every mid-March while NETS is updated every January. The Business Dynamics Statistics is downloaded directly from: http://www2.census.gov/ces/bds/estab/bds_e_all_release.xls.

Panel B. Aggregate net sales receipts from Statistics of U.S. Businesses and NETS

	Statistics of U.S. Businesses		National Establishment Time-Series (NETS)	
Year	# Establishments	Receipts (in $1000)	# Establishments	Receipts (in $1000)
1997	6,894,869	18,242,632,687	12,931,953	15,646,277,989
2002	7,200,770	22,062,528,196	15,849,268	19,601,571,421
2007	7,705,018	29,746,741,904	20,311,659	19,433,716,504

Note: Statistics of U.S. Businesses is updated every mid-March while NETS is updated every January. The Statistics of U.S. Businesses is downloaded directly from: http://www2.census.gov/econ/susb/data/1997/us_4digitsic_receipt_1997.xls, http://www2.census.gov/econ/susb/data/2002/us_6digitnaics_receipt_2002.xls, and http://www2.census.gov/econ/susb/data/2007/us_6digitnaics_receipt_2007.xls.

Appendix B

Examples of the Pitchbook financing database

The Pitchbook financing data indicates whether a particular establishment receives private equity (PE) or venture capital (VC) financing (without dollar amount of PE or VC investments) and its type of ownership. Yeid is the establishment unique identifier from the NETS database. Financing95 implies whether an establishment receives Private Equity (PE) Backed or Venture Capital (VC) Backed financing during year 1995, Financing96 implies whether an establishment receives PE or VC financing during year 1996, etc. Ownership02 implies types of ownership for each establishment during year 2002. Ownership03 implies types of ownership for each establishment during year 2003, etc. The Pitchbook financing and ownership data is available from 1995 to 2009.

Yeid	Financing95	Financing96	Financing98	Financing99
1362			Private Equity Backed	
2846		Private Equity Backed		
3502				Private Equity Backed
15757			Private Equity Backed	
68629				VC Backed
75231	Private Equity Backed			
80424			VC Backed	

Yeid	Ownership02	Ownership03	Ownership04	Ownership05	Ownership06	Ownership07
10000332				Privately Held		
10001797						Privately Held
10001826						Publicly Held
10002734		Privately Held	Privately Held		Acquired/Merged	
10003352						
10012789				Privately Held	Publicly Held	
10014872	Privately Held					

Appendix C

Variables Definitions

Variables	NETS Field Name	Definitions
PEFUNDED	Financing (Pitchbook)	An indicator variable that takes on a value = 1 if the establishment receives funding from Private Equity during 1995 to 2009
VCFUNDED	Financing (Pitchbook)	An indicator variable that takes on a value = 1 if the establishment receives funding from Venture Capital during 1995 to 2009
EMPGR#	Emp	Percentage change of employment in current year upon receiving funding relative to previous year (in decimal)
SALEGR#	Sales	Percentage change of Sales in current year upon receiving funding relative to previous year (in decimal)
MINORITY	Minority	Minority Owned Indicator-Last (Y = Minority or non-Caucasian Owned, N = Non-Minority or Caucasian Owned)
FOREIGN	ForeignOwn	Foreign Owned-Last (Y = Yes, Space = No)
WCEO	GenderCEO	An indicator variable that takes on a value = 1 if the CEO is a woman or 0 otherwise
WOWNER	WomanOwned	Controlling interest in establishment held by woman-Last (Y = Yes, N = No)
CHGPAYDEX	PayDexMax	Change in D&B Maximum PayDex score. PayDex score 80 indicates that, on average, the business pays its bills in a "Prompt" manner.
CHGDNB-	D&Brating	Change in the first digit of Duns & Bradstreet credit rating toward a worse credit rating (i.e. 3A is worse than 4A rating)
CHGDNB+	D&Brating	Change in first digit of Duns & Bradstreet credit rating toward a better credit rating (i.e. 5A is better than 4A rating)
CHGSALE	Sales	Change in inflation adjusted annual net sales ($). Inflation adjusted annual net sales based on the CPI index (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)
CHGEMP	Emp	Change in number of employees
FIRMAGE	Age	Number of years since the establishment was founded
CORP	LegalStat	Legal Status-Last (G = Proprietorship, H = Partnership, I = Corporation, J = Non-Profit, Blank = NA). CORP is equal to one if an establishment is a Corporation.
GCONTRACT	GovtContra	Government Contracts/Grants Indicator-Last (Y=Yes, N= No)
UNEMP	-	County level unemployment rate (%) from the Bureau of Labor Statistics (source: http://www.bls.gov/lau/).
CA	State	An indicator variable that takes on a value = 1 if the state is California (CA) or 0 otherwise
FL	State	An indicator variable that takes on a value = 1 if the state is Florida (FL) or 0 otherwise
MA	State	An indicator variable that takes on a value = 1 if the state is Massachusetts (MA) or 0 otherwise
NY	State	An indicator variable that takes on a value = 1 if the state is New York (NY) or 0 otherwise
TX	State	An indicator variable that takes on a value = 1 if the state is Texas (TX) or 0 otherwise

Figure 1

Establishments Inflation Adjusted Sales (Revenue) for PE and VC-Backed and their Matching Groups
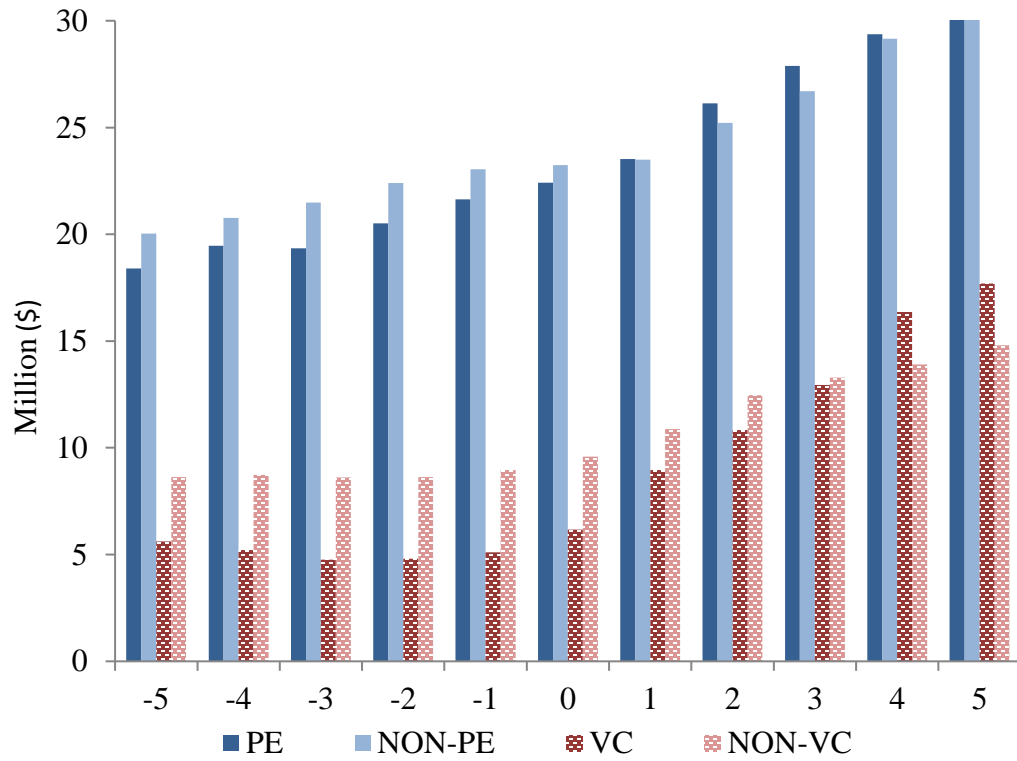
Figure 2

Establishments Employment for PE and VCBacked and their Matching Groups
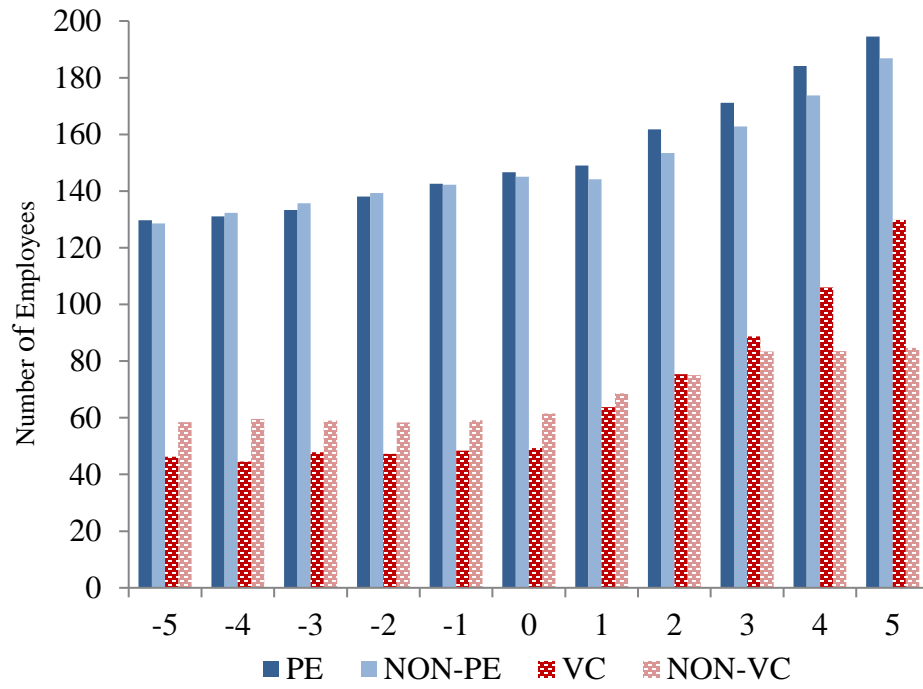
Table 1

Data distribution and sample formation

This table presents sample selection processes from the original Pitchbook and IEGC (NETS) merged (POF data) to our final samples.

A. Financing	Observations	Percentage
Received PE Funding	16,802	62.6%
Received VC Funding	7,555	28.2%
Others*	2,481	9.2%
B. Ownership	**Observations**	**Percentage**
Privately Held	15,508	57.8%
Acquired/Merged	6,232	23.2%
Publicly Held	1,149	4.3%
Others**	3,949	14.7%
Total observations	26,838	100%
Number of establishments	16,482	
C. Sample formation	**PE Sample**	**VC Sample**
Initial data	16,802	7,555
Match pair results	13,538	6,800
Missing values	5,445	3,666
Sample prior to 1% truncation	8,093	3,134
Final match-pair sample with multiple establishments	4,138	811
Final match-pair sample with single establishment	3,874	2,291
Final match-pair with single round financing	3,074	756
D. Rounds of financing	**PE Sample**	**VC Sample**
One round	5,521	979
Two rounds	1,530	971
Three rounds	605	628
Four rounds	214	334
Five rounds	72	134
More than five rounds	71	57

*Others in financing imply acquired by other firms or in the process of going public. ** Others in ownership imply the establishments cease to exist.

Table 2

Sample distribution across Fama-French 48 industries

Industries	PE Match-Pair Sample		VC Match-Pair Sample		IEGC (NETS) Sample	
	Obs	Pct	Obs	Pct	Obs	Pct
Agriculture	22	0.57%	1	0.04%	1,542,504	3.49%
Food	66	1.70%	0	0.00%	49,000	0.11%
Soda	18	0.46%	1	0.04%	15,268	0.03%
Beer	5	0.13%	0	0.00%	9,236	0.02%
Smoke	1	0.03%	0	0.00%	1,422	0.00%
Toys	35	0.90%	7	0.31%	74,526	0.17%
Fun/Entertainment	41	1.06%	11	0.48%	944,726	2.14%
Books	84	2.17%	13	0.57%	188,488	0.43%
Household	56	1.45%	12	0.52%	123,324	0.28%
Clothes	23	0.59%	0	0.00%	58,336	0.13%
Health	125	3.23%	32	1.40%	2,026,970	4.58%
Med. Equipment	106	2.74%	105	4.58%	29,624	0.07%
Drugs	49	1.26%	64	2.79%	14,518	0.03%
Chemical	42	1.08%	11	0.48%	41,922	0.09%
Rubber	83	2.14%	5	0.22%	44,439	0.10%
Textiles	28	0.72%	2	0.09%	66,707	0.15%
Build. Material	106	2.74%	7	0.31%	287,098	0.65%
Construction	103	2.66%	11	0.48%	3,979,342	8.99%
Steel	40	1.03%	4	0.17%	29,113	0.07%
Fab. Prod	68	1.76%	3	0.13%	50,751	0.11%
Machine	169	4.36%	25	1.09%	198,394	0.45%
Elec. Equipment	52	1.34%	33	1.44%	40,227	0.09%
Autos	72	1.86%	1	0.04%	44,396	0.10%
Aero	41	1.06%	1	0.04%	10,382	0.02%
Ships	28	0.72%	0	0.00%	3,642	0.01%
Guns	8	0.21%	5	0.22%	3,899	0.01%
Gold	0	0.00%	0	0.00%	1,689	0.00%
Mines	9	0.23%	0	0.00%	16,040	0.04%
Coal	4	0.10%	0	0.00%	7,008	0.02%
Oil	73	1.88%	3	0.13%	90,910	0.21%
Utility	53	1.37%	8	0.35%	141,177	0.32%
Telecom	126	3.25%	128	5.59%	324,494	0.73%
Personal Service	93	2.40%	31	1.35%	5,311,252	12.01%
Business Service	756	19.51%	1,149	50.15%	11,238,461	25.40%
Computer	56	1.45%	115	5.02%	90,948	0.21%
Chips	145	3.74%	164	7.16%	47,264	0.11%
Lab. Equipment	80	2.07%	47	2.05%	28,263	0.06%
Paper	40	1.03%	0	0.00%	46,584	0.11%
Boxes	42	1.08%	0	0.00%	19,826	0.04%
Transport	11	0.28%	8	0.35%	1,263,342	2.86%
Wholesale	423	10.92%	151	6.59%	6,024,325	13.62%
Retail	163	4.21%	72	3.14%	2,305,084	5.21%
Meals	99	2.56%	3	0.13%	1,375,659	3.11%
Banks	68	1.76%	8	0.35%	533,852	1.21%
Insurance	50	1.29%	9	0.39%	679,215	1.54%
Real Estate	34	0.88%	3	0.13%	1,880,311	4.25%
Security Trading	30	0.77%	13	0.57%	816599	1.85%
Others	48	1.24%	25	1.09%	2,120,947	4.79%
TOTAL	3,874	100%	2,291	100%	44,241,504	100%

Table 3

Sample distribution across states

State	PE Match-Pair Sample		VC Match-Pair Sample		IEGC (NETS) Sample	
	Obs	Pct	Obs	Pct	Obs	Pct
AK	6	0.15%	0	0.00%	102,369	0.23%
AL	46	1.19%	3	0.13%	586,615	1.33%
AR	14	0.36%	1	0.04%	387,834	0.88%
AZ	88	2.27%	18	0.79%	797,076	1.80%
CA	498	12.85%	988	43.13%	5,446,061	12.31%
CO	96	2.48%	69	3.01%	888,817	2.01%
CT	67	1.73%	28	1.22%	580,122	1.31%
DC	10	0.26%	5	0.22%	122,076	0.28%
DE	7	0.18%	1	0.04%	114,652	0.26%
FL	218	5.63%	51	2.23%	3,748,447	8.47%
GA	121	3.12%	48	2.10%	1,474,127	3.33%
HI	6	0.15%	0	0.00%	144,420	0.33%
IA	15	0.39%	0	0.00%	514,544	1.16%
ID	16	0.41%	8	0.35%	262,907	0.59%
IL	185	4.78%	37	1.62%	1,573,483	3.56%
IN	73	1.88%	7	0.31%	771,531	1.74%
KS	28	0.72%	8	0.35%	428,538	0.97%
KY	33	0.85%	3	0.13%	541,637	1.22%
LA	28	0.72%	4	0.17%	660,716	1.49%
MA	159	4.10%	287	12.53%	919,728	2.08%
MD	62	1.60%	34	1.48%	843,879	1.91%
ME	17	0.44%	1	0.04%	197,229	0.45%
MI	81	2.09%	7	0.31%	1,355,604	3.06%
MN	97	2.50%	27	1.18%	850,169	1.92%
MO	70	1.81%	7	0.31%	784,270	1.77%
MS	23	0.59%	4	0.17%	444,808	1.01%
MT	17	0.44%	1	0.04%	171,942	0.39%
NC	82	2.12%	57	2.49%	1,184,547	2.68%
ND	15	0.39%	0	0.00%	123,605	0.28%
NE	25	0.65%	2	0.09%	275,494	0.62%
NH	35	0.90%	8	0.35%	225,248	0.51%
NJ	139	3.59%	46	2.01%	1,192,497	2.70%
NM	12	0.31%	6	0.26%	248,623	0.56%
NV	35	0.90%	6	0.26%	346,506	0.78%
NY	290	7.49%	116	5.06%	2,747,781	6.21%
OH	120	3.10%	31	1.35%	1,392,733	3.15%
OK	40	1.03%	0	0.00%	497,207	1.12%
OR	53	1.37%	15	0.65%	632,558	1.43%
PA	122	3.15%	60	2.62%	1,652,734	3.74%
PR	5	0.13%	0	0.00%	78,656	0.18%
RI	10	0.26%	2	0.09%	134,535	0.30%
SC	47	1.21%	1	0.04%	530,805	1.20%
SD	10	0.26%	1	0.04%	135,338	0.31%
TN	61	1.57%	13	0.57%	836,547	1.89%
TX	356	9.19%	112	4.89%	3,722,027	8.41%
UT	64	1.65%	26	1.13%	434,731	0.98%
VA	86	2.22%	42	1.83%	1,044,544	2.36%
VI	0	0.00%	0	0.00%	4,916	0.01%
VT	16	0.41%	3	0.13%	109,283	0.25%
WA	69	1.78%	89	3.88%	974,621	2.20%
WI	86	2.22%	8	0.35%	714,349	1.61%
WV	8	0.21%	0	0.00%	188,281	0.43%
WY	7	0.18%	0	0.00%	99,737	0.23%
Total	3,874	100%	2,291	100%	44,241,504	100%

Table 4
Correlation coefficients
Panel A. PE Match-Pair Sample

PEFUNDED takes on a value = 1 if the establishment receives funding from Private Equity (PE). SALEGR0 is the annual inflation adjusted sales growth during the period at which the establishment received PE financing. EMPGR0 is annual employment growth during the period at which the establishment received PE financing. MINORITY is equal to 1 if the establishment is owned by an ethnic minority. FOREIGN is equal to 1 if the owner of establishment has foreign status. WOWNER is equal to 1 if the establishment is owned by a woman. WCEO is equal to 1 if the establishment CEO is a woman. CHGPAYDEX indicates the annual change of maximum PayDex score CHGDBR- is the change in Duns & Bradstreet credit rating toward a worse credit rating. CHGDBR+ is the change in Duns & Bradstreet credit rating toward a better credit rating. CHGSALE is the annual change in inflation adjusted sales of an establishment during one year prior to financing. CHGEMP is the annual change in employment of an establishment during one year prior to financing. UNEMP is a county level unemployment rate at which the establishment resides. CORP is equal to 1 if the establishment is a corporation. FIRMAGE is the number of years since the establishment is founded. GCONTRACT is equal to one if the establishment has a government contract. CA, FL, NY, TX are state dummy variables to represent California, Florida, New York and Texas at which represent the top four states with the highest percentage of establishment receiving PE financing. * indicates statistically significant at 1% level.

No	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1	PEFUNDED	1												
2	SALEGR0	0.0178*	1											
3	EMPGR0	0.0223*	0.7847*	1										
4	MINORITY	-0.0786*	-0.0067	-0.0082	1									
5	FOREIGN	-0.0556*	0.0004	0.004	-0.0523*	1								
6	WOWNER	-0.0644*	-0.0039	-0.0063	0.1927*	-0.0481*	1							
7	WCEO	-0.0144	-0.0028	-0.0026	-0.0101	0.0015	0.0833*	1						
8	CHGPAYDEX	0.0288*	-0.0036	-0.0024	-0.0025	0.0062	-0.0004	-0.0101	1					
9	CHGDBR-	0.0203*	-0.0004	0.0017	0.0178	0.0072	0.0219*	0.0078	-0.0430*	1				
10	CHGDNB+	0.0319*	0.0034	0.0019	0.0008	-0.0113	-0.0004	0.0054	-0.0580*	-0.1594*	1			
11	CHGSALE	0.0128	-0.0156	-0.0118	-0.0099	-0.0046	-0.0022	0.0038	-0.0005	0.0129	-0.0013	1		
12	CHGEMP	0.0075	-0.0117	-0.0165	-0.0026	0.013	-0.0027	0.011	-0.0074	0.0157	-0.0012	0.6900*	1	
13	UNEMP	0.0417*	-0.0093	-0.0091	0.0194	-0.0210*	0.008	-0.0251*	-0.0203*	-0.1351*	0.0841*	-0.0055	0.005	1
14	CORP	-0.0656*	-0.017	-0.0228*	0.0177	0.0555*	0.0211*	-0.0057	0.0171	0.0043	-0.0049	-0.0119	-0.0017	-0.0504*
15	FIRMAGE	0.1049*	-0.0128	-0.0206*	-0.0546*	-0.0014	-0.0299*	-0.0236*	0.02	0.0148	0.0166	-0.0214*	-0.0142	-0.0098
16	GCONTRACT	0.0701*	0.0212*	0.019	0.0315*	0.0313*	-0.002	-0.0129	0.0047	0.0177	-0.0352*	-0.0032	-0.0052	-0.0744*
17	CA	-0.0108	0.0067	-0.0076	0.0321*	0.0086	0.0274*	0.0056	-0.0077	0.0072	-0.0046	0.0006	0.0029	0.1360*
18	FL	-0.0042	-0.0045	-0.0038	0.0192	-0.0240*	0.0053	0.0089	0.0039	-0.0019	0.0079	-0.0034	0.0032	0.0326*
19	NY	-0.0031	-0.0057	-0.0029	-0.0038	0.0114	-0.0125	0.0099	-0.0152	0.0014	0.0013	-0.0069	-0.0042	-0.015

No	Variables													
20	TX	0.0347*	0.0013	0.0006	0.017	-0.0165	-0.0074	0.002	0.0087	0.001	-0.0012	0.0210*	0.0145	-0.0317*

No	Variables	15	16	17	18	19
14	CORP	1				
15	FIRMAGE	0.1260*	1			
16	GCONTRACT	0.0671*	0.1137*	1		
17	CA	0.0179	-0.0726*	0.0103	1	
18	FL	-0.0089	-0.0601*	-0.0322*	-0.0928*	1
19	NY	0.0036	0.0184	-0.0220*	-0.1049*	-0.0656*	1
20	TX	-0.0438*	-0.0635*	-0.0327*	-0.1170*	-0.0731*	-0.0826*

Panel B. VC Match-Pair Sample

VCFUNDED takes on a value = 1 if the establishment receives funding from Venture Capital (VC). SALEGR0 is the annual inflation adjusted sales growth during the period at which the establishment received VC financing. EMPGR0 is annual employment growth during the period at which the establishment received VC financing. MINORITY is equal to 1 if the establishment is owned by an ethnic minority. FOREIGN is equal to 1 if the owner of establishment has foreign status. WOWNER is equal to 1 if the establishment is owned by a woman. WCEO is equal to 1 if the establishment CEO is a woman. CHGPAYDEX indicates the annual change of maximum PayDex score. CHGDBR- is the change in Duns & Bradstreet credit rating toward a worse credit rating. CHGDBR+ is the change in Duns & Bradstreet credit rating toward a better credit rating. CHGSALE is the annual change in inflation adjusted sales of an establishment during one year prior to financing. CHGEMP is the annual change in employment of an establishment during one year prior to financing. UNEMP is a county level unemployment rate at which the establishment resides. CORP is equal to 1 if the establishment is a corporation. FIRMAGE is the number of years since the establishment is founded. GCONTRACT is equal to one if the establishment has a government contract. CA, MA, NY, TX are state dummy variables to represent California, Massachusetts, New York and Texas at which represent the top four states with the highest percentage of establishment receiving VC financing. * indicates statistically significant at 1% level.

No	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1	VCFUNDED	1												
2	SALEGR0	0.0206*	1											
3	EMPGR0	0.0359*	0.0899*	1										
4	MINORITY	-0.1367*	-0.0047	-0.0074	1									
5	FOREIGN	-0.0808*	-0.0017	-0.0028	-0.0443*	1								
6	WOWNER	-0.1279*	-0.0055	-0.007	0.1931*	-0.0315	1							
7	WCEO	-0.0268	-0.0015	-0.0053	0.0038	0.0284	0.0904*	1						
8	CHGPAYDEX	-0.0132	-0.0163	-0.0053	-0.0195	-0.0013	-0.0274	-0.0062	1					
9	CHGDBR-	0.0167	-0.0063	-0.0126	0.018	0.0162	0.0048	0.0025	-0.0268	1				
10	CHGDNB+	-0.0975*	0.0026	-0.0321	0.0163	-0.0157	-0.0051	0.0167	-0.0404*	0.1748*	1			
11	CHGSALES	0.0368*	-0.0027	-0.0065	0.0301	-0.0351*	-0.01	-0.0004	0.0085	-0.0078	-0.0033	1		
12	CHGEMP	0.0830*	-0.0033	-0.0169	-0.001	-0.0199	-0.0155	0.0045	0.0164	0.01	-0.0034	0.3297*	1	
13	UNEMP	-0.0377*	0.0192	-0.0102	0.0245	-0.0357*	0.0065	-0.0366*	-0.019	0.1797*	0.1257*	-0.0196	0.0016	1
14	CORP	0.2127*	0.0054	-0.0012	0.008	0.0484*	0.014	-0.0011	0.004	0.0416*	-0.0570*	0.0074	0.0348*	-0.1021*
15	FIRMAGE	-0.4281*	-0.0093	-0.0539*	0.0122	0.0102	0.0505*	0.0082	0.0282	0.0255	0.0667*	0.0087	-0.0618*	0.0045
16	GCONTRACT	0.0918*	-0.0059	-0.0106	0.0533*	0.0022	0.0068	-0.0224	0.0144	0.0438*	-0.0227	0.0115	0.0114	-0.0969*
17	CA	0.2847*	0.0212	0.0119	-0.0369*	0.0201	-0.031	-0.0164	-0.0045	0.0141	-0.0311	-0.0051	0.0105	0.1808*
18	MA	0.1406*	-0.0023	-0.0072	-0.0458*	0.0134	-0.0527*	0.0103	-0.0316	-0.0173	-0.0171	-0.0099	0.0124	-0.1120*
19	NY	-0.0745*	-0.0014	0.0138	-0.0119	0.0115	0.0166	0.0617*	-0.0109	-0.0065	0.0175	-0.007	-0.0144	-0.0238

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No	Variables													
20	TX	-0.0589*	-0.0027	-0.0087	0.0367*	-0.0087	0.0294	0.0017	-0.0128	0.016	-0.0244	-0.0058	-0.0014	-0.0493*

No	Variables	14	15	16	17	18	19
14	CORP	1					
15	FIRMAGE	0.0274	1				
16	GCONTRACT	0.1265*	0.0314	1			
17	CA	0.1016*	-0.1808*	-0.021	1		
18	MA	0.0569*	-0.0590*	0.0365*	-0.1982*	1	
19	NY	-0.0281	0.0579*	-0.0282	-0.1603*	-0.0728*	1
20	TX	-0.0400*	0.0001	-0.0021	-0.1706*	-0.0775*	-0.0627*

Table 5

Univariate analysis for match-pair sample

MINORITY is equal to 1 if the establishment is owned by an ethnic minority. FOREIGN is equal to 1 if the owner of establishment has foreign status. WOWNER is equal to 1 if the establishment is owned by a woman. WCEO is equal to 1 if the establishment CEO is a woman. CHGPAYDEX indicates the annual change of maximum PayDex score. CHGDBR+ is the change in Duns & Bradstreet credit rating toward a better credit rating. CHGDBR- is the change in Duns & Bradstreet credit rating toward a worse credit rating. CHGSALE is the annual change in inflation adjusted sales of an establishment. CHGEMP is the annual change in employment of an establishment. UNEMP is a county level unemployment rate at which the establishment resides. CORP is equal to 1 if the establishment is a corporation. FIRMAGE is the number of years since the establishment is founded. GCONTRACT is equal to one if the establishment has a government contract. * indicates that the means are statistically different from the PE or VC funding sample at 1% level of significance.

Panel A. PE Funding Variable	PE funding	No funding (Control Sample)	IEGC (NETS) Sample
MINORITY	0.023	0.054*	0.018
FOREIGN	0.050	0.078*	0.057
WOWNER	0.061	0.096*	0.076
WCEO	0.002	0.003	0.023*
CHGPAYDEX	-0.474	-0.143	-0.180
CHGDBR-	0.187	0.171	0.282
CHGDNB+	0.886	0.905	0.718
CHGSALES	0.580	0.123	0.355
CHGEMP	5.721	3.401	2.412
UNEMP	5.845	6.050	7.981
CORP	0.781	0.833*	0.519*
FIRMAGE	26.320	31.881*	13.867*
GCONTRACT	0.225	0.169*	0.006*
Panel B. VC Funding Variable	VC funding	No funding (Control Sample)	IEGC (NETS) Sample
MINORITY	0.023	0.084*	0.018
FOREIGN	0.019	0.048*	0.057*
WOWNER	0.054	0.127*	0.076
WCEO	0.001	0.003	0.023*
CHGPAYDEX	-0.477	-0.314	-0.180
CHGDBR-	0.200	0.187	0.282
CHGDNB+	0.856	0.918*	0.718
CHGSALES	0.552	0.148*	0.355
CHGEMP	7.122	1.678*	2.412*
UNEMP	6.349	6.544	7.981
CORP	0.938	0.792*	0.519*
FIRMAGE	7.346	21.278*	13.867*
GCONTRACT	0.222	0.150*	0.006*

Table 6
Univariate analysis between one year prior and one year after financing

This table represents univariate t-tests for the differences-in-differences between establishments that received PE or VC financing and their control (matching) establishment that never received PE or VC financing. Sales is the establishment inflation adjusted annual sales during one year prior to PE or VC financing and one year after PE or VC financing. Employment is the number of employees in the establishment during one year prior to PE or VC financing and one year after PE or VC financing. *, ** and *** are statistically significant at 10%, 5% and 1% levels.

Variables	PE	NON-PE	(PE)-(NON-PE)
Sales before PE financing (in $Million)	21.638	23.051	-1.413
Sales after PE financing (in $Million)	23.527	23.497	0.03
Change in Sales (in $Million)	1.889	0.446	1.443**
Employment before PE financing	142.183	142.585	-0.402
Employment after PE financing	149.01	144.138	4.872
Change in Employment	6.827	1.553	5.274***
Variables	VC	NON-VC	(VC)-(NON-VC)
Sales before VC financing (in $Million)	5.103	8.963	-3.86*
Sales after VC financing (in $Million)	8.179	10.872	-2.693
Change in Sales (in $Million)	3.076	1.909	1.167*
Employment before VC financing	39.44	59.168	-19.728**
Employment after VC financing	63.756	68.598	-4.842
Change in Employment	24.316	9.43	14.886***

Table 7
First Stage: Dynamic model for the probability of receiving PE or VC funding

PEFUNDED takes on a value = 1 if the establishment receives funding from Private Equity (PE). VCFUNDED takes on a value = 1 if the establishment receives funding from Venture Capital (VC). MINORITY is equal to 1 if the establishment is owned by an ethnic minority. FOREIGN is equal to 1 if the owner of establishment has foreign status. WOWNER is equal to 1 if the establishment is owned by a woman. WCEO is equal to 1 if the establishment CEO is a woman. CHGPAYDEX indicates the annual change of maximum PayDex score. CHGDBR- is the change in Duns & Bradstreet credit rating toward a worse credit rating. CHGDBR+ is the change in Duns & Bradstreet credit rating toward a better credit rating. CHGSALE is the annual change in inflation adjusted sales of an establishment during one year prior to receiving PE or VC financing. CHGEMP is the annual change in employment of an establishment during one year prior to receiving PE or VC financing. UNEMP is a county level unemployment rate at which the establishment resides. CORP is equal to 1 if the establishment is a corporation. FIRMAGE is the number of years since the establishment is founded. GCONTRACT is equal to one if the establishment has a government contract. CA, MA, FL, NY, TX are state dummy variables to represent California, Massachusetts, Florida, New York and Texas. Other states dummies, Fama-French 48 industry dummies, and year dummies are included in the regressions but not reported to conserve the space. The standard errors are clustered by establishment level. *, ** and *** indicate statistically significant at 10%, 5% and 1% levels.

	PEFUNDED	PEFUNDED	VCFUNDED	VCFUNDED
MINORITY	-0.2108	-0.2170	-0.2912	-0.2218
	(6.73)***	(6.54)***	(6.45)***	(3.53)***
WOWNER	-0.0388	-0.0261	-0.2162	-0.1867
	(1.83)*	(1.76)*	(5.12)***	(5.71)***
FOREIGN	-0.1107	-0.0885	-0.1973	-0.1793
	(3.90)***	(2.88)***	(3.46)***	(2.48)**
WCEO	-0.1391	-0.1074	0.0168	-0.1281
	(1.31)	(0.91)	(0.11)	(0.50)
CHGPAYDEX	0.0016	0.0013	0.0005	0.0027
	(1.70)*	(1.33)	(0.36)	(1.08)
CHGDBR-	0.0551	0.0601	0.0817	0.0862
	(3.49)***	(3.36)***	(3.49)***	(2.19)**
CHGDBR+	-0.0466	-0.0417	-0.1218	-0.1399
	(2.34)**	(1.81)*	(4.20)***	(2.41)**
CHGSALE	0.0012	0.0008	0.0067	0.0018
	(1.52)	(0.96)	(1.53)	(0.24)
CHGEMP	0.0001	0.0001	0.0006	0.0011
	(1.06)	(1.21)	(1.81)*	(0.98)
FIRMAGE	-0.0024	-0.0028	-0.0412	-0.0366
	(7.64)***	(8.25)***	(24.28)***	(14.34)***
CORP	-0.1030	-0.1015	0.4244	0.3196
	(6.96)***	(6.48)***	(13.85)***	(8.22)***
GCONTRACT	0.1179	0.1112	0.1610	0.1533
	(6.50)***	(5.68)***	(5.29)***	(3.00)***
UNEMP	-0.0184	-0.0199	-0.0480	-0.0395
	(5.03)***	(4.99)***	(6.95)***	(3.77)***
CA	0.0104	-0.0039	0.2978	0.2401
	(0.57)	(0.20)	(11.51)***	(6.38)***
MA			0.2332	0.2574
			(6.31)***	(3.94)***
FL	-0.0180	-0.0707		
	(0.67)	(2.63)***		
NY	-0.0236	-0.0625	-0.0522	0.0182

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	(0.93)	(2.32)**	(1.18)	(0.27)
TX	0.0165	0.0100	-0.0524	-0.0279
	(0.73)	(0.41)	(1.19)	(0.43)
INTERCEPT	0.0581	0.1989	0.0940	0.1687
	(0.89)	(2.77)***	(0.46)	(0.81)
Observations	7748	6148	4582	1512
EST. with PE or VC	3874	3074	2291	756
Pseudo R-square	0.0638	0.0609	0.4060	0.3607
State dummies	Yes	Yes	Yes	Yes
Establishment Level Clustering	Yes	Yes	Yes	Yes

*, ** and *** are statistically significant at 10%, 5% and 1% levels.

Table 8
Second Stage: Differences-in-differences regressions for sales growth during 3 years prior and 3 years after financing

This table presents the second stage regression of differences-in-differences (Bertrand et al., 2004; Card, Katz, and Krueger, 1994) during three year prior to PE or VC financing (period -3, -2 and -1) and three years after PE or VC financing (period 1, 2, and 3). SALEGR is the annual inflation adjusted sales growth in the establishments during 3 years prior to PE or VC financing and 3 years after PE or VC financing. PE/VC FUNDED takes on a value = 1 if the establishment receives funding from Private Equity (PE) or Venture Capital (VC). POST PEVCFUNDED takes on a value = 1 during the periods after establishments received PE or VC financing. PE/VC FUNDED*POST PE/VC is the interaction variable that represents the differences-in-differences between establishments that received PE or VC financing and their control (matching) group during periods prior versus after receiving financing. LAGSALEGR is one period lag of sales growth. MINORITY is equal to 1 if the establishment is owned by an ethnic minority. FOREIGN is equal to 1 if the owner of establishment has foreign status. WOWNER is equal to 1 if the establishment is owned by a woman. WCEO is equal to 1 if the establishment CEO is a woman. CHGPAYDEX indicates the annual change of maximum PayDex score. CHGDBR- is the change in Duns & Bradstreet credit rating toward a worse credit rating. CHGDBR+ is the change in Duns & Bradstreet credit rating toward a better credit rating. CHGSALE is the annual change in inflation adjusted sales of an establishment during one year prior to receiving PE or VC financing. CHGEMP is the annual change in employment of an establishment during one year prior to receiving PE or VC financing. UNEMP is a county level unemployment rate at which the establishment resides. CORP is equal to 1 if the establishment is a corporation. FIRMAGE is the number of years since the establishment is founded. GCONTRACT is equal to one if the establishment has a government contract. CA, MA, FL, NY, TX are state dummy variables to represent California, Massachusetts, Florida, New York and Texas. Other states dummies, Fama-French 48 industry dummies, and year dummies are including in the regressions but not reported to conserve the space. The standard errors are clustered by establishment and year. *, ** and *** indicate statistically significant at 10%, 5% and 1% levels.

	PE	PE	VC	VC
	SALESGR	SALESGR	SALESGR	SALESGR
PE/VC FUNDED	0.0290	0.0263	0.2433	0.2720
	(2.07)**	(2.49)**	(2.98)***	(3.01)***
POST PE/VC	0.0041	0.0083	0.1009	0.1034
	(0.19)	(0.34)	(1.41)	(1.56)
PE/VC FUNDED x POST PE/VC	0.0248	0.0208	0.2518	0.2285
	(2.00)**	(2.11)**	(1.79)*	(1.68)*
LAGSALEGR	-0.0001	-0.0002	-0.0002	-0.0002
	(0.98)	(0.95)	(0.30)	(0.23)
WCEO	-0.2241	-0.2463	-0.7943	-0.6918
	(2.12)**	(2.26)**	(1.85)*	(1.60)
CHGPAYDEX	0.0006	0.0011	0.0005	0.0005
	(1.40)	(1.27)	(0.61)	(0.52)
CHGDBR-	0.0087	0.0215	0.0514	0.0511
	(1.04)	(1.42)	(1.14)	(0.96)
CHGDBR+	-0.0158	-0.0281	-0.1324	-0.1647
	(1.23)	(1.40)	(1.52)	(1.64)
FIRMAGE	-0.0020	-0.0026	-0.0136	-0.0143
	(5.49)***	(5.96)***	(1.53)	(1.50)
CORP	-0.0487	-0.0627	-0.0007	0.0077
	(1.69)*	(1.82)*	(0.00)	(0.05)
GCONTRACT	0.0368	0.0452	0.1880	0.2193
	(1.29)	(1.39)	(1.35)	(1.36)
CA	-0.0239	-0.0206	-0.1979	-0.2505
	(0.70)	(0.55)	(1.69)*	(1.87)*
MA			0.0323	0.0172
			(0.12)	(0.06)
FL	-0.0803	-0.0852		
	(2.49)**	(2.19)**		
NY	-0.0046	-0.0086	-0.2458	-0.3059
	(0.09)	(0.16)	(1.75)*	(1.99)**

TX	-0.0383	-0.0290	-0.0800	-0.0933
	(1.17)	(0.67)	(0.51)	(0.53)
INVERSEMILL	0.1373	0.1601	0.1038	0.0949
	(1.68)*	(1.99)**	(0.79)	(0.67)
INTERCEPT	0.1134	0.1686	-0.0487	-0.0201
	(1.27)	(1.53)	(0.21)	(0.08)
Observations	46,488	36,888	27,492	9,072
R-squared	0.0128	0.0123	0.0646	0.0643
EST. with PE or VC	3874	3074	2291	756
State dummies	Yes	Yes	Yes	Yes
Establishment and Year Clustering	Yes	Yes	Yes	Yes

Table 9
Second Stage: Differences-in-differences regressions for employment growth during 3 years prior and 3 years after financing

EMPGR is the annual employment growth in the establishments during 3 years prior to PE or VC financing and 3 years after PE or VC financing. PE/VC FUNDED takes on a value = 1 if the establishment receives funding from Private Equity (PE) or Venture Capital (VC). POST PEVCFUNDED takes on a value = 1 during the periods after establishments received PE or VC financing. PE/VC FUNDED*POST PE/VC is the interaction variable that represents the differences-in-differences between establishments that received PE or VC financing and their control (matching) group during periods prior versus after receiving financing. LAGSALEGR is one period lag of sales growth. MINORITY is equal to 1 if the establishment is owned by an ethnic minority. FOREIGN is equal to 1 if the owner of establishment has foreign status. WOWNER is equal to 1 if the establishment is owned by a woman. WCEO is equal to 1 if the establishment CEO is a woman. CHGPAYDEX indicates the annual change of maximum PayDex score. CHGDBR- is the change in Duns & Bradstreet credit rating toward a worse credit rating. CHGDBR+ is the change in Duns & Bradstreet credit rating toward a better credit rating. CHGSALE is the annual change in inflation adjusted sales of an establishment during one year prior to receiving PE or VC financing. CHGEMP is the annual change in employment of an establishment during one year prior to receiving PE or VC financing. UNEMP is a county level unemployment rate at which the establishment resides. CORP is equal to 1 if the establishment is a corporation. FIRMAGE is the number of years since the establishment is founded. GCONTRACT is equal to one if the establishment has a government contract. CA, MA, FL, NY, TX are state dummy variables to represent California, Massachusetts, Florida, New York and Texas. Other states dummies, Fama-French 48 industry dummies, and year dummies are including in the regressions but not reported to conserve the space. The standard errors are clustered by establishment and year. *, ** and *** indicate statistically significant at 10%, 5% and 1% levels.

	PE	PE	VC	VC
	EMPGRW	EMPGRW	EMPGRW	EMPGRW
PE/VC FUNDED	0.0145	0.0184	0.1207	0.1405
	(0.88)	(0.91)	(1.82)*	(1.89)*
POST PE/VC	0.0195	0.0076	0.0478	0.0570
	(0.88)	(0.44)	(0.74)	(0.97)
PE/VCFUNDED x POST PE/VC	0.0303	0.0294	0.3403	0.3239
	(2.33)**	(2.76)***	(2.65)***	(2.61)***
LAGEMPGR	-0.0264	-0.0303	-0.0108	-0.0105
	(0.85)	(1.11)	(2.01)**	(2.01)**
WCEO	-0.1022	-0.0965	-0.6626	-0.5738
	(1.11)	(0.99)	(1.76)*	(1.53)
CHGPAYDEX	0.0001	0.00004	0.0006	0.0009
	(0.36)	(0.06)	(0.86)	(0.97)
CHGDBR-	0.0013	0.0039	0.0030	0.0017
	(0.19)	(0.33)	(0.08)	(0.04)
CHGDBR+	-0.0032	-0.0188	-0.0506	-0.0776
	(0.32)	(1.08)	(0.78)	(1.03)
FIRMAGE	-0.0011	-0.0015	-0.0080	-0.0071
	(3.74)***	(4.17)***	(0.99)	(0.83)
CORP	-0.0309	-0.0583	-0.1028	-0.1127
	(1.33)	(1.80)*	(0.70)	(0.79)
GCONTRACT	-0.0026	-0.0009	0.2198	0.2355
	(0.10)	(0.03)	(1.69)*	(1.57)
CA	0.0009	0.0019	-0.1348	-0.1774
	(0.03)	(0.05)	(1.33)	(1.56)
MA			-0.1088	-0.1504
			(0.95)	(1.17)
FL	-0.0467	-0.0587		
	(2.93)***	(2.78)***		
NY	0.0377	0.0161	-0.1503	-0.1945
	(0.77)	(0.32)	(1.16)	(1.39)
TX	-0.0528	-0.0504	-0.1091	-0.1056

	(2.16)**	(1.43)	(0.78)	(0.65)
INVERSEMILL	-0.0375	-0.0399	0.0349	0.0054
	(0.90)	(0.83)	(0.29)	(0.04)
INTERCEPT	0.1641	0.2492	0.2428	0.2551
	(2.46)**	(2.57)**	(1.00)	(1.07)
Observations	46,488	36,888	27,492	9,072
R-squared	0.0134	0.0119	0.0667	0.0650
EST. with PE or VC	3874	3074	2291	756
State dummies	Yes	Yes	Yes	Yes
Establishment and Year Clustering	Yes	Yes	Yes	Yes

Table 10
Second Stage: The impact of PE and VC financing on establishment annual growth during three years after financing

SALEGR0, SALEGR1, SALEGR2, and SALEGR3 are the annual employment growth in the establishments during period 0, 1, 2, and 3 years after PE or VC financing. EMPGR0, EMPGR1, EMPGR2, and EMPGR3 are the annual employment growth in the establishments during period 0, 1, 2, and 3 years after PE or VC financing. PE/VC FUNDED takes on a value = 1 if the establishment receives funding from Private Equity (PE) or Venture Capital (VC). POST PEVCFUNDED takes on a value = 1 during the periods after establishments received PE or VC financing. PE/VC FUNDED*POST PE/VC is the interaction variable that represents the differences-in-differences between establishments that received PE or VC financing and their control (matching) group during periods prior versus after receiving financing. All control variables from Table 9 including states dummies, Fama-French 48 industry dummies, and year dummies are included in the regressions but not reported to conserve space. The standard errors are clustered by establishment and year. *, ** and *** indicate statistically significant at 10%, 5% and 1% levels.

Panel A. PE Funding	SALEGR 0	SALEGR 1	SALEGR 2	SALEGR 3	EMPGR0	EMPGR 1	EMPGR 2	EMPGR 3
PEFUNDED	0.0047	0.1831	0.0251	-0.0441	0.0149	0.1722	-0.0017	0.0665
	(0.18)	(1.40)	(0.16)	(0.41)	(0.68)	(1.29)	(0.01)	(1.08)
POSTPE	0.0188	0.0864	-0.0111	0.0066	0.0198	0.0816	0.0019	0.0099
	(1.07)	(1.16)	(0.37)	(0.38)	(1.94)*	(1.15)	(0.06)	(0.70)
PEFUNDED x POSTPE	0.0146	0.1972	0.0324	0.0297	0.0058	0.1764	0.0279	0.0165
						(3.16)**		(2.56)**
	(0.91)	(3.32)***	(2.40)**	(2.57)***	(0.37)	*	(2.21)**	*
INTERCEPT	0.1929	1.9092	-0.2331	0.1372	0.3040	1.8548	-0.3409	-0.0260
	(1.69)*	(1.38)	(0.49)	(0.60)	(1.94)*	(1.28)	(0.76)	(0.13)
Observations	35091	32982	26106	23746	34753	32982	26106	23746
R-squared	0.0067	0.0123	0.0082	0.0170	0.0064	0.0117	0.0079	0.0104
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B. VC Funding	SALEGR 0	SALEGR 1	SALEGR 2	SALEGR 3	EMPGR0	EMPGR 1	EMPGR 2	EMPGR 3
VCFUNDED	0.1949	0.2264	0.2623	0.0107	0.1469	0.1580	0.0371	-0.0910
	(1.43)	(1.49)	(0.76)	(0.08)	(1.87)*	(1.62)	(0.86)	(0.72)
POSTVC	0.1023	0.0344	0.0238	0.0564	0.0687	0.0692	0.0631	0.0303
	(1.57)	(0.25)	(0.46)	(0.94)	(1.19)	(0.53)	(1.23)	(0.73)
VCFUNDED x POSTVC	0.2856	0.3033	0.0642	0.03483	0.2830	0.2778	0.0268	0.0732
	(2.98)***	(2.38)**	(0.96)	(1.09)	(2.35)**	(2.34)**	(0.44)	(1.45)
INTERCEPT	-0.0118	-1.0202	-2.5033	0.8416	0.2544	-1.0829	0.4838	0.7363
	(0.05)	(1.30)	(0.58)	(1.15)	(1.08)	(1.43)	(1.80)*	(1.03)
Observations	9026	7869	6152	4884	9026	7869	6152	4884

R-squared	0.0624	0.1567	0.1078	0.0524	0.0614	0.1638	0.0565	0.0591
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes