



## Venture capital and new business creation <sup>☆</sup>

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### ABSTRACT

Using a comprehensive database of firms from 21 European countries over the period 1998–2008, we find that venture capital investment has a positive effect on the rate of new business creation. This is especially true in countries with higher entry costs, higher protection of intellectual property rights, and lower taxes on capital gains. Our results suggest that, controlling for country and industry characteristics, venture capital is beneficial to bringing new ideas to the marketplace in the shape of new companies.

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## 1. Introduction

It is generally accepted that access to finance is an important determinant of new business creation and growth (Rajan and Zingales, 1998; Aghion et al., 2007). However, banks are often reluctant to finance small new firms because of high uncertainty, information asymmetry, and agency costs (Beck et al., 2005). In comparison, venture capitalists are specialized to overcome these problems through the use of staged financing, private contracting, screening, and active monitoring (Hellmann, 1998; Gompers and Lerner, 1999, 2001a; Kaplan and Stromberg, 2001), and are therefore more likely to finance early stage and technology companies

than banks (Carpenter and Petersen, 2002; Schwienbacher, 2008; Cosh et al., 2009). Recent research (Mollica and Zingales, 2007; Samila and Sorenson, 2011) shows that firm entry increases in US regions that attract more venture capital (VC). However, there is no empirical evidence as to the ability of VC to replicate this success in an international context.

In this paper, we fill this gap by providing the first comprehensive study of the effect of venture capital on new business creation in 21 European countries. This question is highly relevant to economic policy makers given that they often perceive venture capital as an important contributor to the rising leadership of US firms in high technology industries (Gompers and Lerner, 2001b). Hoping to rival this success, the European Union stimulates venture capital investment in an attempt to make Europe a hotbed for entrepreneurship (Aernoudt, 1999; Gilson, 2003). We exploit cross-sectional and longitudinal variation in the supply of venture capital across countries and industries in order to determine whether the availability of venture capital stimulates new business creation, and which characteristics of the regulatory and business environment strengthen or hinder the effect of venture capital on the formation of new firms.

Our paper adds to a remarkably limited field of research on the effect of venture capital on aggregate economic growth rather than on firm-level performance. Among the few studies on the subject, Kortum and Lerner (2000) and Hirukawa and Ueda (2008) show that venture capital investment in the United States is associated with more innovation as measured by patent counts and patent

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citations at the industry level. Tang and Chyi (2008) find that venture capital investment enhances aggregate productivity growth. Our paper analyzes another such channel through which venture capital affects economic growth, namely, the rate of new business creation.

There are three mechanisms suggested by the literature via which venture capital should lead to higher rates of new business incorporation. First, venture capitalists may directly assist the birth of new firms. Keuschnigg (2004) develops a model in which the entrepreneur's own wealth constitutes a binding constraint, and so venture capitalists stimulate new business creation by ensuring that good ideas receive funding (seed capital) even when conceived by entrepreneurs without substantial assets. In addition, venture capitalists may raise the firm's early-life survival chances and growth through value-added services such as mentoring entrepreneurs, hiring executives, formulating strategies, and helping the companies they finance establish themselves in the marketplace (Sahlman, 1990; Kaplan and Stromberg, 2001; Hellmann and Puri, 2002; Bottazzi and Da Rin, 2002).<sup>2</sup>

Second, nascent entrepreneurs may recognize the need for capital in the future and only establish firms when they have reasonably high expectations of obtaining such funding. Sevilir (2010) develops a model in which the availability of new firm financing through venture capitalists makes it more desirable for employees to exert effort, generate a new business idea, and start their own firm. This implies that the availability not just of seed and start-up capital, but of VC capital at later financing stages should matter too for firm entry (Samila and Sorenson, 2011).

Third, firms may be engaged in "entrepreneurial spawning" or in spin-offs. Gompers et al. (2005) examine the propensity of publicly traded firms to create new venture backed firms. They find that younger public firms located in main hubs of venture capital activity are the most likely to create new ventures. The employees of these firms are more likely to start their own business because of their exposure to the entrepreneurial process and due to working in a network of entrepreneurs and venture capitalists. While we investigate the effect of venture capital on firm entry, distinguishing among the various channels through which this effect is realized is beyond the scope of the paper.

The literature has distinguished entry into an industry from new business creation. The first accounts for the migration of firms across industries, while the second emphasizes pure entrepreneurship (*de novo* firms). We focus on the second approach and define entry as the incorporation of a previously nonexistent firm in the respective industry and country. To that end, we use data from Amadeus, a comprehensive database of corporations across a number of developed and transition countries in Europe, which allows us to calculate the share of new firms to total firms in each industry for the period 1998–2008. We combine that data with industry-level data on venture capital investment in Europe from VentureXpert. This allows us to study the contribution of venture capital to new business creation over the longest period for which both firm entry and venture capital investment can be calculated. In addition, we capture a full business cycle, encompassing the peak of the dot-com bubble, the slowdown in VC fund-raising in the early 2000s, and the resurgence of VC activity in the mid-2000s.

Finally, we address in two different ways the potential endogeneity induced by the fact that the supply of venture capital may in itself depend on the demand for it by new firms. First, we employ a panel approach which allows us to eliminate the effect of time-invariant country and industry level left-out variables. Second,

we use the variation across countries and over time in buyout fund-raising and in pension reforms as instruments to identify the supply of venture capital. The logic behind this approach is that the size of buyout funds and pension funds is correlated with risk capital investment, while at the same time the general demand of institutional investors for alternative assets should not depend on entrepreneurship. Our results remain robust to these specifications.

We find that the rate of new business creation increases in countries and industries with sizeable venture capital investment. An increase in venture capital investment by a factor of 7.2 (the difference between an industry at the 25th and an industry at the 75th percentile of VC investment) leads to an increase in the share of new firms for the medium-entry industry by between 3% and 19%, depending on the estimation approach. This finding is robust to a variety of data issues, as well as to using venture capital investment measured over different time periods. Crucially, the evidence that VC stimulates new business creation does not disappear once we address the endogeneity of the supply of venture capital, implying that our results are not driven by investment responding to a higher demand for VC. We find that the effect of venture capital is not influenced by its high correlation with other types of finance, such as bank credit, or by the sensitivity of venture capital-intensive industries to alternative market and regulatory developments. In general, we find that venture capital works better in countries with higher entry costs, higher protection of intellectual property rights, and lower taxes on capital gains. This implies that in a cross-country context, VC helps nascent entrepreneurs overcome the monetary cost of establishing new firms, and it is more effective in countries where the return to investment in intangible capital is higher. Finally, the effect of VC on new business creation is robust to controlling for other standard determinants of new business creation, notably barriers to entry.

The paper proceeds as follows. In Section 2 we summarize the data. Section 3 describes the empirical methodology. Section 4 presents the empirical results. Section 5 concludes with the main findings of the paper.

## 2. Data

This section describes the two main data sources used in the empirical analysis. We first describe our concordance key, necessary to match the data sources, then the data on *de novo* firm creation, and finally the data on VC investments.

### 2.1. Concordance

The relevant data are initially available in different industrial classifications. The original venture capital data from Thomson VentureXpert contain information about deal value as well as each portfolio company's industry affiliation codes using Thomson VentureXpert's own VE Primary Industry Sub-Group 3 and SIC codes. However, for 13.8% of the deals, the SIC industry affiliation information is missing. For these cases we developed a unique concordance key to translate these companies' VE Primary Industry Sub-Group 3 to a SIC code. The concordance key is constructed based on the most frequently observed SIC code from all deals in that VE Primary Industry Sub-Group 3 realized in 21 European countries from 1998 until 2008. By using this key, we are able to assign all target companies to a SIC code. Aggregate values of venture capital invested in each industry are then calculated for each year and for each country. This procedure is based on Hirukawa and Ueda (2008).

The data on the share of new firms come in NACE Rev. 1.1 format, which is the industrial classification used by Amadeus. To

<sup>2</sup> Cumming et al. (2005) show that venture capitalists that provide financial and management expertise to entrepreneurial firms raise significantly more capital from investors than venture capitalists that only provide marketing and administrative expertise.

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