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A comparison of the effect of angels and venture capitalists on innovation and value creation

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ABSTRACT

We examine the extent to which private equity investors generate value-added benefits to venture development and investigate whether these benefits differ across angel groups and venture capitalists. This is the first study to compare the relative contributions to venture innovation and successful exits by angel groups versus venture capitalists. We do so by tracking external investments in 350 technology ventures. The results suggest that VCs and angel groups contribute equally to innovation rates, but these effects are non-additive. We also show, however, that VC-backed ventures have more impactful innovations and experience faster commercialization rates.

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1. Executive summary

Over the past four decades, private equity investments have played a significant role in developing technology ventures to catalyze innovation and entrepreneurial growth. The majority research on the impact of private equity has focused on one type of investor, the venture capitalist, and established that value-added benefits derived from active engagement of VCs facilitate innovation for technology ventures. Our paper complements this stream of research by investigating whether the value-added contributions from active engagement differ between angels and VCs.

A focus on establishing the relative impact between angels and VCs on creating value is warranted from both managerial and academic standpoint. With the growing access to alternative sources of private equity, entrepreneurs have a choice between sources of private equity that might be guided by the terms of the financial offering, or by the value-added benefits each may offer. So understanding the relative contribution to value creation has considerable practical importance. Investments by angels and early stage VCs tend to concentrate on the initial stages of venture development, and it is frequently the case that angel investments either precede VCs or syndicate together. A solitary focus on VCs without accounting for angels may be spurious, as angel investments may be endogenous to VC investments and raises concerns that the effects prior research has attributed to VCs may be equally attributable to angels. Finally, angels and VCs are dissimilar in terms of the investment structure and governance requirements. Thus, there

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may be sound theoretical reasons to expect that angels and VCs have a differential impact on value creation. Our analysis compares value-added benefits measured through innovation and commercialization in early stage VC-backed firms with angel-group-backed firms.

We build on the theoretical ideas from studies of the role of financial intermediaries in alleviating problems around asymmetric information and moral hazard to compare angel and VC contributions along the dimensions of signaling and information intermediation, governance, and investment structure. To decouple the effect of angel and VC investment, we assembled a novel longitudinal data set of 350 technology ventures backed by angel groups and early stage VCs representing five technology-intensive industries. Clearly, the process of external investment in ventures is not a random event, and our empirical analysis employs two alternative econometric approaches—difference-in-differences estimation and switching regression to control for selection effects. The results highlight that angel groups and early stage VCs provide an equivalent impact to accelerate innovation rate that prior research to date has solely attributed to VCs. However, when investigating the impact of innovation or performance through successful commercialization, our results indicate that VC influence is significantly higher compared to angel group influence.

Our application of theoretical rationale and empirical findings contribute to enhance our understanding about the substitutive and complementary effect of different sources of private equity. In addition, the findings have important normative implications for entrepreneurs, private equity investors, and policy makers who traditionally focus more on VCs. Entrepreneurs incur significant cost in seeking private equity investment, and it is important to understand how different private equity investors add value to the venture beyond capital infusion.

2. Introduction

Entrepreneurs launching technology-based ventures face considerable risks as they innovate while assessing technological feasibility, business model credibility, and product or service viability. These early stage entrepreneurial risks severely limit capital sources, yet angel investors and venture capitalists fill this need by assuming risk alongside company founders in exchange for an equity stake in the company. It is not only capital infusion that fuels innovation but also the active way in which private equity investors can engage founders through strategic counsel around development and production and connecting them to key management talent. In this paper, we investigate whether private equity does, in fact, provide value-added services by influencing firm-level innovation and commercialization beyond mere capital infusion. While prior literature has extensively studied contributions from venture capital investments, our emphasis is on assessing whether the contributions from active engagement differ between angels and venture capitalists (VCs).

Examining the relative impact of angels and VCs in creating value is worthwhile in several respects. Both have a high concentration of their investment in seed and early stage ventures, where the risks associated with innovation are highest. In 2013, 86% of all angel investment and 36% of all venture capital was invested (and 55.6% of all deals) in seed and early stage ventures (Center for Venture Research, 2013; PricewaterhouseCoopers MoneyTree report, 2013). It seems early stage entrepreneurs have access to multiple sources of private equity, so understanding the relative contribution to value creation has considerable practical importance. There are also substantive empirical implications because empiricists accounting for one type of private equity without accounting for the other risk misstating the true effect on value creation. For example, prior empirical research that has focused exclusively on how venture capital contributes to value creation without considering angel contributions may over- or under-state the effect of VCs. Finally, there may be theoretical reasons to expect a difference in the value-added services between angels and VCs. Dissimilarities on such issues as board involvement, investment structure, exit requirement, and ownership control might inspire varying degrees of effectiveness of active involvement in ventures.

Although the literature on entrepreneurial finance has been inattentive to the relative impact of angel financing and VC financing on innovation and exit, there has been research comparing angels and VCs on other dimensions, such as sourcing information (Fiet, 1995a), risk avoidance approaches (Fiet, 1995b), subsequent investment returns (Mason and Harrison, 2002), and ability to manage slack resources (Vanacker et al., 2013). Our research complements this broader stream of work.

There are a number of empirical challenges to overcome to address our research question. A focus on angels invites consideration of the full spectrum of different types of angel investors, ranging across wealthy individuals, former or existing entrepreneurs, or executives with or without relevant industry experience, and those organized into angel groups. Unfortunately, there is a lack of data capturing this heterogeneity. Currently, the only data available is that collected by angel associations from angel groups and networks (OECD, 2011). To overcome this limitation, we focus on an available sample of technology ventures funded by angel groups. This focus compromises the generalizability of our findings and may bias the results against finding differences because angel groups are thought to be similar to early stage VCs along several dimensions (OECD, 2011). It has the advantage, however, of a conservative test. Moreover, it is a test worth undertaking because the angel investment sector is not only growing, but is becoming increasingly more formalized and organized through groups (Carpentier and Suret, 2015; Shane, 2008) to leverage economies in due diligence, investment scale and staging, networks, and capability. These are economies typically enjoyed within venture capital firms.

Another empirical challenge is in measuring private equity effects on innovation. Our approach is consistent with prior studies in measuring innovation and innovation importance through patenting rates and patent citations, respectively (e.g., Kortum and Lerner, 2000; Lerner et al., 2011). An exclusive focus on patents might be criticized for not being a comprehensive assessment of innovation, but it has the advantage of being broadly available across many contexts. We also consider successful exits through acquisition or initial public offering as a measure of value creation through innovation.

The second dimension of the challenge is distinguishing whether the relative contribution of angel groups and VCs on venture innovation is tied to (a) the decision to invest in a venture or (b) the active contributions by investors through their value-added

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