Journal of Corporate Finance 23 (2013) 345–367

Contents lists available at ScienceDirect

Journal of Corporate Finance

journal homepage: www.elsevier.com/locate/jcorpfin

# Public policy, entrepreneurship, and venture capital in the United States☆

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ARTICLE INFO

*Article history:*
Received 4 July 2012
Received in revised form 3 September 2013
Accepted 5 September 2013
Available online 16 September 2013

*JEL classification:*
G24
G32
G33
G38
K22
K31

*Keywords:*
Venture capital
Entrepreneurship
Public policy
Tax
Labor law
Bankruptcy

ABSTRACT

This paper empirically examines business starts, deaths, venture capital and patents in relation to U.S. public policy. The most consistent evidence in the data shows that lower levels of labor frictions and higher levels of SBIR awards are associated with more business starts and higher levels of venture capital per population. Counter to expectations, the data indicate a positive impact from the homestead exemption only among the bottom quartile homestead exemption states, and otherwise a negative impact. We analyze a variety of other policy instruments and compare the effects of policy in regular times with the financial crisis of 2008–2010.



## 1. Introduction

A central question in entrepreneurial finance is the appropriate role for public policy for stimulating investment, such as venture capital, and for stimulating the creation, survival, and innovation (Denis, 2004; Jeng and Wells, 2000). The stimulation of entrepreneurship can occur through direct government subsidy programs and legislative changes that affect the institutional setting. These programs are large and important around the world. For example, The World Bank spent more than $US10 billion

☆ We are indebted to Harold Mulherin, the Editor, and to an anonymous referee for very timely and helpful suggestions. Also, we are indebted to the Fraser Institute for data, assistance, suggestions and comments. We especially owe thanks to Amela Karabegovic, Alex Gainer, and Keith Godin. As well, for helpful comments we owe thanks to Rebel Cole, Sofia Johan, Ming Dong, Katrin Hussinger, Gordon Roberts and Pauline Shum, and the IFN Conference on the Economics of Ownership, Organization and Industrial Development in Vaxholm, Sweden (10–11 September 2009), York University (January 2010 and March 2011), the American Law and Economics Association, Princeton (May 2010), the University of Saskatchewan (May 2010), the Third Annual Searle Research Symposium on the Economics and Law of the Entrepreneur at Northwestern University (June 2010), the European Financial Management Association Annual Conference in Aarhus, Denmark (June 2010), the European Financial Management Association Meeting on Alternative Investments in Toronto (April 2011), the Milan VICO Conference (June 2011), the Conference on Business Creation at George Washington University (October 2011), the Kauffmann Empirical Entrepreneurship Conference, Philadelphia (November 2011), and the Eastern Finance Association, Boston (April 2012).

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http://dx.doi.org/10.1016/j.jcorpfin.2013.09.005

in 2001–2005 to promote small enterprises (Beck et al., 2008). In the U.S., government spending grew to over 45% of GDP during the recent financial crisis (Chantrill, 2009), a record level since WWII. The increasing presence of government in stimulating entrepreneurial activity gives rise to a growing need to reexamine the role of public policy on entrepreneurial activity and entrepreneurial finance. How exactly do public policy tool mechanisms such as government transfers, and labor and bankruptcy laws influence the rate of business start-up activity, venture capital finance, and innovation? How important are direct policy measures such as the Small Business Innovation Research (SBIR) awards and business incubators relative to taxation and the institutional environment? What is the relative importance of the institutional setting versus direct policy instruments such as the SBIR program? How do such mechanisms compare in normal times versus the financial crisis period of 2008–2010?

In this paper we examine state level data over 1995–2010 to study the determinants of new establishment births, births–deaths, venture capital, and patents. Our main findings highlight strong and consistent evidence that lower levels of labor frictions and higher levels of SBIR awards are associated with more business starts and higher levels of venture capital per population. The data do not indicate much evidence consistent with the view that the overall tax burden gives rise to economic harm in terms of less entrepreneurial activity. Counter to expectations, the data indicate a positive impact of the homestead exemption only among the bottom quartile homestead exemption states, and otherwise a negative impact. We analyze a variety of other policy instruments and compare the effects of policy in regular times with the financial crisis of 2008–2010.

Our paper is at a broad level related to recent scholarship such as Lerner (2009), who has argued that direct government investment programs often are poorly designed and hence fail to meet their objectives. Also, at a broad level our work is related to earlier work on the topic of venture capital fundraising which compares venture capital to GDP (Jeng and Wells, 2000), and this work highlights the importance of legal and institutional setting across countries for stimulating venture capital investment.

Our work is perhaps most closely related to scholarship that has examined differences in entrepreneurship across U.S. states. Earlier work on topic based on policy measures averaged over 1995–1999 and outcome measures average over 2000–2004 (Xue and Klein, 2010) suggests the importance of a smaller public sector for stimulating entrepreneurial activity, as measured by an aggregation of patents, SBIR awards, venture capital, and technology establishments. Our findings are consistent with Xue and Klein (2010), but in this paper, we take a somewhat different approach by examining a panel data setting, different outcome variables that are not aggregated such as new establishment births, births–deaths, venture capital, and patents, and examine data that includes but is not limited to the recent financial crisis.

This paper is organized as follows. The second section describes policy instruments that potentially impact on entrepreneurial activity, venture capital, and innovation. The third section introduces the data and provides the summary statistics. Multivariate regression analyses are thereafter presented in the fourth section. After the presentation of the main regressions, we discuss alternative robustness checks, acknowledge limitations, and consider extensions. Concluding remarks follow in the last section.

## 2. Policy instruments for entrepreneurship, venture capital, and innovation

The OECD (1996) and others have argued that entrepreneurship and innovation will facilitate economic growth and the competitive advantage of nations in the 21st century. Much evidence, albeit not all, indicates that small high-tech companies contribute disproportionately to innovation and economic growth (World Bank, 1994, 2002, 2004). Drivers of entrepreneurial activity have been extensively researched in the U.S. and internationally. Empirical evidence points to a number of factors, including market conditions, education, finance, information, spillovers and agglomeration (Audretsch, 2007; Audretsch and Feldman, 1996; Audretsch and Keilbach, 2007; Bertoni et al., 2011; Bjornskov and Foss, 2008; Cosh et al., 2009; Evans and Jovanovic, 1989; Foss et al., 2007a,b, 2012; Colombo and Grilli, 2008; Fossen, 2011; Gaston and Nelson, 2000; Imai and Kawagoe, 2000; Wang and Wang, 2010, 2012, forthcoming; Wang and Zhou, 2004). Empirical evidence has likewise confirmed the role of personal bankruptcy laws to mitigate the cost of failure (Armour and Cumming, 2008; Berkowitz and White, 2004; Fan and White, 2003), taxation to minimize moral hazard and maximize the returns to entrepreneurship, and legal and institutional settings that protect property rights and mitigate the start-up costs and costs of failure (Acemoglu and Johnson, 2005; Chavis et al., 2009; Djankov et al., 2002; Engel and Keilbach, 2006; Glaeser et al., 2004; Klapper and Love, 2011; Klapper et al., 2006; La Porta et al., 1999; Levine, 2005; Xue and Klein, 2010; Yung, 2009).

In this section, we explain policy instruments pertinent to comparing the 50 U.S. states. Section 2.1 compares the institutional setting in different states in terms of the size of government, taxation, and labor policies. Section 2.2 discusses other policy instruments pertinent to the institutional setting, as well as specific government expenditure programs specific to the U.S. context.

### 2.1. Institutional setting

In this subsection we examine and discuss the role of government transfers and subsidies, takings and discriminatory taxation, labor policies, and bankruptcy law in entrepreneurship, venture capital, and innovation. The next subsection discusses direct government programs.