

# Public policy and the creation of active venture capital markets

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Received 5 October 2004; received in revised form 10 June 2005; accepted 20 September 2005

Available online 25 January 2006

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## Abstract

We assess the effectiveness of different public policy instruments for the creation of active venture capital markets. Our methodology focusses on ‘innovation ratios’, defined to be the shares of high-tech, and of early stage, venture capital investments. We study a unique panel of data for 14 European countries between 1988 and 2001. We have several novel findings. First, we find no evidence of a shortage of supply of venture capital funds in Europe, a result which questions the effectiveness of the most widely used policy for fostering active venture capital markets. We also find other policies to be effective. In particular, the opening of stock markets targeted at entrepreneurial companies has a positive, large effect on the innovation ratios. Reductions in the corporate capital gains tax rate increase the share of both high-tech and early stage investment. A reduction in labor regulation also results in a higher share of high-tech investments. Finally, we find no evidence of an effect of increased public R&D spending on the innovation ratios.

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*Keywords:* Venture capital; Entrepreneurship; Capital gains tax; Corporate income tax; Public R&D expenditure; Stock markets

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## 1. Introduction

Venture capital is a form of financial intermediation particularly well suited to support the creation and growth of innovative, entrepreneurial companies (Hellmann and Puri, 2000, 2002; Kortum and Lerner, 2000). It specializes in financing and nurturing companies at an early stage of development (‘start-ups’) that operate in high-tech industries. For these companies the

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expertise of the venture capitalist, its knowledge of markets and of the entrepreneurial process, and its network of contacts are most useful to help unfold their growth potential (Bottazzi et al., 2005a; Gompers, 1995; Hellmann and Puri, 2002; Lerner, 1994, 1995). By contrast, when venture capital is applied to companies at a later stage of their growth, or in companies which operate in technologically mature industries, it has less of an opportunity to ‘make a difference’ (Michelacci and Suarez, 2004). Economics thus points to the desirability of providing an adequate share of venture investments in high-tech and early stage companies.

Such a goal has been shared by public policy, which appreciates the possibility to foster venture capital for achieving economic growth and job creation ((Bottazzi and Da Rin, 2002a; European Commission, 2003). Governments around the world have been trying to replicate the success that venture capital has achieved in the United States (Megginson, 2004). These attempts absorb large sums of public money. Yet, we know very little about what policies can really help create active venture capital markets. Our study contributes a first step towards filling this gap. While we cannot evaluate both the benefits and the costs of alternative policy instruments for active venture capital markets, we can contribute a rigorous assessment of what their impact has been in the recent European experience.

We start by discussing the methodological challenges to assessing the effectiveness of alternative public policies for venture capital. We propose an empirical approach which allows to minimize the risk of omitting relevant explanatory variables. This relies on the notion of ‘innovation ratios.’ These are defined to be the ratio of high-tech investments to total venture investments (high-tech ratio), and the ratio of early stage investments to total venture investments (early stage ratio).

These ratios are useful for methodological reasons, but also for their substantive meaning: they measure the extent to which venture capital markets are active, i.e., provide support for high-tech and early stage ventures. By looking at the innovation ratios we can better understand how policy can make venture capital markets not only larger but also more effective—i.e., better able to cater to those firms which most benefit from the support of a venture capitalist.

Economic analysis has identified several policies as potentially useful for the development of active venture capital markets. For each of them we discuss the predicted effect on the innovation ratios. First, theory suggests that innovative start-ups suffer from credit constraints, and that these constraints are more severe for high-tech and early stage firms. Such constraints may be overcome by public policies which increase the supply of funds available for early stage and high-tech investment. This would stimulate venture investments in high-tech and early stage firms, and so result in higher innovation ratios. The other relevant policies influence the innovation ratios by affecting the expected (after tax, risk-adjusted) return to new ventures. A higher expected return reduces credit rationing and so increases the innovation ratios. Taxation affects the return to investors and entrepreneurs in several ways. A lower corporate capital gains tax increases the return to investors. A lower differential between the personal tax rate and the capital gains tax rate makes leaving a job and become an entrepreneur more attractive. Lower corporate income taxation increases the return to both investors and entrepreneurs by increasing the present value of future (after tax) corporate income. Beyond taxation, the existence of viable exit markets for venture investments also increases the expected return to investors and entrepreneurs. Policies which result in the creation of stock markets suitable for listing entrepreneurial companies are therefore expected to increase the innovation ratios. The expected return to investors and entrepreneurs can also be made higher by policies that increase the stock of R&D, giving rise to technological spillovers, and in turn to valuable entrepreneurial opportunities. Finally, the reduction of barriers to entrepreneurship—such as restrictions to hiring and firing workers—

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