



Risk Financing for Knowledge-Based Enterprises

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Innovative firms offer a return on investment that is skewed and highly uncertain, with risk characteristics and default probabilities that are hard to estimate. The likely existence of substantial informational asymmetries between such companies and investors make it difficult to come up with a mutually agreeable financing contract. In addition, the intangible nature of innovative activities makes the assessment of their monetary values difficult before they become commercially successful and offers little salvage value in the event of failure. Regarding the firms, smaller companies tend to have limited market power, a lack of management skills, a higher share of intangible assets, an absence of adequate accounting track records and few assets, if any. The assessment can therefore be made that the more knowledge-intensive the firm, and the smaller its size, the harder it will be for it to gain access to capital. A European Commission study published in 2002 identified access to financing as the most crucial challenge facing small and medium-sized enterprises (SMEs) (European Commission, 2002: 13).

Enterprises that require outside capital beyond the amount invested by the founders, family and friends (commonly known as "the three Fs") will turn to a variety of financing mechanisms. Two important mechanisms are debt and equity. Debt involves borrowing money from an institutional lender that is repaid with interest. The advantages of debt financing are that interest payments are tax-deductible and equity - read control management - is not surrendered. However, its disadvantages, especially to Knowledge-Based Enterprise (KBEs) (1), are substantial. First, they are considered riskier than other types of enterprises. Second, lack of accounting records and inadequate financial statements make it difficult for banks to assess them. Third, the high administrative costs of lending or investing small amounts do not make loan portfolios for such companies a profitable business. Hence, debt financing is basically an inappropriate mechanism for risk financing, particularly at early stage KBEs.

Equity involves capital investments made by outside parties who become partial owners of the firm. The most basic hurdle to equity financing is finding investors who are willing to buy into the business. The degree to which a business is willing to share management control may be just as crucial to equity financing as its appeal to investors. Two major means of equity funding exist that aim at providing funding to new ventures. Business Angels are private investors who allocate a small part of their net worth to investments in high-risk/high-reward early stage businesses or in more mature businesses that have smaller capital needs than those in search of venture capital. For the entrepreneur, angel financing often provides the critical first funds needed to attract key employees and to develop a technology or a product to the stage where more significant venture capital funding becomes available. In return for their investments, business angels receive common stock in the enterprise, although some may demand preferred stock giving them certain rights and liquidation preferences over the common stock. In order to protect their investment, business angels often ask the firm to agree not to take certain actions without their approval in what are known as negative or restrictive covenants.

In many regions and countries, business angels have organized themselves into networks. These networks create channels for communication between investors and entrepreneurs, and enable a more effective mobilization of informal capital. By collecting investment-seeking individuals into groups, business angel networks (BANs) can increase the supply of risk capital and the efficiency in which it is used (as a consequence of more investors being introduced to more investment proposals).

Venture capital is the second type of equity risk financing and the one more typically used by firms that have successfully raised pre-seed and seed funding. It is provided by venture capital funds (VCFs) that make investments of several millions of dollars (typically between five and fifty million) in return for stock. As in the case of business angels, venture capital is often the course taken by KBEs with little or no collateral cash flows and looking to expand their capital in return for a share in future profits. There are three major types of VCFs: private partnerships, subsidiaries of industrial corporations and financial institutions, and public entities. In most countries, private partnerships control the largest share of venture capital resources. Subsidiary VCFs of financial institutions are affiliated with banks, pension funds and other entities of this type, while those of industrial corporations are often spun-off from the mother company (see below). Public VCFs are set up - but not always managed - by national or regional governments (Smith and Florida, 2000: 201-207).

VCFs assess business plans that are submitted to them for their potential commercial success. They evaluate the promise of the firm's technology and consider the experience and flexibility of management and potential market size. Like business angels, they rely heavily on personal contacts in their search for - and initial screening of - venture opportunities and will also often demand preferred stock, representation on the board of directors, and numerous restrictive covenants as conditions for their investments. These investments are usually made in stages so as to closely monitor potential profitability of funded projects over time.

Government Policy Options for Risk Financing

As argued above, new knowledge-based enterprises tend to face difficulties in their access to various sources of funding. The growing recognition of the importance of KBEs and of the challenges they face in raising risk financing has led to a proliferation of government programs to close perceived financing gaps, especially those faced by smaller and highly innovative firms during the initial period of their existence.

Policy Options for Debt Financing

Some governments offer direct loan programs, including micro-lending, particularly targeting SMEs at the inception stage. These programs generally require a personal guarantee from an investor with a stake in the business. For example, the U.S. Small Business Administration offers direct long-term loans for fixed assets of up to \$500,000 and MicroLoan programs of up to \$25,000. However, most direct loan programs do not appear to be suitable for financing KBEs since they do not share potential upside return but assume a significant portion of downside risks. For example, the Business Development Fund (*Ethervsudviklingsfonden*) was established in Denmark to provide high-risk loans to high-technology projects in start-ups and established enterprises. The Fund was set up to share the downside risk, but receive only a fixed interest for commercially successful projects. More than sixty percent of total funding was lost on more than 900 funded projects. The fund was recreated as the Danish Investment Fund (*V?kstFonden*) in 2000.

Concerning Loan Guarantee Programs, many governments have implemented these mechanisms to close the debt financing gap for KBEs. The aim is to transfer part or some of the lending risk to the public sector while leaving the administration of the loans in the hands of the banks (in order to maintain efficiency and contain program costs). In most cases, the subsidy component is not reflected in the interest rate that is charged to borrowers, which is usually the market rate plus a small premium, but rather in the government's incurring of some or all of the costs when clients default on their loans.

Policy Options for Equity Financing

Relaxed investment regulations, specifically those affecting pension funds and capital gains tax rates, may lead to an increase in capital made available for financing risk. Furthermore, increasing the expected rate of return on investments in KBEs is likely to shift venture capital investments towards KBEs with less collateral, namely those at the earlier stages and working on more advanced technologies (Da Rin, Ncodano and Sembenelli, 2005: 25).

There are also examples of Government Business Angel and Venture Capital Initiatives. In the U.S., for example, the Small Business Investment Act passed in 1958 authorized the founding Small Business Investment Companies (SBICs). These are privately organized and managed investment firms, licensed by the Small Business Administration (SBA), which fund SMEs by channeling long-term federal loans into VCFs, loans and combined debt and equity mechanisms (Smith and Florida, 2000: 210). Currently, there are over 270 SBICs nationwide with \$3.5 billion in private funds and \$1 billion in government money to lend. However, they are often too restrictive for new KBEs. On the U.S. public VCF scene, it is the state and local governments that are most active largely due to their closer relationship with businesses and regional / local innovation compared to the federal government. Specifically for SMEs, state and local governments have traditionally taken the lead for policy formulation and implementation (Vonortas, 2000: 18). The fact that sources for venture capital as well as firms it is invested in both tend to be geographically focused also helps to explain this phenomenon.

In the European Union, the European Investment Fund (EIF) enhances risk financing by channeling appropriated E.C. and European Investment Bank funds to VCFs. In 2002, it invested 471.5 million euros in 36 VCFs, down from 800 million euros in 57 VCFs the year before. Its emphasis is on early-stage KBEs, which comprise close to 75 percent of its total portfolio of commitments (European Commission, 2003b: 17).

Governmental initiatives may also include Grants, which usually are merit-based and highly competitive and may be awarded on a "cost-sharing" basis in which the recipient is required to invest a certain amount in addition to the grant given.

Conclusions

Knowledge-based enterprises are important for countries transitioning into knowledge economies and hoping to rely on advanced technologies for their economic growth. The

innovations these enterprises generate stimulate trade, generate outside investment, create knowledge and improve the potential of human capital. However, most traditional funding mechanisms are unsuitable for KBEs, especially new ones or those working on advanced technologies that are in early stages of development. Through a number of policy initiatives, starting with a favorable institutional and legal framework for business development, governments can provide funding solutions for this type of firms, which are the seedlings of tomorrow's employment and wealth creating organizations.

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References

- Da Rin, M, G Ncodano and A Sembenelli 2005. *Public policy and the creation of active venture capital markets*. Brussels: European Central Bank Working Paper Series No. 430.
- Gompers, Paul and J Lerner 1999. *What Drives Venture Capital Fundraising?* Cambridge, MA: National Bureau of Economic Research.
- Smith, D and R Florida 2000. Venture capital's role in regional innovation systems: historical perspective and recent evidence." In *Regional Innovation, Knowledge and Global Change* ed. Z Acs. London: Pinter.
- Vonortas, Nicholas 2000. *Science and Technology Policy Initiatives in the Americas*. Beirut: United Nations Economic and Social Commission for Western Asia.

For Further Reading

- Angel Capital Association website: <http://www.angelcapitalassociation.org>, last accessed 26 December 2006.
- Ben-Ari, Guy 2006. Innovation policy in the knowledge-based economy: the Israeli case. In *"Mode 3" Knowledge Creation, Diffusion and Use in Innovation Networks and Clusters: A Comparative Systems Approach Across the United States, Europe and Asia*, eds. E Carayannis and D Campbell, pp. 253-282. Westport, CT: Praeger.
- Council on Competitiveness 2004. *National innovation initiative: final report*, Washington, DC: Council on Competitiveness.
- European Commission 2002. Highlights from the 2001 survey. *Observatory of European SMEs*, No. 1, Brussels: European Commission.
- European Commission 2003a. *Communication from the Commission to the Council and the European Parliament on Implementation of the Risk Capital Action Plan (RCAP)*, Brussels: European Commission.
- European Commission 2003b. *Third European Report on Science and Technology Indicators*. Brussels: European Commission.
- European Commission 2005. *Proposal for a Decision of the European Parliament and the Council establishing a Competitiveness and Innovation Framework Programme (2007-2013)*. COM(2005) 121 final. Brussels: European Commission.
- Organization for Economic Cooperation and Development 2004a. *Financing Innovative SMEs in a Global Economy*. Paris: OECD.
- Organization for Economic Cooperation and Development 2004b. *Venture Capital: Trends and Policy Recommendations*. Paris: OECD.
- Wessner, Charles 2000. *The Small Business Innovation Research Program: An Assessment of the Department Of Defense Fast Track Initiative*. Washington, DC: National Academy Press.

(1) The term "knowledge-based enterprise" (KBE) is used in this paper more or less equivalently to the term "new-technology-based firm" (NTBF) that tended to dominate earlier literature.