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**FINANCING INNOVATION-ORIENTED SMEs:
A BOOST TO SUSTAINABLE GROWTH AND EMPLOYMENT¹**

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INTRODUCTION

In an increasingly knowledge-intensive economy, economic development is strongly influenced by innovation performance, which relies on the generation, distribution and exploitation of knowledge. SMEs and entrepreneurship are a key source of innovation and flexibility in advanced industrialised countries, as well as in emerging and developing economies, being responsible for most net job creation and making important contributions to productivity and economic growth.

In the past two decades, many innovations that have been instrumental in transforming economic life in information and communications technology and biotechnology originated with high-growth SMEs. While there is no single blueprint, research showed that growth is closely related to a company's ability to innovate; this involves continual changes to products, processes and organisational and managerial practices (OECD, 2002). Also, high-growth firms are more R&D-intensive than less rapidly growing firms or average firms.

Governments across OECD countries recognise that innovative SMEs generate sizeable gains in income, employment, exports and productivity; and that the availability of finance is a precondition for the foundation of such firms. Indeed, in most OECD countries a lack of appropriate financing has been a hindrance to the expansion of innovative SMEs with high growth prospects (OECD, 2006). In a small number of countries, this sector has expanded significantly, with positive implications for employment and technological competitiveness, but it has lagged considerably in most OECD countries, producing a gap to which policy makers often attribute low job creation and sagging competitiveness. Closing this gap is an important policy challenge to sustain growth and employment.

INVESTING IN INNOVATIVE SMEs

While innovative SMEs only account for an extremely small share of all SMEs in any country, they are of strategic significance for economic prospects because of their potential to yield disproportionately high benefits in creating new employment and introducing cutting-edge technology into the economy.

This sector is not comprised exclusively of high-tech firms, although many innovative SMEs will be in high-technology endeavours. Indeed, across OECD countries new firms play an important role in the

¹ This paper summarises in particular some key findings of recent work developed by the SME & Entrepreneurship Division of the OECD Centre for Entrepreneurship, SMEs and Local Development (CFE) for the OECD Global Conference organised in Brasilia (27-30 March 2006) by the Working Party on SMEs & Entrepreneurship on *Better Financing for Entrepreneurship and SME Growth*.

process whereby research is undertaken on a basic level and, subsequently, is supplemented by further market-oriented research, product development and marketing. Small innovative firms form a special link between the research laboratory and the market.

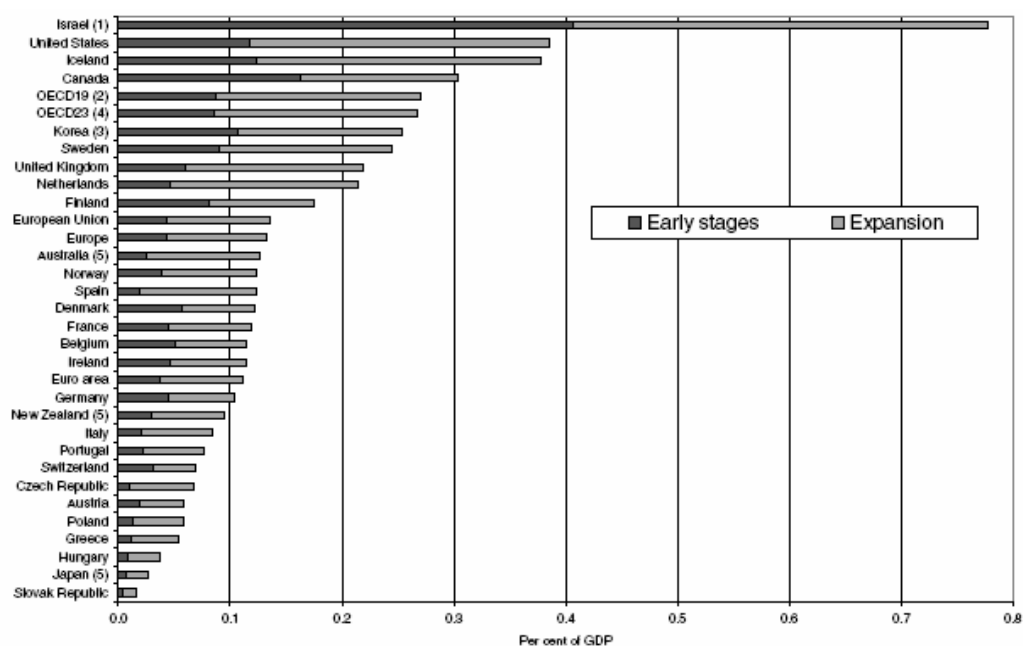
Traditional means of finance, such as bank lending, government guaranteed loans, and listing on traditional stock exchanges are only of limited relevance to new innovative small firms, which usually have negative cash flows, untried business models and uncertain prospects for success. High-growth firms are ill-suited for debt finance, at least until the middle or later stages of their life cycle. Such firms rarely generate sufficient cash flow to service debt and their risk is too high to be suitable candidates for bank credit and other forms of debt financing. The most successful means of providing finance to these firms has been through equity and quasi-equity products under which the investor can assume a large amount of risk, but can also reap very large rewards. However, traditional equity investments, based upon publicly listed companies operating in established regulatory frameworks, have limited applicability to the companies in question. A listed company frequently has diverse ownership with many investors buying and selling shares on an ongoing basis. They face strong legal disclosure requirements and follow mainstream models of corporate governance. Innovative SMEs, instead, will usually progress through several stages of equity finance adapted to their special needs.

The process of investment in innovative SMEs is sometimes referred to as venture capital, but venture capital is only part of the larger financing process and is relevant only in the relatively later stages of this process. Equity is the most commonly used form of finance for innovative SMEs; other products such as “mezzanine finance” and “hybrid products” combining equity with other forms of investment are sometimes used. Thus, the expression risk capital seems better suited to designate the entire process of financing innovative SMEs.

The rates of development of this sector vary widely among OECD countries (Figure 1). Among OECD members, investment for early and expansion stage venture capital ranges from 0.4% of GDP in countries such as Canada, the United States and Iceland, to barely one-tenth that size in OECD countries with less developed venture capital sectors. Israel, which is not an OECD member, has the largest share of venture capital to national income. This wide discrepancy has persisted even as the entire risk capital sector underwent some fairly sharp cycles during the past decade.

Believing that the slow development of the risk capital sector has widespread negative consequences, many OECD countries as well as the European Union have made it a high priority to develop their risk capital sectors. For example, the European Union in 1997 formulated a Risk Capital Action Plan (RCAP) designed to reduce the “risk capital gap” with the United States and thereby to enhance the competitive position of EU members.

**Figure 1. Venture capital investments by stages
In percent of GDP, averages 2000-2003**



Notes: (1) 2000-2002; (2) Europe, Canada and United States; (3) 1998-2001; (4) Europe, Czech Republic, Hungary, Poland, Slovak Republic, Canada, and United States; (5) 1998-2001.

Source: OECD, based on data from EVCA (Europe); NVCA (United States); CVCA (Canada); Asian Venture Capital Journal (The 2000 Guide to Venture Capital in Asia).

ASCENDING THE FINANCING “LADDER”

Traditional SME finance essentially seeks to finance a static or slowly growing company. Once an SME has attained a viable size and attains positive cash flow, the company utilises a fairly standard range of products such as bank loans, asset-related finance, and government programmes. Expansion can be considered using financing mechanisms such as term loans, bonds, or public listing on an exchange (or section of an exchange) specialising in smaller companies.

By contrast, the goal in financing innovative SMEs is to progress along a financing continuum from informal finance, through various phases of formal finance, culminating in entry into the formal regulated capital markets. In this process, finance often acts as a catalyst in developing and commercialising emerging technology and shortening product development cycles. A key reality is that innovative SMEs require funding for a period during which they are not generating sufficient revenues to cover expenses. Moreover, even when innovative SMEs begin to generate revenue, the need to re-invest heavily in the company means that the company will have negative cash flow for prolonged periods. Thus, risk capital usually assumes that the project will require multiple rounds of injection of outside funds.

An innovative SME investor has distinctive means of operating in comparison with other equity investors. In risk capital, the investor selects a portfolio of firms with the knowledge that there is a strong probability that many, if not most, firms will not be successful and the investment in them will be lost. At the same time, the returns on a small number of companies in the portfolio that prove to be highly successful will be sufficient to compensate the investor for individual losses. Such a system obviously needs a high degree of transparency and a high degree of confidence that the outside investor will be protected.

Sources of financing tend to evolve according to the nature of the firm and over its business life cycle, so that different problems arise as firms approach new phases and deal with newer kinds of investors. Gaps at any point in the funding cycle can leave the entire sectors in an undeveloped state. Table 1 illustrates the recourse to finance of an innovative SME during its business life cycle.

Table 1. Funding sources of Innovative SMEs

Phase	Suppliers of Funds	Preconditions
SEED	Personal assets Family & friends "Type ii" individual investors Academic & professional colleagues Government & university grants Endowments and foundations Seed funds	Framework for entrepreneurship Business/government/research links Government & university support for applied research
START UP	Family & friends "Type ii" individual investors Academic & professional colleagues Government & university grants Business angels Venture capital Endowments and foundations	Robust legal system Enforceability of contracts Efficient bankruptcy regime Support facilities Science parks/incubators Favourable tax environment Business angel networks
EXPANSION	Business angels Venture capital/private equity/mezzanine finance Pension funds Endowments and foundations Corporate venturing Government Foreign venture capital	Institutional savings Sufficient volume Flexible regulation Legal framework Tax transparency
EXIT	IPO Institutional investors Retail investors Trade sale Strategic investors (M&A) Private equity	"Growth" exchanges Environment for M&A
PUBLIC LISTING	Institutional investors Retail investors	Legal and regulatory framework for investment

Source: The SME Financing Gap, OECD (2006).

Like SMEs, most innovative small firms initially depend upon informal financing raised by the entrepreneur or his/her *family, friends and business or academic associates* before turning to outside sources of finance. Usually, the company has no financial statements and no track record, and hence, financing from traditional sources is scarce. Funds provided by governments as grants or through seed capital funds can be partnered with other suppliers of early stage funding such as those supplied by universities, endowments and local authorities. Funds are mostly used for development of product prototypes and feasibility studies.

Government programmes that make grants available to encourage very early stage applied research leading up to proof of concept, can be effective at this stage. The possibility of raising funds from research grants may be important catalysts. Grants that have been vetted by governments or universities sometimes give a “badge of credibility” to an entrepreneur seeking capital. In the past few years early stage investments have been facilitated by “seed funds”, which make small amounts of money and support available for pre start-up preparation of business concepts and business plans.

Business angels play key roles in the early stages of the life of the firm. They provide informal equity finance on relatively flexible conditions. The classic business angel is a successful former entrepreneur who has realised profit from initial ventures and contributes both capital and coaching skills. He/she normally plays an active role in supporting the development of products and the management of the company in its early phases.

Box 1. Networking angels

Business angels serve as a bridge between the earliest forms of informal investment, where it is nearly impossible to separate the act of providing capital from other aspects of developing a product and starting and managing a company, and the later phases of the life of a company where the separation of functions becomes sharper. They are active in all categories of newer companies, both those which will peak as medium-sized enterprises with modest growth potential as well as those that will qualify for formal venture capital.

Compared to the investment criteria of venture capitalists, business angels will tend to invest more on an intuitive feeling rather than based on the precise valuation of the term sheet of the company. Their decision will be based on highly intangible assets of the company, such as the experience of the entrepreneur or of the management team. This can be explained by the fact that angels invest in the very early stages of a company, when the entrepreneur may not have a well articulated business plan.

Business angels’ methods of operation also tend to be somewhat different from those of conventional venture capitalists. They tend to own common stock rather than preferred convertible stock, the preferred instrument of venture capitalists. Because they invest their own money, angels invest preferably in companies with which they can maintain close contacts; thus, they often operate in very narrow geographic areas. In the United States, it is sometimes said that business angels operate within a radius of 80km of their homes. They will also frequently ask for a seat on the board so as to closely oversee the work done by the team.

An important advance has been the emergence of well-developed channels to share information and to provide a means of introduction and contact between innovative firms and potential investors. Business angels networks (BANs) have the potential to mobilize substantial pools of informal venture capital that were formerly fragmented and invisible, to stimulate demand for equity finance that would otherwise have been latent, and to facilitate investments by creating communication channels. Contacts are maintained with other sources of deal flow such as universities, government investment promotion agencies, incubators, financial institutions, lawyers and consultants.

BANs operate mostly on the regional level, but sometimes have a national coverage. In some European countries they are represented by a national federation which mainly works towards raising awareness on the topic of angel investing and the potential economic role that angels can play in filling the equity gap. In addition to nationally and regionally organised BANs, there are increasingly sectoral BANs for biotech, Internet, media, etc., or for women investors. Some of these networks are sponsored by local governments. BANs may also be sponsored by financial institutions, stock exchanges or venture capital associations.

Tax incentives that enable individuals to defer income taxes or to offset losses in early stage investment against other income may have a stronger effect on angel finance than on venture capital.

Venture capital is a more structured technique providing a link between the innovative firms and institutional sources of capital. Although venture capitalists may participate at any stage of the life cycle of an innovative SME, they often enter the firm at the middle to later stages. Normally, in each round, the expected rate of return diminishes, but through all phases the investor always expects a return higher than on publicly traded investments.

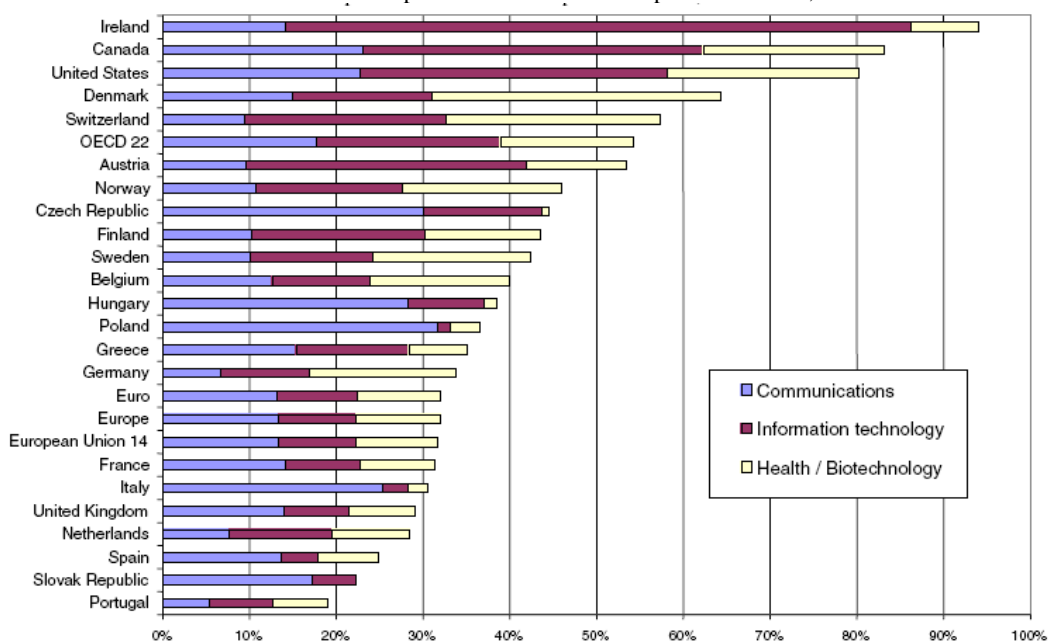
Box 2. Providing finance to high-technology sectors

In order to compensate for high risk and for the prolonged period of illiquidity, the proposed project must have potential to attain very high revenue growth. Frequently such opportunities are found in the advanced technology sectors, although firms such as Federal Express or Starbucks Coffee Company did not operate in high-technology sectors, but on innovative business models with potential for high rates of growth and thus were credible venture capital candidates.

An indication for the innovative potential generated by venture capital is the share of high-technology sectors in total venture capital. Half of the OECD venture capital flows into high-technology firms, but there are large disparities among countries.

Share of high-technology sectors in total venture capital

As a percent of total venture capital investment, 2000-03



Note: Total venture capital investment consists of early and later stage venture capital as well as, except for the United States, buyouts. European Union 14 comprises data from Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Euro, Denmark, Sweden, and the United Kingdom. OECD 22 comprises data from European Union 14 countries as well as from Norway, Switzerland, the Czech Republic, Hungary, Poland, the Slovak Republic, Canada and the United States.

Source: OECD, 2003.

By providing opportunities for certain investors to deploy their capital to innovative and high growth sectors of the economy, venture capital can offer diversification to offset the risks in other asset classes. Venture capital also holds the promise of higher absolute returns over time in order to compensate for the lesser liquidity and transparency of venture capital investments.

The venture capital firm, which is typically organised as a limited partnership, brings together venture capitalists (the general partners), who are active specialists in the various stages of the venture capital cycle, with the investors (the limited partners.) The partnership has a definite life after which it terminates, and will normally have a number of investments at various points of the investment cycle and revenues from exits will normally be reinvested in new ventures.

At the end of the process the venture capitalist aims to realise a return on the investment through “exit”. The exit may take the form of a trade sale to a company that wishes to make a strategic acquisition, a sale to a group seeking to achieve managerial control over the company (including a management buyout) or through an initial public offering (IPO). While trade sales are much larger than IPOs in volume terms in almost all times and places, IPOs are important in establishing valuation, both for listed and unlisted companies. IPOs are also important in setting standards to which newer companies can aspire, since many highly successful companies are publicly listed. Without such “exit vehicles”, venture capital cannot function. A certain number of high-growth companies eventually achieve listing on specialised exchanges or specialised parts of exchanges that are reserved for high-growth companies. The archetypical system for listing such companies is NASDAQ in the United States, but several exchanges (or sections of exchanges) dedicated to emerging companies are found in other countries.

Investment at any stage of the life cycle is frequently contingent on there being some potential to advance to the next stage. Thus, providers of funding in the seed stage and start-up phases are more likely to respond positively to business plans when they believe the proposal has the capability of attracting support of business angels. Business angels in turn will be encouraged if they believe that the project is a good candidate for venture capital financing. This process is most explicit in the venture capital process in which it is accepted that equity will be injected into the firm in successive rounds, with the objective of realising an exit through a trade sale or an IPO. Overall, if gaps appear at any point in the funding continuum, the capability of the system to support the emergence of high potential firms is lessened by a disproportional amount. A funding gap will act as an impediment to the development of innovative SMEs. The absence of the necessary instruments, institutions or techniques at any point of the cycle will pose a serious obstacle to the entire process of formation and growth of innovative SMEs.

TWO DRIVERS OF SUCCESS: LOCATION AND TALENTED LABOUR

The availability of technical expertise and support in critical amounts and across a full range of products highlights the importance of developing technology hotbeds or regions conducive to knowledge-based industry.

Geographic proximity is an ingredient in building an environment conducive to innovative SME development. Investors must remain in ongoing communication with technical innovation, innovative entrepreneurs and the marketing plans of competitors. Therefore, these investors, as well as the entrepreneurs they support, tend to be located near technology clusters, concentrated in areas near universities and other research facilities. In the United States, the classic examples are Silicon Valley in California and similar locations in the Boston area. This tendency is often reinforced by policies to build science parks, often close to universities and research facilities. Similar clusters are found at various locations in the United Kingdom and in continental Europe. In recent years, clusters have been developed in Bangalore, India and Shanghai and other places in China. The geographic concentration of innovative SMEs and the close connection between the financial aspects and non-financial aspects of innovative SME investment suggest that the most important precondition for a successful system of innovative SME finance is the broader social, technological and business environment in which the innovative SME operates.

However, it is not completely agreed what makes some regions successful centres of technological innovation and finance.

The World Knowledge Competitiveness Index (WKCI) (produced by the international consulting firm Robert Huggins Associates) compares 125 regions in North America, Europe and Asia Pacific in terms of their competitive position as centres for knowledge-based economic activity. The index uses 19 variables such as employment in the knowledge economy, patent registrations, R&D investment by public and private sectors, information and communication technology and access to finance. In 2005, Silicon Valley scored the highest globally, with US regions achieving the seven highest scores. In Europe, Stockholm scored highest with Nordic countries generally scoring well. Many of these locations are not in the traditional financial centres of their own countries, suggesting that geographic proximity to entrepreneurs and researchers is more crucial than proximity to traditional providers of finance. To the degree that it is within its power, one of the best contributions that government can make to the process of innovative SME finance is to create an environment that favours the emergence of technology hotbeds. Of course, to the degree that certain regions emerge as successful technology hotbeds, other regions will be at a disadvantage when attracting innovative SMEs.

The policy implications are not always straightforward. Sweden, which is reputed to have a tax system and other policies designed to produce social egalitarianism that would not appear to be favourable to entrepreneurship and risk taking, scores high on the WKCI index and also has a comparatively well developed venture capital sector. China and India are making rapid strides in attracting venture capital investment despite significant problems in the market infrastructure in areas such as bureaucratic rigidity, uncertain legal environments, and spotty records concerning the equitable treatment of foreign investors and the protection of intellectual property. In fact, several Asian regions that are now significant technology centres, such as Bangalore and Shanghai, achieved low scores on the WKCI. Despite these apparent paradoxes, it is plain that location is a critical element in the development of innovative SMEs and, hence, efforts to identify and quantify the elements that make for a successful location are useful.

The cases of Silicon Valley and cities such as Toronto or Dublin demonstrate the important contribution that the attraction of talented overseas labour can make to the stimulation of entrepreneurship, often in knowledge-intensive sectors. Tolerance, social capital and a positive image appear to be key factors contributing to success in attracting skilled and entrepreneurial people. The quality of university systems is also clearly a critical asset for attracting overseas students and researchers. It must be recognised that many people move overseas temporarily as a career step. Their contribution to economic development can nevertheless be highly positive and, given suitable follow-on opportunities, people will often wish to stay. At the same time, it should be recognised that attraction programmes must fit with established immigration policies that seek to balance the interests of attracting skilled workers for economic development and protecting the jobs of domestic workers in occupations where there are labour surpluses. Indeed, the attraction of skilled and talented workers from overseas should go hand in hand with policies to upskill the domestic workforce.

GOVERNMENT SUPPORT OF RISK CAPITAL MARKETS

In a competitive market, suppliers of finance have powerful incentives to overcome barriers to SME finance. In most OECD countries, banks perceive SME finance as an attractive line of business and thus have developed effective monitoring techniques. Whether a country experiences a financing gap will ultimately depend upon whether the business environment is sufficiently robust to enable borrowers and lenders to interact with confidence on an arm's length basis.

In the belief that there are instances of market failure in the innovative SME financing process, many OECD countries have programmes to provide equity investments to innovative SMEs.

The early stage in the life of a company, where the entrepreneur first seeks outside financing is where many analysts and policy makers perceive a market failure or financing gap for new and risky enterprises and recommend official intervention to aid investment. Surveys of potential entrepreneurs often indicate that the lack of financing is perceived as a barrier to enterprise formation. However, many potential investors report a scarcity of investment ready proposals. To some degree, the difference in perceptions reflects the difference between entrepreneurs' and financiers' viewpoints. In many cases, entrepreneurs, especially those in technology-related fields, may have strong technical backgrounds and novel ideas but may lack the business acumen to turn ideas into marketable products. Entrepreneurs may have unrealistic expectations about the possibilities to retain control and/or the terms for sharing risk and rewards with outside investors.

Channels of communication for entrepreneurs and investors constitute a critical part of the infrastructure. Studies have shown that the lack of awareness of small firms concerning alternative financing is a factor depressing demand for venture capital. The information gap that has to be bridged: on the one hand, potential investors have to gain access to information about potential new projects; on the other hand, entrepreneurs need to gain access to information about the availability of potential financing and about the requirements in terms of transparency and acceptable contracts that are required to induce investors to participate in undertakings. National and local authorities can play a useful indirect role in encouraging private initiatives at the local level, by contributing for example to the development of incubators, which help provide infrastructure, on-site advice and information on venture capital suppliers. Similarly, they can lock in some of the benefits of existing geographical clusters that have spawned naturally. A key feature of such clusters is the informational networks that bring together business angels, venture capitalists, professional firms including lawyers and accountants, entrepreneurs and university business schools.

Also, government participation can come either directly in the form of an equity participation in private sector venture capital firms or government participation in joint venture capital funds with a private party, the so-called hybrid fund. National and sub-national governments have provided financial support in the form of loans or guarantees. Government loans are given to small firms, for which financing from other sources is more difficult to obtain or more expensive. Guarantee schemes facilitate venture investments by lowering some of the risks involved. Guarantees may be attached to the provision of loans (usually from banks) or equity (usually venture capital). In addition to governments, international organisations are major suppliers of funding for venture capital. The European Union and the European Investment Bank have several programmes to invest in venture capital. These schemes are often targeted to firms in an early stage of development when the firms have difficulties in attracting private capital. As private sector involvement grows, the government typically aims to phase out its programmes. Programmes usually seek to maximise private sector participation. To achieve this, government funds are often offered on a matching basis. Public officials are usually not directly involved in the investment process. Rather, this responsibility is delegated to specialists from the private sector. In some of these schemes, the share of the government is lower than that of the private investors and most of the upside of the investment is transferred to the private investors. Private investors often have the option of acquiring the government's investment at a favourable rate.

Since many governments have assigned a high priority to the development of risk capital and have made considerable sums available to support this sector, it is worth keeping in mind the need to avoid skewing incentives. Government intervention should not seek to alter the basic nature of risk capital which is that entrepreneurs must persuade investors to accept high risk in the hope of obtaining high return. As in all government programmes to support private lending, the principle of risk sharing must be observed in which the entrepreneur is expected to place funds at risk alongside those of the public agency. Project selection must be made by the private partners and the reward structure should allow the official side to obtain a reasonable return on the investment, but leaving a substantial benefit potential to the private partners. Governments should also be wary about providing funds at concessionary rates. Policies that

reduce rates of return below those which private investors will accept can stifle the emergence of an equity market for innovative SMEs.

Some countries have provided tax relief for various forms of investment in unlisted companies or in companies listed on second tier or growth exchanges. In the United States, corporate and individual investors in shares of small companies may exclude all or part of capital gains on such shares from income taxes if the investment is held longer than five years. In addition, taxes on capital gains are deferred if the proceeds are reinvested in other innovative SMEs. In many European countries, investors in funds specialising in SMEs or innovative SMEs receive a tax deduction at the time of investment as well as exclusion or reduction of capital gains taxes if specified conditions are met. Japan also provides investors with tax deductions at the time of investment as well as exclusion of taxes on capital gains. Since venture capitalists depend upon capital gains for their income, the industry tends to press strongly for low rates of capital gains taxation. Many of the investors in venture capital, such as pension funds, are tax exempt. However, the empirical support for a strong correlation between capital gains taxes and venture capital investment is ambiguous. The United States and the United Kingdom, where the private equity sector is advanced, have fairly high capital gains taxes (and had even higher rates of capital gains taxation during periods when the industry grew exceedingly rapidly), while many countries with low or no capital gains taxes do not have thriving private equity sectors.

Stock options are commonly used as an incentive for managers and employees in new technology-oriented companies. OECD studies on entrepreneurship and the new economy recommended that members simplify the legal and tax treatment of stock options, encourage broad-based plans for employees, and ensure that their tax system is neutral vis-à-vis this form of compensation.

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