

**SCIENCE TECHNOLOGY INDUSTRY**

**VENTURE CAPITAL: TRENDS AND POLICY  
RECOMMENDATIONS**

## FOREWORD

Venture capital is a special type of equity finance for typically young, high-risk and often high-technology firms. Not all OECD countries, however, are able to allocate private equity to risky, high value-added undertakings. Structural, regulatory and fiscal barriers act to constrain the development of a dynamic venture capital market and business environment.

Country peer reviews on venture capital have been initiated to analyse recent market trends and the policy framework in selected OECD countries, as a part of the OECD project on *Growth Follow-up: Micro-Policies for Growth and Productivity*. Five policy areas, which are conducive to increasing the supply of venture capital, are surveyed: investment regulations, taxation, public equity programmes, business angel networks, and second-tier stock markets. Peer reviews have taken place on a voluntary basis in the Committee on Industry and Business Environment (CIBE). Ten countries have been reviewed, including: Canada, Denmark, Israel, Korea, Norway, Portugal, Spain, Sweden, the United Kingdom, and the United States.

The following is a synthesis of the main findings, highlighting recent market trends, effective policies and recommendations that can serve as a guide for policy reform in individual countries.

Further information, including an electronic version of this report and individual country reviews, can be accessed at [www.oecd.org/sti/micro-policies](http://www.oecd.org/sti/micro-policies). This report was prepared by Günseli Baygan of the OECD Secretariat.

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## SUMMARY

The OECD Growth Project recommended increasing access to high-risk finance to stimulate firm creation and entrepreneurship, one of the main drivers of growth and productivity performance (OECD, 2001). However, countries have had varied success in channelling funds, particularly venture capital, to early-stage firms in high-growth sectors. On the supply side, this may be due to a lack of funds, risk-averse attitudes and/or the absence of an equity investment culture. On the demand side, there may not be a sufficient pool of entrepreneurs and investment-ready small firms. Countries need to first determine where financing gaps exist and assess all possible supply and demand factors which may be contributing to market failures in terms of access to venture capital.

The United States has the oldest and one of the largest venture capital markets in the OECD. Not only does the United States have an entrepreneurial and risk-taking culture, small firms have benefited from a continuum of venture finance provided by business angels, private funds and public equity schemes. But US venture funding, as in most other OECD countries, has suffered from the recent global downturn in technology and financial markets. The United States and other OECD countries need to re-evaluate and redirect government venture capital initiatives to assure their continuing contributions as market conditions change. And as the market becomes more global, countries need to enhance their ties to international venture capital flows, which are a source of both finance and expertise.

Peer reviews of ten OECD countries have provided insights into effective policy approaches in the venture capital area, although these will need to be tailored to specific national economic and financial contexts. Entrepreneurship policies which are complementary to venture capital initiatives are essential to assuring sufficient demand for financing. The constraints faced by young firms with rapid growth potential could be different from those of small firms in general. A broader support structure is needed to ensure that small innovative firms have access to technology development and transfer programmes, high-skilled labour, and international markets.

On the supply-side, there is a full set of policy actions which can increase venture financing for small, entrepreneurial firms. Easing quantitative restrictions on institutional investors (*e.g.* pension funds) can diversify sources of venture capital. Lowering capital gains tax rates can stimulate the supply of entrepreneurs and venture investors. Government equity programmes can help leverage private sources of venture funding. Building links between business angel networks and other small firm initiatives such as technology incubators can improve the flow of funds. And exit routes for small firms can be provided through enhancing secondary stock markets (**Box 1**).

<b>Box 1. VENTURE CAPITAL POLICY RECOMMENDATIONS</b>	
<b>Investment regulations:</b>	
+	<i>Ease quantitative restrictions on institutional investors to diversify sources of venture funds</i>
+	<i>Support the development of a private equity culture among institutional investment managers</i>
+	<i>Facilitate creation of alternative investment pooling vehicles, such as funds-of-funds</i>
+	<i>Improve accounting standards and performance benchmarks to reduce opacity of venture capital funds and protect investors</i>
+	<i>Remove barriers to inflows of foreign venture capital finance</i>
<b>Taxation</b>	
+	<i>Reduce complexity in tax treatment of capital from different sources and types of investments</i>
+	<i>Decrease high capital gains tax rates and wealth taxes which can deter venture capital investments and entrepreneurs</i>
+	<i>Evaluate targeted tax incentives for venture capital investment and consider phasing out those failing to meet a cost-benefit test</i>
<b>Equity programmes</b>	
+	<i>Use public equity funds to leverage private financing</i>
+	<i>Target public schemes to financing gaps, e.g. start-up firms</i>
+	<i>Employ private managers for public and hybrid equity funds</i>
+	<i>Consolidate regional and local equity funds or use alternative support schemes</i>
+	<i>Focus venture funding on knowledge-based clusters of enterprises, universities, support services, etc.</i>
+	<i>Evaluate public equity funds and phase-out when private venture market matures</i>
<b>Business angel networks</b>	
+	<i>Link local and regional business angel networks to each other and to national initiatives</i>
+	<i>Ensure linkages between business angel networks and technology incubators, public research spin-offs, etc.</i>
+	<i>Provide complementary support services to enhance investment-readiness of small firms and increase demand</i>
<b>Second-tier stock markets</b>	
+	<i>Encourage less fragmentation in secondary-stock markets through mergers, e.g. at Nordic or European level</i>
+	<i>Enhance alternative exit routes such as mergers and acquisitions (M&amp;As)</i>

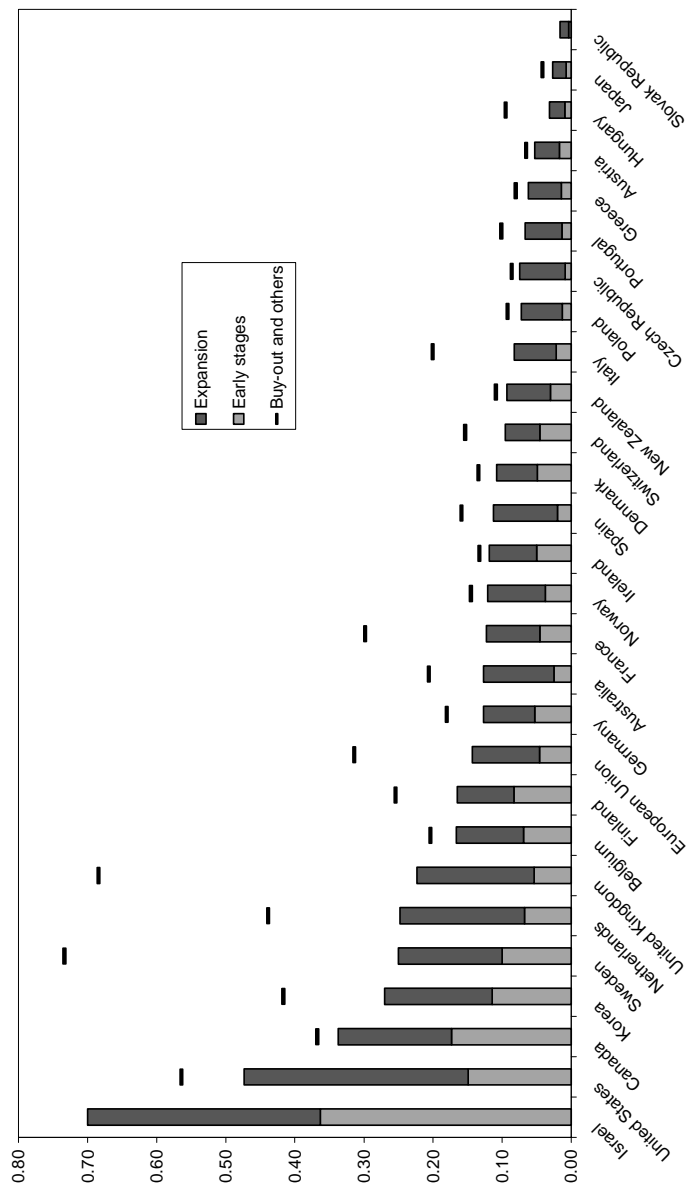
## TRENDS IN OECD VENTURE CAPITAL MARKETS

### *Countries differ markedly in venture capital as a share of GDP and the portion going to start-ups*

Venture capital-backed firms played a key role in driving innovative economic activity during the 1990s. The size and depth of venture capital markets across countries, however, remain uneven. The United States is the oldest and one of the largest venture capital markets, along with Israel, which has had marked success in attracting venture capital, mostly from US sources (**Figure 1**). While the United States and Canada have effectively channelled funds to early-stage investments (on average around 0.15% of GDP between 1999 and 2002), early-stage financing constituted a lower share of the total invested in other OECD countries such as the Netherlands and the United Kingdom, amounting to 0.06% of GDP. In spite of the dramatic growth in venture capital activity in the past decade, the share of start-up and other early stage investments remains insignificant in many other OECD countries. The global downturn in technology and financial markets since mid-2000 has led to an even more conservative investment stance, leaving many small firms cash-constrained, particularly those in the seed and start-up phase.

A lack of an equity investment culture, information problems, and market volatility hinder the development of early-stage financing in many OECD countries. In the United States, a continuum of capital providers – *e.g.* business angels, public and private venture funds - helps to diversify risk and ensure a steady flow of quality deals. These networks - together with the use of staged financing instruments linked to performance, provision of technical and managerial support, and easy exits on secondary stock markets - have contributed to the survival and growth of portfolio firms. The number of venture capitalists with financial and technical expertise is limited in many countries and has not generally matched the rapid growth in risk capital supply across the OECD. Some countries, including Canada and Sweden as well as Israel, fill this experience gap by attracting venture investors from abroad.

Figure 1. Venture capital investment by stages as a share of GDP, 1999-2002



Note: 1998-2001 for Australia, Japan, Korea and New Zealand. The definition of private equity/venture capital tends to vary by country.  
 Source: OECD venture capital database, 2003.

Improving the supply of venture capital is a necessary but not a sufficient condition for increasing the number of start-ups and small firm growth. The United States also exhibits the qualities which foster entrepreneurship and the demand for venture funding. In addition to an entrepreneurial culture and a risk-taking investment community, insolvency laws and the availability of exit opportunities on secondary stock markets lead to high levels of small firm entry and exit or “enterprise churning”. A low level of venture financing can thus reflect a lack of funds and/or a dearth of plausible recipients of such funding.

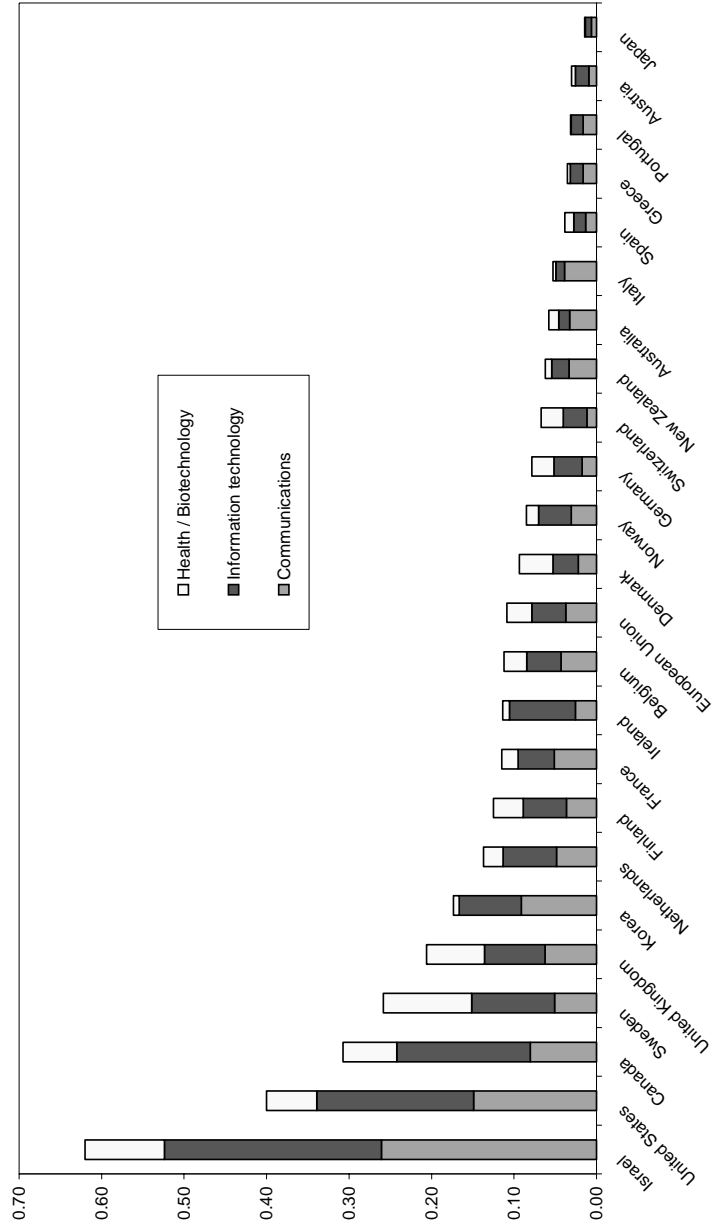
***Some countries are more successful than others in targeting venture capital to technology-based sectors***

The rapid development and application of new technologies in the 1990s enhanced the role played by small technology-based firms in OECD economies. This is particularly the case for information and communication technologies (ICT) and health-related sectors, including biotechnology. But not all OECD countries are successful in channelling venture capital investments to these technology-based, high value-added industries. Between 1999 and 2002, investment in high-technology sectors - communications, information technology, and health/biotechnology - was the highest in Israel, reaching over 0.6% of GDP. Investments in these sectors constituted over 0.3% of GDP in the United States and Canada, followed by Sweden and the United Kingdom at 0.25% and 0.20% of GDP, respectively (**Figure 2**). In newly emerging venture capital markets such as Korea, ICT and health-related sectors also constituted a majority of investments.

Overall, venture capital markets experienced significant growth in countries where the shift from traditional sectors to high-technology manufacturing and services accelerated in the 1990s. These countries also benefited from strong linkages across universities, public research institutes and industry. Small business innovation finance programs, particularly in the United States and Israel, facilitated the flow of high quality projects to private funds with an early-stage technology focus.

Other OECD countries have industrial structures featuring more traditional manufacturing industries to which a large share of equity capital is channelled. They also tend to have limited expertise in early-stage high-technology investments and lack competent risk capital. Both these factors may favour deals focused on later-stages of the enterprise life-cycle. The share of high-technology sectors in venture capital funding continues to be small in many countries of the European Union, Japan and Australia. Equity investments are

Figure 2. Venture capital investment in high-technology sectors as a percentage of GDP, 1999-2002



Note: 1998-2001 for Australia, Japan, Korea and New Zealand.  
 Source: OECD venture capital database, 2003.

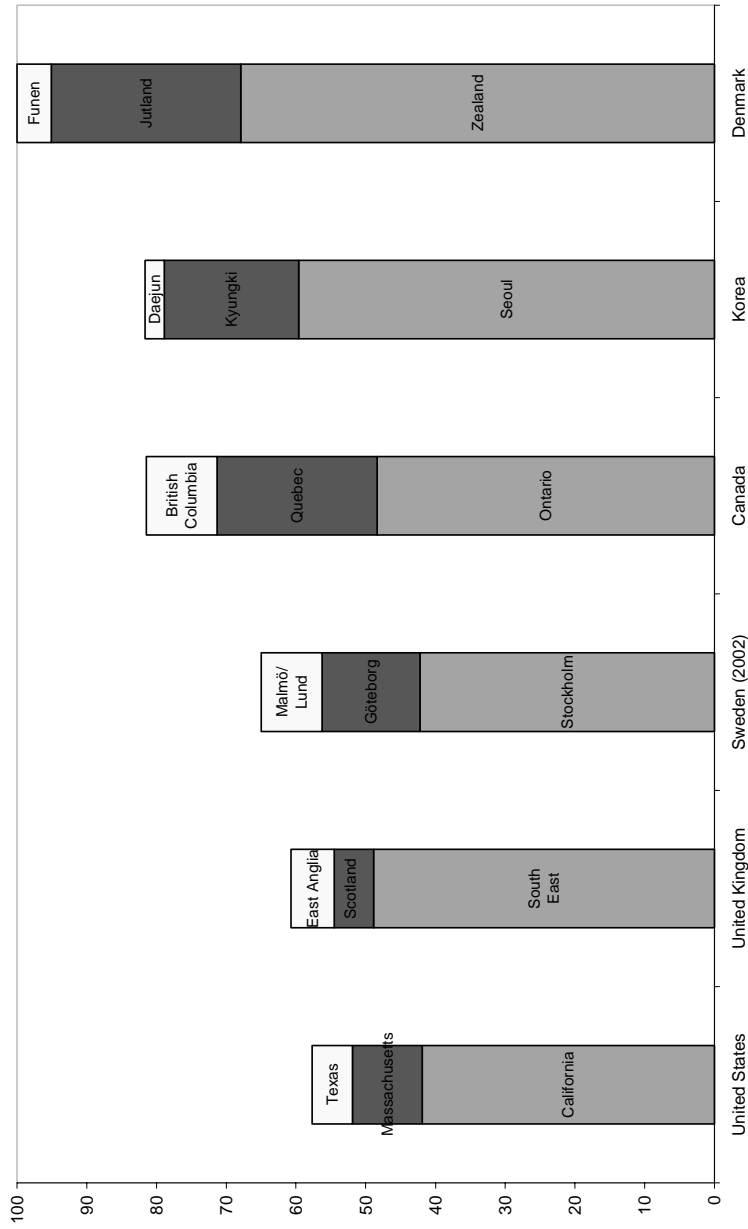
targeted mostly to textiles, food products and metals in Spain and Portugal and to resource-based industries in countries such as Norway. However, these countries suffered less of a downturn in venture investments with the technology market crash of 2000/2001 than did countries with a technology-based venture capital profile, particularly in ICT sectors.

***In all countries, venture capital investment tends to be concentrated in regional clusters***

Venture capital activity tends to be highly concentrated geographically and centred on existing areas of economic activity. Regions based on high-technology manufacturing and services attract a larger share of venture capital, e.g. Silicon Valley in the United States, London and the southeast in the United Kingdom, Ottawa and surroundings in Canada, the metropolitan Seoul area in Korea (**Figure 3**). In Israel, Tel Aviv and the central area continue to absorb most venture capital investment. Newly emerging hot spots in Sweden and Denmark are also built around technology-based industrial clusters. These regions tend to be well-endowed with skilled human capital, legal and technical services, universities and research centres as well as specialised sources of finance appropriate to the technology sector. This supporting infrastructure is important in reducing transactions costs needed for starting-up and financing new firms.

Regional disparities in venture capital activity tend to persist over time. Even in the leading OECD countries, financing has only recently started to diversify geographically, as risk capital markets mature and reach a critical size. There is doubt that government programmes to spread venture capital investments evenly across regions can be effective. Small firms need a supportive infrastructure and a range of complementary services other than just equity financing. Venture capital markets also fare better where there are economies of scale in financing and centres of technology-based economic activity. For this reason, venture capital will show better returns when it is channelled to start-ups in existing technology clusters than when it is dispersed widely in the attempt to assist outlying firms and areas.

**Figure 3. Regional concentration of venture capital investment as a % of total (selected OECD countries, 1998-2001)**



Source: OECD venture capital database, 2003.

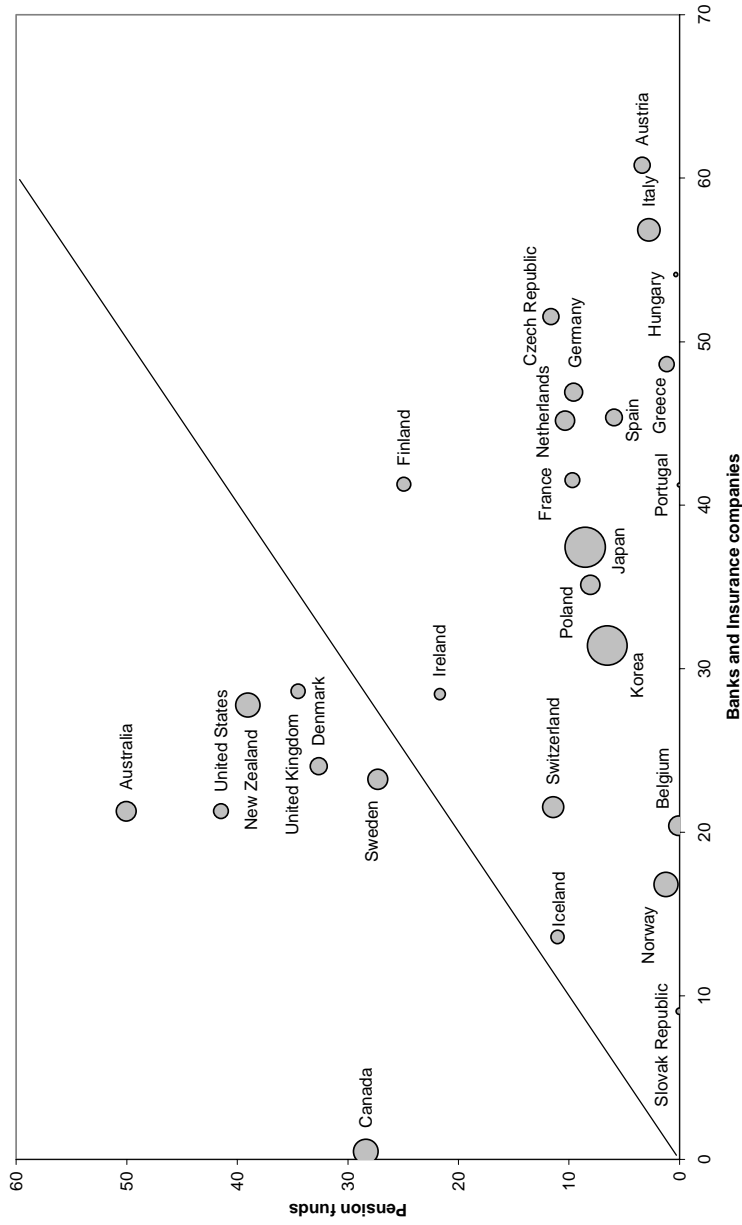
### *Countries differ greatly with regard to the sources of venture capital funds*

While institutional investors, in particular pension funds, play a key role in the leading OECD venture capital markets, their role is fairly limited in others (**Figure 4**). Besides the United States, the share of pension funds is significant, over 40%, in Australia and New Zealand, followed by the United Kingdom. Pension funds and insurance companies, which often control a large share of national assets and have long-term liabilities, are likely to have a longer investment horizon compared to other investor groups. But due to regulatory restrictions as well as conservative investment attitudes, these institutional investors play a minor role in venture capital markets in many OECD countries. In addition, some countries have comparatively small shares of institutional investor assets in total financial assets. Instead, bank financing may be dominant. In countries with bank-based financial systems, such as Austria, Germany and Italy, around 50% of funds raised came from banks between 1999 and 2002. But the asset and liability structure of banks is not as suited to undertaking long-term private equity investments, which they generally conduct through specialised subsidiaries. More institutional investor involvement is thus expected as venture capital markets in these countries mature.

Business angels - private individuals investing directly in small firms – play a significant role in financing new enterprises, but there exist few data on their financial contributions. These informal investors can be seen as an alternative or predecessor to formal venture capital markets. In some countries, *e.g.* the United States, business angels are believed to be more important, but less organised, than formal venture capitalists. Corporations contribute a large share of venture funds raised in Korea and Japan as well as in Norway and Sweden, in line with their influence on economic activity and share in total R&D. Corporate venturing can take various forms, including financial, managerial or technical. However, establishing successful strategic partnerships between large and small firms is generally difficult. Funds raised from both individuals and corporations tend to be cyclical, *e.g.* corporate venturing programmes often lack long-term commitment and are scaled-down following market downturns.

Another primary source of venture capital in many OECD countries is government, both national and local. In countries such as Korea, Norway and Portugal, the relative contribution of central government has been significant, while in other countries the public role has been gradually phased out.

**Figure 4 . Sources of venture capital funds raised as a % of total, 1999-2002**



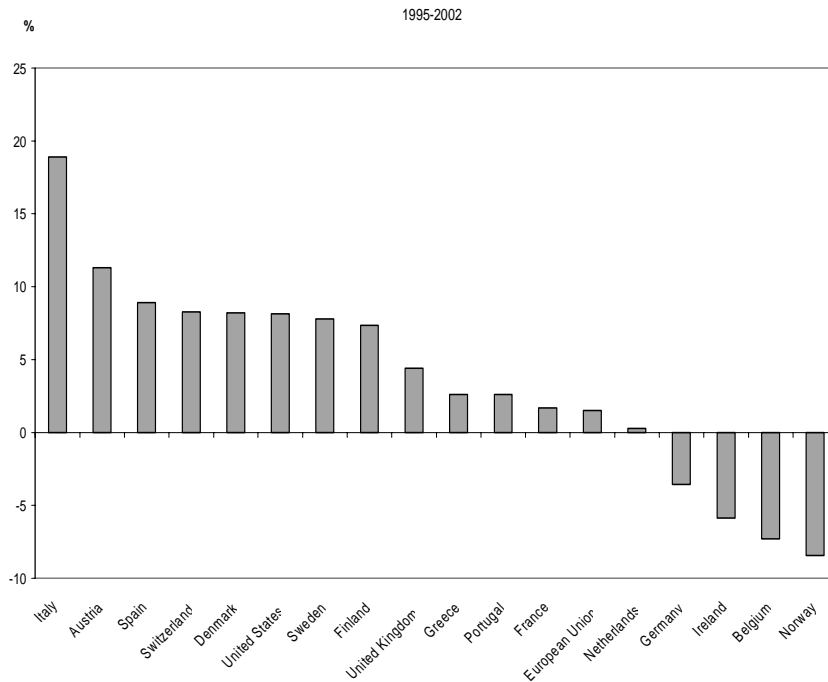
Note: 1998-2001 for Australia, Japan, Korea and New Zealand. The area of the bubbles corresponds to the share of corporations in total funds raised which ranges from 1% (Slovak Republic) to 47% (Japan).  
 Source: OECD venture capital database, 2003.

***Average fund and deal size are increasing with potential adverse effects on early-stage financing***

Economies of scale become more important as venture capital markets mature. The average fund size in the United States almost tripled between 1992 and 2002, reaching USD 140 million. The number of large funds also increased. The high transaction and monitoring costs associated with raising finance constrain the profitability of smaller funds. To stay competitive, smaller funds are increasingly specialised, whereas large funds keep a more general and increasingly international focus. In 2002, less than 7% of US venture funds managed capital under USD 10 million, while funds with capital under management between USD 500 million and USD 1 billion, and over USD 1 billion, constituted around 8% and 9% of the total, respectively. Fund sizes have also been on the rise in countries where they traditionally specialise in later-stage and larger-scale deals, *e.g.* the United Kingdom and Sweden. The weak fund-raising environment in the past few years has accelerated fund mergers and market consolidation.

Recent cyclical adjustments and increasing market concentration in the leading OECD countries raise some concerns about a potential *equity gap* in early-stage financing. Capital availability for young firms that require small capital infusions are affected the most, in part due to the high due diligence such investments require. Since the mid-1990s, the average size of venture capital investments in the United States has doubled, reaching around USD 8.5 million in 2002. Likewise, average equity investments in early and expansion stages in Sweden and the United Kingdom grew by 8% and 5% annually between 1995 and 2002. In countries where funds are relatively small, there has been an increase in deal size as more funds undertake larger syndicated deals, *e.g.* Denmark, Spain and Portugal (**Figure 5**). The upward trend in venture capital fund and deal sizes will probably become prevalent in more countries, as fund managers establish reliable track records and attract more diversified source of funds, notably from large institutional investors. But this evolving market structure could adversely affect the availability of risk capital for smaller early-stage investments.

**Figure 5. Annual growth rate in average deal size, 1995-2002**



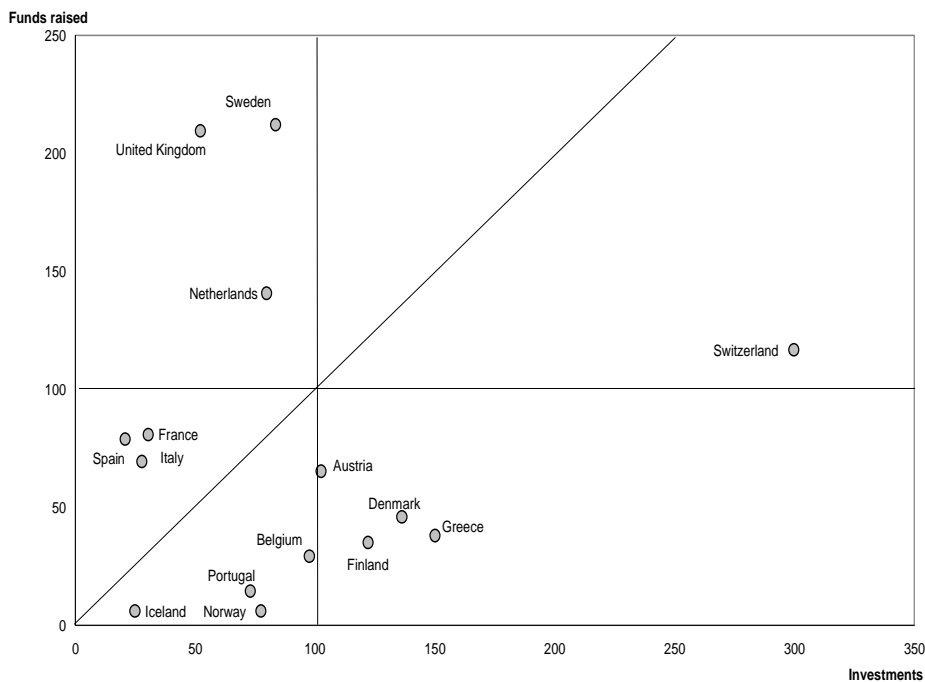
Source: OECD venture capital database, 2003.

***International flows of venture capital are becoming more important to some OECD countries***

Cross-border private equity flows are gaining prominence, especially across Europe and in North America, as venture capital markets become internationalised. OECD countries differ greatly in the degree of foreign equity funds raised and invested, expressed as the sum of inflows and outflows as a percentage of domestic funds (Figure 6). In Europe, cross-border flows of finance as a share of funds raised were most important in the United Kingdom, Sweden and the Netherlands in the period 1999-2002. As a share of funds invested, international capital was significant in countries such as Denmark and Switzerland. The Israeli venture capital market was built almost entirely on foreign capital, which still accounts for 70% of venture funds. Similarly, foreign financing, primarily from the United States, provides 70% of venture capital in the United Kingdom. About 22% of Danish, 50% of Spanish and over 80% of Swedish venture capital funds are from foreign sources, primarily European. Some 30% of Canadian venture capital investments are from abroad, mostly the

United States, which continues to be one of the largest sources of venture funds to other countries. This is in contrast to countries like Norway, Portugal, Korea and Japan, where cross-border inflows and outflows of venture funds are highly limited.

**Figure 6. Degree of internationalisation of venture funds raised and invested, 1999-2002**



*Note:* Measured as inflows plus outflows as a percentage of domestic funds raised and invested. Data for European countries only.  
*Source:* OECD venture capital database, 2003.

International venture capital provides more than just financing. Through co-investment opportunities with foreign entities, domestic venture funds and investors can undertake larger syndicated deals and gain venture investment management expertise. Countries with a supply of skilled labour and technological know-how as well as a risk-taking entrepreneurial culture are better positioned to attract venture capital flows in the face of rising international competition. However, a dynamic economic infrastructure is necessary but not sufficient. The legal and institutional settings, as well as the fiscal environment, continue to be limiting factors in attracting international venture capital in some OECD countries. The complexity and diversity of fund

structures across the OECD have been another factor blamed for limited cross-border flows. There are also initiatives within the European Union to remove burdensome regulations and bureaucratic obstacles that reduce the supply of foreign capital. For many small venture capital markets, integration with international financial flows is essential to long-term survival. Rather than focusing on developing self-contained venture capital markets, smaller OECD countries need to implement policy reforms and take active steps to take advantage of global equity flows.

## RECOMMENDATIONS FOR VENTURE CAPITAL POLICIES

### *Quantitative restrictions on institutional investors should be eased to broaden the sources of venture capital in many OECD countries*

Institutional investors such as pension funds and insurance companies are blocked or discouraged in many OECD countries from making private equity investments, which are seen by regulators as too risky. However, the trend across the OECD is now to loosen such restrictions. Most countries are inspired by the US experience in the late 1970s and early 1980s, when legislative changes to the *Employee Retirement Income Security Act's* (ERISA) “prudent man rule” allowed pension funds to engage in riskier investments and set loose a wave of funds that invigorated the venture capital market in the United States. The new rule stated that investments should be managed with the “care, skill and diligence of a prudent man” and suggested that a risky investment imprudent in isolation may be acceptable in a portfolio context.

In the United Kingdom, investment constraints on insurance companies were loosened by the 1994 *Amendment to the Insurance Companies Regulation Act*. Reviews are also underway to establish a long-term funding standard for pension fund assets, instead of using external benchmarks, such as the minimum funding requirement (MFR) introduced by the 1995 *UK Pensions Act*. Investment ceilings on institutional investors have also been progressively relaxed in countries such as Denmark and Sweden. In most cases, venture fundraising can be increased by replacing quantitative restrictions on institutional investors with more flexible regulatory policies. These regulatory changes should be combined with a review of financial reporting standards. Accounting rules, in particular the valuation of pension fund liabilities and solvency margins for insurance companies, might have indirect effects on portfolio composition, discouraging investments in risky assets.

However, investment ceilings and accounting rules are not the only limiting factors. Structural imbalances and lack of funded pension schemes pose challenges in some OECD countries, as in the case of Korea, Norway and Spain. These countries must first decide whether to develop capitalised private pension funds and then how their investment portfolios should be regulated to protect the interests of beneficiaries. Even when allowed to invest in venture

capital outlets, many institutional investors are too risk-averse or unfamiliar with venture markets. They often lack in-house expertise and a venture investment culture. Many countries are adopting schemes – or promoting co-investments with more experienced foreign funds – to impart venture investment experience to institutional managers. Specific legislation which allows the creation of pooled investment vehicles, such as the “*funds-of-funds*” in Canada, Denmark and Israel, is another means of allowing institutional investors to combine resources and venture know-how in making riskier placements.

More liberal policies for institutional investors should be combined with improved standards for transparency and disclosure in order to minimise potential abuses. Both in the United States and the United Kingdom, countries with relatively liberal investment rules, there have been cases of unwise investments by institutions. Currently, there are no agreed guidelines across the OECD countries for performance measurement and evaluation of venture capital funds. Reliable performance measures and accounting standards will improve transparency in venture investing and help reduce opacity in venture markets. Sound performance benchmarks will help build trust and establish private equity as a viable alternative asset class. These steps will also help institutional investors beyond the current downturn in global financial markets, which has strained their ability to allocate funds to riskier investments.

***Lower capital gains tax rates will stimulate entrepreneurs and investors, while avoiding the need for special venture capital tax incentives***

Venture capital tax incentives are generally aimed at individual and corporate investors since some major sources of capital, *e.g.* pension funds and endowments, are generally tax-exempt. Some OECD governments strive to maintain neutrality in their fiscal systems and have not introduced tax measures to spur venture capital activity, as in Sweden and Denmark. Others have a wide range of tax incentives targeted to venture investors. These include front-end incentives or tax credits against personal or corporate income for entities investing in small companies and qualified venture funds (*e.g.* the *Enterprise Investment Scheme* and the *Venture Capital Trust Scheme* in the United Kingdom; the *Certified Capital Companies* (CAPCOs) in the United States; the *Labour Sponsored Venture Capital Corporations* (LSVCCs) in Canada). In addition to being costly, these front-end incentives could attract venture investments primarily for tax shelter purposes.

An alternative consists of back-end incentives, which provide capital gains tax relief on profits realised from venture investments. Because small firms and business angels often rely on personal income and wealth for investment, these

tax breaks can increase incentives for reinvestment. Examples include the lower tax rate on shares of small business IPOs in the United States; lower capital gains tax rates for certified venture firms in Korea, Portugal and Spain; and the capital gains tax exemption for foreign venture investors in Israel. Some countries also have tax deferrals for corporations and/or individuals to encourage rollover of capital gains into small firms or funds, *e.g.* Canada, the United States and the United Kingdom. But these targeted tax incentives for venture investors can introduce added complexity into fiscal systems in the form of varied rates for corporations and individuals, types of assets, holding periods, types of investments, etc. Countries are also generally limited in their ability to use generous fiscal incentives given pressures on fiscal stability and budget targets.

The underlying fiscal environment – including the overall tax burden on individuals and corporations and the complexity of the tax system – may matter more in altering entrepreneurial incentives and venture financing than do targeted tax measures. However, high tax rates on capital gains for corporations and individuals have been cited as a key factor depressing venture capital supply in many OECD countries. Capital gains tax rates are relatively high in Japan and the Nordic countries and lower in the United States. As well, countries such as Denmark, Norway and Sweden have “wealth taxes” which place an additional levy on material and financial assets. In general, countries should focus on greater neutrality and reduced complexity in the taxation of capital. In many countries, however, targeted reductions in capital gains tax rates could stimulate the supply of venture funds and increase the incentives to make risky investments.

***Government equity programmes can pump-prime private venture financing, but should be phased out when private markets mature***

In almost all OECD countries, venture capital investment started as a publicly-financed activity. Government equity funds have been widely used to pump-prime private venture capital and reduce imbalances in the allocation of funds across different financing stages, sectors and regions. Particularly at the beginning, the risk profile of seed and start-up firms is generally too high to attract sufficient private equity capital, hence the need for risk-sharing between the public and private sectors. In some countries, the government played a dominant role for a long period of time, *e.g.* the *Small Business Investment Company* (SBIC) programme in the United States and *YOZMA* in Israel. These schemes not only channelled substantial amounts of risk capital to young firms, but helped to train managers who later launched their own funds stimulating growth in venture markets and instilling a venture culture.

Not all public initiatives are well-targeted, and some have outlived their original purpose and usefulness. Over time, public programmes tend to converge towards the same market segments as the private sector rather than addressing gaps in the provision of risk capital. This could “crowd out” private investors and even delay the development of early-stage financing, especially if the market is limited. The type and extent of the government’s role in terms of equity inputs should be evaluated on a continuing basis. In Israel, *YOZMA* was terminated as private sources of capital grew, while the *SBIC programme* in the United States needs to revisit its continuing sizeable infusion of funds to venture markets. In some cases (e.g. Korea), financing schemes should be consolidated and the government role changed to that of a complementary financing source, leveraging risk capital from private sources. In this vein, several countries now have privately-managed funds which use public money to leverage private finance in underserved market segments, e.g. the *Business Development Bank of Canada Venture Capital Fund*; the Danish Investment Fund (*VaeksFonden*); the National Industrial Development Fund (*Industrifonden*) in Sweden; the *Fundo de Sindicação de Capital de Risco* (FSCR) in Portugal and the *Early Growth Fund* in the United Kingdom. To enlarge the pool of high quality deals countries are also strengthening public/private partnerships, e.g. the *University Challenge Fund* in the United Kingdom, which provides seed financing to facilitate the transfer of know-how and technology from universities into commercial applications.

Equity programmes financed by federal or central governments are now competing more with regional, state and local funds, particularly when these are directed to correcting geographical imbalances in venture financing. Regional initiatives (e.g. the *Regional Venture Capital Funds* (RVCFs) in the United Kingdom; state funds such as the *Massachusetts Technology Development Corporation* (MTDC) in the United States; provincial initiatives such as the *Quebec Innovatech Venture Capital Fund* in Canada; the *Centre d’Innovació i Desenvolupament Empresaria* (CIDEM) in Catalunya, Spain) are supplemented by schemes developed for small businesses in deprived communities and disadvantaged groups (e.g. the *Community Development Venture Fund* in the United Kingdom and the *New Markets Venture Capital* programme in the United States). Such funds often have social goals, including technology transfer, job creation and economic development, as well as commercial aims. Their contribution to economic activity and regional development in the long-run, however, has been mixed. They tend to lack economies of scale and experienced managers and face a trade-off between fulfilling social goals and attaining commercial viability. Regions and communities should be encouraged to evaluate these equity schemes and determine whether consolidation or alternative assistance programmes might be more worthwhile.

In all countries, public venture capital funds will need to be redirected over time and focused on pump-priming private financing, particularly for firms in seed and start-up stages. A transparent evaluation scheme should be put in place to phase-out the government's stake and allow greater scope for private funds in venture markets. In this context, an overall assessment of small business innovation finance initiatives may be warranted. This could help establish a continuum of financing sources for smaller enterprises at different stages in their life-cycle and minimise potential overlap between research grants and other sources of seed and start-up capital.

***Governments should link business angel networks to public programmes such as technology incubators***

Business angels are an important source of risk capital. Available information indicates that the total funding by angels is at par - and in some countries several times greater than - early-stage financing provided by venture capital funds. However, most angels are *ad hoc* investors. They prefer to invest locally in projects filtered through trusted channels and informal connections. Information flows between investors and potential entrepreneurs are limited or non-existent in many OECD countries. In recent years, several public as well as commercial networks have been created to organise the angel market and bridge the information gap. Most business angel networks provide matching services for entrepreneurs and angel investors through Internet databases, while others offer mentoring and support services.

Business angel networks are most developed in the United Kingdom and the United States, where private and public networks have evolved over time in tandem with venture capital markets. Localised networking, designed according to a community's economic and financial strengths and weaknesses, have tended to outperform national efforts in larger countries, *e.g.* the *Canadian Community Investment Plan (CCIP)*. A number of networks, however, act simply as listing services and are unable to maintain a steady flow of quality deals. Such networks need to be tied to other regional schemes and to networks at national level to minimise information gaps and duplicative efforts. Smaller markets - as in Sweden, Denmark and Norway - should link their business angel networks through joint initiatives such as the *Nordic Venture Network (NVN)*.

Some networks, in particular the government-sponsored ones, may suffer from a lack of quality investors that have the necessary expertise and knowledge on angel investing. To counter this, the Israeli government has sought foreign angels by offering tax incentives and initiating programmes to link small firms and venture capital funds with foreign-based institutions and multinational

enterprises as well as individuals. Some Israeli venture capital funds have also established branches in the United States and Europe to keep abreast of the latest technological and market developments. Establishing such arms-length relationships with foreign angel investors can increase the visibility of portfolio firms and co-investment opportunities.

Unlike venture capital funds, business angels invest money on their own and can be disproportionately affected by market downturns. In recent years, new co-investment schemes among angels and with other venture funds have helped to alleviate liquidity shortages and better manage risk. Structured angel groups, *angel syndicates*, have been formed in some countries, investing as a pool or as “side funds” to larger venture capital companies. Governments can sponsor venture fairs, workshops and seminars on private equity markets to encourage pool formation and strengthen synergies between informal and formal risk capital providers. Angel networks and venture capital associations can also be connected to other business groups to bridge the supply- and demand-side of markets. Deal flow through business angel networks can be enhanced if they are linked to public venture capital programmes and start-up initiatives, such as technology incubators. Governments can also increase the pool of start-ups and entrepreneurs through complementary schemes such as investment-readiness programmes for small firms and enhancing spin-offs from public research and universities.

***Governments can encourage merging of secondary stock markets to achieve more economies of scale***

The existence of appropriate exit mechanisms is essential in ensuring a well-functioning venture capital market. Exit provides an important benchmark of the profitability of venture capital relative to other investments. The success of exit affects fund-raising cycles as investors are willing to contribute funds only if their risk will be adequately rewarded. Early-stage investments, in particular, require a high target rate of return and call for more aggressive exit strategies, such as initial public offerings (IPOs). Secondary stock markets, which have less stringent admission requirements and lower costs compared to first-tier markets, are the favoured vehicle for small firm exits.

During the 1990s, there was a proliferation of secondary stock markets across the OECD largely due to the success of IPOs of young technology-based firms on the *NASDAQ* in the United States (**Table 1**). The *Alternative Investment Market* (AIM) of the London Stock Exchange began trading in 1995, followed by *Le Nouveau Marche* in France and the Korean *KOSDAQ* in 1996; the German *Neur Market* and the Belgian *New Market* in 1997, etc. OECD countries, however, have had varied success at building up these secondary

stock markets and offering exits to small firms. The majority of these exchanges remain fragmented with low market capitalisation and liquidity. Currently, only a few markets have sufficient scope and scale to sponsor IPOs. In addition, these smaller markets are volatile and prone to speculative movements. While the robustness of IPOs in many countries in the 1990s led to unprecedented growth in venture capital fund-raising and investment, the burst of the technology bubble in mid-2000 greatly lowered stock market capitalisation and some exchanges were merged or disappeared.

**Table 1. Second-tier stock markets in OECD countries**

Country (stock market)	Year of creation	Number of initial public offers (IPOs)							Number of quoted companies			Market capitalisation (% GDP)					
		1999	2000	2001	2002	1999	2000	2001	2002	1999	2000	2001	2002	1999	2000	2001	2002
Sweden (O-List)	1988	..	..	24	9	150	228	240	235	28.3	24.0	23.3	18.5				
United States (NASDAQ)	1971	485	397	63	40 <sup>(1)</sup>	4 829	4 734	4 109	3 725 <sup>(1)</sup>	56.5	36.9	28.9	16.5				
Canada (Canadian Venture Exchange) <sup>(2)</sup>	1999	2 425	403	330	122	2 358	2 598	2 688	2 504	1.7	10.2	12.7	9.7				
Korea (KOSDAQ)	1996	160	250	181	176	453	604	721	843	22.0	5.6	9.5	5.0				
Norway (SMB List)	1992	3	7	7	3	78	77	79	79	4.2	1.8	1.5	1.2				
United Kingdom (AIM)	1995	67	203	109	78	347	524	629	704	1.5	1.6	1.2	1.0				
Ireland (ITEQ)	2000	---	..	..	..	---	---	7	8	---	3.6	1.7	0.7				
Italy (Nuovo Mercato)	1999	6	32	5	0	6	40	45	45	0.6	2.2	1.2	0.6				
Germany (Neuer Markt) <sup>(3)</sup>	1997	132	132	11	1	201	338	326	240	5.7	6.0	2.4	0.5				
France (Nouveau marché)	1996	32	52	9	2	111	158	164	154	1.1	1.7	1.0	0.5				
Switzerland (SWX New Market)	1999	6	11	1	0	6	17	15	9	..	3.0	0.9	0.2				
Finland (NM List)	1999	..	..	..	..	..	17	16	15	..	0.7	0.3	0.2				
Denmark (Dansk AMP)	2000	3	0	1	3	3	3	4	7	0.1	0.1	0.1	0.1				
Spain (Nuevo Mercado)	2000	---	..	..	..	---	---	12	14	---	3.4	..	..				
Japan (Mothers in Tokyo)	1999	2	27	7	8	2	29	..	..	0.2	0.1	..	..				
Japan (Hercules in Osaka)	2000	---	..	43	..	---	..	32	..	..	..	0.3	..				
Netherlands (EURO.NM Amsterdam)	1997	1	2	---	---	13	15	---	---	0.3	0.2	---	---				
Belgium (EURO.NM Belgium)	1997	6	3	---	---	13	16	---	---	0.2	0.2	---	---				
Europe (EASDAQ)	1996	..	..	---	---	56	62	---	---	---	---	---	---				
NASDAQ Europe <sup>(5)</sup>	2001	---	---	..	..	---	---	49	43	---	---	---	---				
Austria (Austrian Growth Market) <sup>(6)</sup>	1999	..	..	---	---	2	2	---	---	0.01	0.01	---	---				

1. End of October.

2. Data includes both high-growth firms' shares and shares of investment funds.

3. The Neuer Markt is discontinued as a single market segment after a transition period in 2003. The stocks noted at the Neuer Markt will mainly change to the Prime Standard Segment. The 30 largest technology companies are now mapped in a new index "TecDAX".

4. Previously NASDAQ Japan.

5. In 2001, NASDAQ Europe acquired majority ownership in EASDAQ, but operations will cease by the end of November 2003.

6. On April 2001, the two stocks in the AGM segment were transferred to the Specialist Segment of Wiener Börse.

Source: Compiled by OECD Secretariat from national sources.

Volatility in global financial markets since 2000 has exacerbated the weak performance and further diminished the credibility of secondary markets as a viable exit route. Only a small fraction of recent exits across the OECD has been through IPOs. Mergers and acquisitions (M&As), *i.e.* trade sales, and buy-backs are more frequently used. Greater economies of scale and scope can be achieved through more integration of second-tier markets across countries. Some initiatives are under way to improve competitiveness and reduce the fragmentation of stock exchanges. For example, the Canadian government played an important advocacy role in promoting consolidation and specialisation across the Canadian exchanges. In 2000, the four main stock exchanges in Canada -- the *Montreal Exchange* (ME), the *Toronto Stock Exchange* (TSE) and the *Alberta Stock Exchange* -- were restructured. The trading of senior securities was consolidated on the TSE, while the *Canadian Venture Exchange* (CDNX) now specialises in the trading of junior securities. Similarly, the Swedish-based *Nordic Growth Market* established the *Nordic OTC* in 2003 with the intent of creating a common Nordic platform for small unlisted companies. A European-wide stock exchange for high-growth companies, rather than the current nationally-based exchanges, should be encouraged in the broader context of capital market integration in Europe. Similar steps could be taken in Asian countries to provide a viable exit mechanism for small innovative firms in that region.

Globalisation, diffusion of new technologies and deregulation will continue to put pressure on secondary stock exchanges to reorganise and stay competitive. The scope of partnerships across exchanges could range from enhancing trade linkages, cross-listings and alliances to full-scale mergers. Although these are primarily decisions for the markets themselves, governments can provide the appropriate regulatory frameworks for more viable secondary exchanges and seek to further such integration in the interest of small firm growth and entrepreneurship.

## CONCLUSIONS

The importance of promoting risk capital and liquid equity markets for the development of small, high-growth firms, particularly in high-technology sectors, is widely recognised. OECD countries, however, differ significantly in venture capital activity and the share of investments directed to early-stage firms in high growth sectors. In general, a lack of knowledge and expertise regarding private equity financing among institutions and other investors, as well as the high transaction costs associated with early-stage financing, constrain the number and type of portfolio firms. Countries also face difficulty in sustaining quality deal flows. The global downturn in financial markets and high-technology sectors since mid-2000 has slowed fund-raising activity, while investments have shifted towards later-stage and larger-scale deals. These allocational problems are further exacerbated in countries with limited market size and depth.

In order to realise the growth benefits from fostering firm creation and entrepreneurship, countries need to take steps on both the demand-side (*e.g.* creating an entrepreneurial culture) and the supply-side (*e.g.* increasing access to risk finance). Benchmarking studies indicate that national entrepreneurial activity varies greatly across OECD countries. While taking steps to enhance the investment conditions and culture for risky undertakings, countries must also improve the business environment for entrepreneurs and increase the pool of investment-ready small firms. If demand-side problems predominate, any government intervention in financial markets could be distortionary, subsidising firms that are not creditworthy.

Levels of entrepreneurship depend on intangible factors, such as the existence of a risk-taking culture, as well as more tangible conditions, such as the ease with which new firms can be created and the penalties associated with bankruptcy. Entrepreneurship policy should also focus on spurring the growth potential of existing small firms. If the entrepreneurial sector cannot come up with new products and markets and fails to broaden potential areas of investment, excess venture funds may end up chasing too few deals. Private equity could then be concentrated on later-stage investments and traditional industrial sectors, with far less impact on potential growth. Government programmes that seek to reduce barriers to the commercialisation of early-stage

technologies and facilitate university and research spin-offs could help enhance the demand for risk capital.

On the supply-side, countries may need a full set of policy actions to create a continuum of finance for small entrepreneurial firms. This could include investment regulations which diversify the potential sources of venture funds, tax systems which do not overly penalise capital accumulation, government schemes which help jump-start the private venture market, business angel networks which supplement the flow of funds and mentor small firms, and secondary stock markets which allow for easy exits. General recommendations in implementing such policies apply to most OECD countries, although they may need to be tailored to specific economic systems and the size and stage of development of venture markets.

Most OECD venture capital markets are in the early development phase where both supply-side and demand-side constraints may be binding. Complementary entrepreneurship policies thus are essential. For smaller countries, integration into global equity flows and the consolidation of secondary stock markets is better than developing isolated national venture arenas. For all countries, private venture capitalists and funds are preferable to government schemes. Any direct intervention through public funds should be focused on small early-stage investments, combined with overall small firm finance approaches, and evaluated and phased-out when no longer needed.

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