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Venture CAPITAL *in* LATVIA Revisited

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9

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Venture Capital in Latvia Revisited

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Foreword

This is the ninth of the TeliaSonera Institute Discussion Papers. The Institute, which is located at the Stockholm School of Economics in Riga, is generously supported by TeliaSonera and aims to promote applied economic research in the fields of entrepreneurship and telecommunication – the latter with a focus on regulatory issues.

The current discussion paper by Alf Vanags, Jūlija Staševska, and Anders Paalzow is a substantially revised and updated version of the Institute's first discussion paper *Venture Capital in Latvia* by Vitas Dijokas and Alf Vanags published in 2004. The current discussion paper and the previous eight can be downloaded from the SSE Riga website, *www.sseriga.edu.lv.* Hard copies can be ordered from *office@sseriga.edu.lv.*

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1. Introduction and conceptual background

1.1. Background and outline of the study

This study represents an update and extension of Dijokas and Vanags (2004) which was the first attempt to examine the size and scope of the venture capital (VC) sector in Latvia. Here we trace the development of the sector since then, based on a survey of the main local funds together with data from the state venture capital programme developed within the framework of the ERDF for the 2004–2006 structural funds programming period. The main results of interest concern changes in the sectoral composition of VC in Latvia and an assessment of how the sector has grown. This is reported in section 2. Section 3 examines the rationale and role of publicly supported VC programmes. The remainder of this introductory section offers a short introduction to the main theoretical concepts.

1.2. Sources of financing a business

Irrespective of whether an entrepreneur wants to create a new business or expand an existing one, they need financial resources to introduce new technologies and ideas, to grow and to remain competitive. One of the main barriers (in many cases *the* main barrier) an entrepreneur faces throughout the entrepreneurial process is access to capital.

Thus a company's ability to compete in its chosen product and service market(s) may depend as much on its ability to secure resources on good terms as on its business strategy *per se*.
There are four main types of sources for financing a business:[4]

- self-financing (including personal savings, family and friends);
- debt financing (bank loans);
- equity financing (private equity, venture capital);
- raising capital via a stock market flotation.

In addition, government funding through various programmes targeting start ups and SMEs can also be an option.

Self financing is an important source of initial finance for a business but is rarely a viable long-term solution. Personal relationships can become entangled with the business and the joint shareholders rarely play an equal and effective role in the development of a business and in supporting the entrepreneur.

Stock market flotation requires that a company has already reached a certain level of activity. It also involves a considerable degree of public control and control by stock market regulators. Stock market financing is also vulnerable to external economic fluctuations.

[4] McNally (1997), p.256.

The other two sources – debt financing and equity financing – are both particularly suitable for financing SMEs. However, they have different characteristics and different relative advantages especially in the context of technology based businesses.

The availability and cost of debt finance, such as a bank loans, depend on reliable information about the borrower and, typically, newly established and small firms can provide less information to outside financiers than their larger counterparts, which leads to higher loan rates or simply to an unwillingness to lend unless backed by adequate collateral.[5]

Additionally, in the case of technology-based start-ups banks face difficulties in distinguishing between good and bad lending propositions. Technology-based start-ups are often unable to meet requirements for collateral. This is because the early stages of product development can often exhaust the personal assets of the business founder leaving possibly valuable but intangible assets. Creditors demand guarantees which companies with few or no tangible assets find difficult to provide. This situation typically does not change until the business achieves production and income levels that generate tangible business assets, such as receivables and inventories.[6]

This implies that smaller firms pursuing innovation strategies may face greater difficulty in obtaining debt finance for start-up and early stage development than their conventional counterparts. Such capital constraints limit the innovative capabilities of start-ups.

It is estimated that the amount of finance required to develop and launch a technology-based product is on average ten to twenty times greater than the initial R&D expenditure. Internal sources alone are unlikely to be sufficient to meet such high capital requirements for development so that innovative firms will typically need to seek external finance while still in the relatively early stages of growth. For these firms equity can be a more suitable and accessible form of finance than debt.[7]

The four main distinctions between venture capital[8] and bank loans are:[9]

1. Venture capitalists take an equity-linked stake in the firms they finance, so they share both the upside and downside risk and can benefit from an increase in the value of the firm, while banks can profit from financing projects only by receipt of interest and repayment of the loan.
2. Venture capitalists may also contribute with technological expertise, which allows them to identify good projects better than banks can.
3. Venture capitalists after an initial investment will typically provide entrepreneurs with access to consultants and accountants and will play an active role as monitors of the enterprise. This reduces verifiability problems.
4. Venture capitalists are also interested in and take an active part in guiding the exit decision either by selling their shares directly to other firms or launching an initial public offering (IPO).

[5] Audretsch D.B., Keilbach M.C., Lehmann E.E. (2006), p.227.
[6] Bank of England (2001).
[7] Bank of England (2001).
[8] Venture capital includes not only formal venture capital firms or funds but also 'business angels' ie private individuals who are prepared to invest in companies on an equity basis.
[9] Audretsch D.B., Keilbach M.C., Lehmann E.E. (2006).

In many cases, venture capitalists syndicate their investments, i.e. one venture capitalist originates the deal and then invites other venture capitalists to invest. In addition to bringing more competence into the decision making process, syndication allows venture capital firms to diversify by giving them the opportunity to invest in more projects and hence to a large extent diversify away from firm-specific risk.

Box 1. Why venture capital?

To understand the role of venture capital and venture capitalists, consider the individual entrepreneur. In most cases entrepreneurs do not have the financial resources to see their ideas to fruition. Hence, they must rely on outside financing. However, in most cases traditional sources of company financing such as bank loans and issue of public stock are not available so that even the most potentially profitable firms and the most exciting projects face limited access to capital. According to Gompers and Lerner (1999), four factors essentially contribute to this result and hence determine available sources of financing:

- Uncertainty relating to whether the company's product or research will succeed.
- Asymmetric information reflecting that the entrepreneur knows more about the company and its prospects than the investors.
- Nature of firm assets – in many cases more or less all assets are intangible. Hence, there are few physical assets, e.g. buildings and machinery that can be used as collateral when borrowing money.
- Conditions in the relevant financial and product markets. The supply of capital from investors (for example through a shift in investor preferences) or public funding may be volatile, as indeed may be the price of capital. The nature and size of the market for a product or service under development may also be subject to change and uncertainty: new and competing products might appear and potential buyer preferences can change.

All of these factors contribute to making a venture capital investment a high risk asset, which in turn constrains, for example, pension funds in how much they can invest in venture capital. Even if there are no explicit restrictions on the scale of VC investments, most of those that control capital, e.g. banks and investment funds, have neither the time nor the competence to evaluate and invest in young companies that are most in need of venture capital. This creates a niche for venture capital funds.

As discussed in Gompers and Lerner (1999), venture capital can be viewed as a cycle which starts with raising a venture fund, which in most cases involves a number of investors/venture capitalists. Then follows screening and eventually investment – a typical venture capital fund receives dozens of business plans for each one it funds. Once the investment is made the venture capitalist monitors and contributes knowledge and hence adds value to the firm(s). In the final stage of the cycle, the venture capitalist exits through a successful deal and returns the capital to the investors – almost all funds are designed to be "self-liquidating", i.e. to dissolve after ten to twelve years. Then a new cycle starts with raising new funds.

1.3. The screening process

Venture capitalists also play an important role when it comes to screening investment opportunities/business plans. As discussed in the literature, see e.g. Lerner (2009), the screening process undertaken by venture capitalists is in general by far more efficient than those undertaken by other potential funders of innovative businesses such as government programmes or grant-makers; and corporate research and development laboratories. Furthermore, substantial empirical evidence suggests that venture capitalists play an important role in terms of encouraging innovation and hence that venture capitalist entrepreneurs have a special advantage when it comes to innovation.

The screening process focuses, in addition to financial analysis *per se,* on a set of different measures/criteria[10]:

- Product differentiation: uniqueness, patents, technological edge.
- Market conditions: market size and growth, demand, competition and barriers to entry, sensitivity to the business cycle, and life cycle of the technology.
- Execution: nature of the product and overall business strategy.
- Managerial skills: managerial performance so far, skills in marketing, finance and overall management.
- Monitoring costs.
- Exit conditions: opportunities to realize capital gains on the investment (see section 1.5 below).
- Funds at risk and fit within the investor's existing portfolio of assets.

Needless to say, this process requires substantial skills and is in general fairly time consuming – as discussed in Amis and Stevenson (2001), the investors interviewed spend up to 160 hours to screen just one investment opportunity. The final outcome of the process is a high number of rejections. According to Gompers and Lerner (1999), only about 0.5 to 1 per cent of projects considered are funded.

[10] This follows from the findings in Tyebjee and Bruno (1984) and Kaplan and Strömberg (2004).

1.4. Definitions of development stages

Some definitions of enterprise development stages that will be used in this report are:[11]

- *Start-up* – if the results of the seed stage of development are promising, the start-up stage follows. In this stage, a management team is assembled, and they develop a more detailed business plan. The duration of this stage may be one to two years. This stage requires substantial additional committed capital. Fortunately, financing alternatives generally expand. Business angels who have committed seed money to a venture are generally prepared to contribute additional funds. Venture capitalists may also step in at this stage.

- *Expansion* – in this stage, the company has accumulated considerable experience in the marketplace. Even though ultimate success may not yet be assured, major success factors have been identified. On an operational basis, the firm may still be losing money in this stage, which generally lasts for about two years. The company may need additional substantial financing for purchase of equipment and inventory, and for increased working capital. Alternative financing sources are VC and bank loans.

- *Bridge Stage (Mezzanine Financing)* – the bridge or mezzanine stage is essentially a final growth-and-preparation stage that may be required before the firm can harvest the venture. However, the harvest alternative has already been determined, so the firm's growth-and-preparation strategy is generally tailored to this alternative. For instance, if the firm is considering an initial public offering (IPO), it may be shaping its earnings numbers to promote favourable reception in the market, and may also be waiting for favourable stock market conditions for an offering.

- *Harvest* – the final stage of development, harvest, involves cashing in and exit of short-term investors.

1.5. Divestment: types of exit strategies

Venture capital investors harvest their results when they exit their investments. Essentially, an exit is a change of ownership structure of a portfolio company which allows the VC to liquidate its position and realise a gain if the investment has been successful. There are a number of different types of exit strategies. The most common ones are listed and briefly discussed below. Table 1 shows how these exit strategies were employed in Europe over the period 2005–2009. According to the European Venture Capital Association (EVCA), in 2009 private equity companies based in Europe exited 1,846 companies with a total amount divested at cost[12] of EUR 11.1 billion.[13] This figure was down 21% compared to 2008.

[11] Ogden J., Jen F., and O'Connor P. (2002), p.702.
[12] At cost invested excludes any proceeds (positive or negative).
[13] European Venture Capital Association and PEREP_Analytics (2010), "Annual Survey 2009", available at *http://www.evca.eu/knowledgecenter/statisticsdetail.aspx?id=412*.

1. As seen from Table 1, overall the consistently most frequent form of exit over the period 2005–2009 according EVCA data was trade sale, i.e. when the venture is sold privately to another party (e.g. investor or corporate firm).

2. IPO (initial public offering): flotation on a public stock market. This is often regarded as the most profitable form of exit and is much sought-after as it corresponds with a wish to make a company more dynamic over the long term and to profit from the growth possibilities offered by a stock market exit.[14] However, as seen from Table 1, this has been a rather rare exit strategy and one which to a large extent depends on overall capital market conditions. Thus IPOs almost dried up in 2008 and 2009 when the climate was unfavourable for IPOs.

3. Sale of quoted equity (i.e. the equity is already quoted on the stock market).

4. Write-off or liquidation. This corresponds to the option when the VC investment has failed. As seen from Table 1 write-offs shows a huge variation over time and are negatively correlated with the business cycle. Thus, in 2009 a third of divestments were made through write-offs as compared with 3% to 6% in the previous four years.

5. Secondary sale: this is the sale of the investment to another financial purchaser (called a secondary market investor). Here one financial investor sells their equity stake to another investor when the company has reached a stage of development where this is feasible. Table 1 shows that this was a popular form of exit in the boom years reaching 33% in 2007 but fell to just 9% in 2009.

6. Repayment of shares or loans. Table 1 shows that this, too, is a form of exit that has declined sharply in the recession.

7. Sale to a financial institution.

8. The entrepreneur or management team can buy back the VC share (MBO – management buyout). This can be convenient for both sides if the company expects regular cash flows and can mobilise sufficient loans.

[14] Carter (1996).

	2005	2006	2007	2008	2009
Trade sale	23%	23%	27%	38%	28%
IPO	5%	9%	4%	<1%	<1%
Sale of quoted equity	5%	7%	5%	5%	7%
Write-off	5%	4%	3%	6%	33%
Secondary sale	18%	17%	33%	28%	9%
Repayment of shares/loans	23%	17%	14%	6%	2%
Sale to financial institution	4%	5%	5%	5%	6%
Sale to management	5%	6%	3%	5%	5%
Other	12%	12%	6%	7%	10%
Total	100%	100%	100%	100%	100%

Table 1. Divestments in Europe by type (percentage of total amount divested at cost)
Source: EVCA[15]

2. The private equity and venture capital industry in Latvia

2.1. Participants in the Latvian venture capital market

This section aims to identify and describe the various participants in the Latvian private equity/venture capital (PE/VC) market. These include: PE/VC funds and fund management companies, business angels, commercial banks, the European Bank for Reconstruction and Development (EBRD) as well as the Latvian state itself.

2.1.1. PE/VC funds

In order to identify and characterise the PE/VC funds dealing on the Latvian PE/VC market, a survey was conducted. The survey identified 13 PE/VC funds active in the Latvian market as of June 1st 2008. These are:

AS "Eko Investors",
NCH Advisors Inc.,
SIA "Baltcap Management Latvia",
SIA "Hanseatic Capital Latvia",
SIA "Imprimatur Capital Baltics",
SIA "PriBalt",
SIA "TechVentures Fondu Vadības Kompānija",
SIA "Zaļās gaismas investīcijas",
"Uzņēmējdarbības atbalsta fonds" (UAF),
SIA "Mazo un vidējo komersantu riska kapitāla sabiedrība"(MVKAF),
Alta Capital,
Laika stari,
Gild Bankers.

[15] *http://www.evca.eu/investorsforum2010/Defreyn.pdf*

Annex 1 provides a summary of the characteristics of these participants. However, for two funds, AltaCapital and Laika stari, it proved impossible to get reliable information, so these two market participants have not been included in the overall calculation of PE/VC supply in Latvia. It should be noted that the list includes only funds that had made an investment by June 2008, which leaves out funds or fund management companies that intend to invest in Latvia, but have not yet made any investment.

Commercial banks and pension funds do not operate in the venture capital market directly but do so through their funds: "ZGI" (SEB Banka), "Eko investors" (Swedbank) and "Hanseatic Capital Latvia" (Swedbank).

As compared with the situation described by Dijokas and Vanags (2004) the overall number of PE/VC funds participating on the market has remained stable although the composition has changed – some participants have left the market and some new ones have joined. This suggests that the VC market in Latvia may be too small to admit more than about 15 funds.

New funds that have joined the market are: SIA "Zaļās gaismas investīcijas", SIA "PriBalt", SIA "Imprimatur Capital Baltics", SIA "TechVentures Fondu Vadības Kompānija", and MVKAF.

Most funds operating in Latvia involve foreign institutional investors from the United Kingdom, the United States or from the Scandinavian countries. A few funds, such as AS "Eko Investors", SIA "Zaļās gaismas investīcijas", and SIA "Laika stari" have been established by private individuals from Latvia. Most funds focus their investments on all three Baltic countries or even more widely on the CEE and Russian region. Investments aimed exclusively on Latvia are by funds founded by Latvian private individuals. These funds are relatively small and make investments in a lower range than competitors with a foreign investor background.

With the exception of SIA "Hanseatic Capital Latvia", which specializes in mezzanine[16] financing in the Baltic countries, Poland and Finland, most of the PE/VC fund management companies operating in Latvia invest in equity-like instruments and typically they invest in companies at the early and expansion stages. Buy-outs are also common. Usually VC investors are not willing to invest in start-ups because these investments involve relatively high management costs. Exceptions are funds that are fully or partly financed by the state such as UAF, MVKAF, AS "Eko Investors", SIA "Zaļās gaismas investīcijas", SIA "TechVentures Fondu Vadības Kompānija". These were created with the specific purpose of supporting start-ups that need smaller investments. The role of government and public support for the Latvian venture capital industry is discussed in further detail in section 3.3.

[16] Mezzanine finance is a flexible financing instrument which may be tailored to meet specific needs. It shares characteristics of both debt and equity funding. The concept is discussed in section 1.3.

Our survey suggests that VC investments in Latvia can be divided into the following three groups based on size of investment:

1. Funds making investments of up to EUR 200 000. This group includes funds of Latvian origin that are subsidized by the government. These funds support a niche that usually needs rather small start up investments. Taking into account that small investments are hard and expensive in management, government support may be justified for this niche.

2. Funds dealing with investments between EUR 200 000 and EUR 1 million. The typical Latvian investment fund belongs to this group.

3. Investments of more than EUR 1 million are made by just a small group of companies, all of which have foreign investors. These are NCH Advisors Inc., SIA "Baltcap Management Latvia", SIA "Hanseatic Capital Latvia" and Gild Bankers.

Annex 2 provides data on VC investments by year and by industry or sector between 1995 and the end of the third quarter of 2008. Until 2007 the annual number of investments was typically small but rather stable. In most of those years the number of investments was in single figures – between 2 and 6 – an exception was 1996 when there were 11. However, from 2007 the pace of activity picked up with 16 investments in that year and 21 in 2008. This acceleration of activity was a result of the ERDF financed venture capital programme which ended in 2008.

In total over this time there were 96 investments of which 32 (or 33%) were in manufacturing, while within manufacturing food products received the biggest share, with 10 investments. However, all of the investments in food products were made in the early part of the period and there have been none at all since 2000. The largest single sub-sector, with 12 investments, has been waste collection, treatment and disposal activities (NACE 38). All of these investments have been since 2001 with no less than 5 in 2008. The next most important receiving sub-sectors, with 8 investments each, were: computer programming, consulting and related activities (NACE 62) with 6 of these occurring since 2006 and real estate (NACE 68) with half of these occurring in 2008, illustrating perhaps that venture capital fund managers can get things wrong too.

Distribution of investments by period and by high-tech/low-tech industry and knowledge based and less-knowledge based services[17] is illustrated in Figure 1 below.

[17] High-tech/low-tech and knowledge based and less knowledge based sectors are classified according to Eurostat definitions. High tech here includes medium high tech and low tech includes medium low tech.

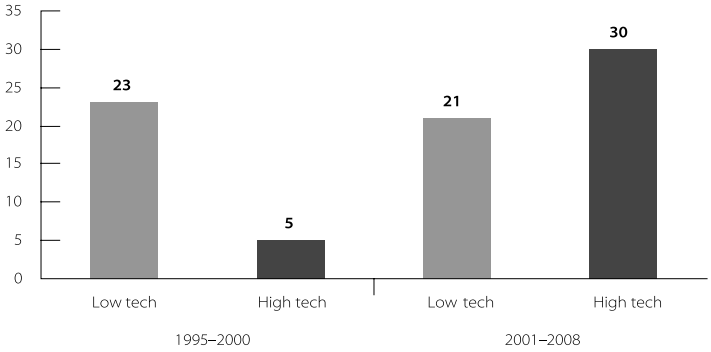

Figure 1. Distribution of VC investments by high tech/low tech sectors
Source: Own calculations

A considerable shift of investments towards high tech is noticeable in the period since 2000. This was strongly influenced by the ERDF VC programme in which more than half of its 28 were in the high tech category. It should be noted that overall 17 (of 96) investments cannot be put in the high tech/low tech classification. These include 12 investments in 'waste collection, treatment and disposal activities; materials recovery' (NACE 38) as well one or two investments in such sectors as 'construction' and 'electricity, gas, steam and air conditioning supply'. Thus, while moving quite strongly in a conventional high tech direction it cannot be said that the Latvian VC industry yet conforms to the classic model of VC that is seen as particularly supportive of innovative businesses.

2.1.2. The European Bank for Reconstruction and Development (EBRD)

The EBRD has played a significant role in development of the venture capital market in Latvia. As an early player, starting from 1995 it worked closely with the management team of BaltCap, investing in three BaltCap established investment funds: Baltic Investment Funds I and II (1995), Baltic Investment Fund III (1999); and Baltic SME Fund (2001); and in 2007 EBRD invested EUR 20 million in the BaltCap Private Equity Fund that aims to support SMEs in all three Baltic countries with an intended equity investment range between EUR 2 and EUR 15 million.

2.1.3. Business Angels

Business angels are potentially rather important for development of entrepreneurship in Latvia, as they invest in start-ups at a stage before these businesses are in a position to receive financing from banks or formal venture capitalists. In other words they help to close the so-called equity financing 'market gap'. However, business angel activity is not officially registered or recorded in Latvia and hence it has proved impossible to assess either the amount and structure of their investments or how their investments have performed.

Nevertheless, it should be stressed that business angels do have a serious presence in Latvia. There are at least three associations of business angels that collect and provide information on potential investors and investees – the Latvian Private Investor Association, Connect Latvia, and the Business Angel Association.

Box 2. Start-up financing and informal investors in Latvia

In terms of financing start-ups, a pattern is repeated over and over again, be it in Latvia or elsewhere. First the founders raise capital by using their own personal funds, next they turn to informal investors such as family, relatives, friends and colleagues and maybe to business angels. If the company is viable, grows fast and shows good potential then it might (although it is very rare) attract venture capital. Eventually, there might be an IPO or the company is acquired by another, larger, company.

The Global Entrepreneurship Monitor (GEM) Latvia Reports[18] provide information on financing of new business ventures in Latvia[19]. The findings of the GEM 2005–2009 Latvia Reports reveal that:

i) The typical (median) amount needed to start up a business in Latvia increased from EUR 10,000 in 2005 to EUR 30,000 in 2008 and then dropped to EUR 14,000 in 2009.

ii) On average two thirds of start-up capital comes from personal savings. Hence, the median demand for external start-up financing is quite small – in 2008 it was around EUR 3,000.

iii) In 2008 around one third of start-ups were financed entirely by the entrepreneur's own resources.

iv) Family, relatives, friends and colleagues are important informal investors when it comes to external start-up financing. According to GEM 2009, the amount of capital supplied by informal investors as a percentage of GDP was around 3 percent – one of the highest observations among the developed countries taking part in GEM.

Hence, founding entrepreneurs themselves generally provide more of the funding needed to start up their new business than do informal investors. In terms of external financing, there are of course other sources of external funding besides informal investors, e.g. banks, governmental and EU programmes. However, the findings of the Latvian GEM studies indicate that these sources, as in most other countries, play a rather small role when it comes to financing start-ups.

[18] The Global Entrepreneurship Monitor is a major international research project aimed at describing and analyzing entrepreneurial processes across a wide range of countries. The TeliaSonera Institute at SSE Riga is responsible for Latvian participation. See Chandler et al (2006), Dombrovsky et al (2007), and Rastrigina (2008, 2009, 2010).

[19] Financing of start-ups in Latvia is also addressed in Baltrusaityte-Axelson et al (2008) and in Dombrovsky et al (2010).

Furthermore, according to the GEM 2008 Latvia Report around five per cent (or around 75,000 persons) of the Latvian adult population were identified as informal investors providing funding for new businesses. This proportion is similar to that of the United States and Korea, but higher than in most European Union countries. However, the average amount of financing is smaller: in 2008 it amounted to EUR 3,500.

The observed relationship between informal investors and the investee reveals that around 90 per cent of investments go to family, relatives, friends and colleagues. In other words, confirming the above findings showing that these groups are the most important investors in the eyes of entrepreneurs.

2.1.4. The Latvian Venture Capital and Private Equity Association

The Latvian Venture Capital and Private Equity Association (LVCA) was founded in September 2003, at the same time becoming a member of the European Venture capital Association (EVCA). The LVCA currently has 16 members, of which 8 are general partners/fund management companies and 8 are representatives of venture capital supporting industries such as audit and legal service companies. The Association was founded with the aim of informing entrepreneurs and society about the possibilities of venture capital financing, as well as to promote cooperation with venture capital associations abroad. However, the LVCA does not collect data and has limited membership among companies active in the Latvian venture capital market.

2.2. The size of the VC market in Latvia

The aim of this section is to estimate the 'size' of the VC market in Latvia in monetary terms. The results reported here represent an update of the calculations made in Dijokas and Vanags (2004). The data employed are based on responses to a survey[20] of companies active on the Latvian venture capital market supplemented with information from the ERDF funded venture capital programme.

Data for individual companies are reported in Annex 1 but when aggregated we find that as of mid-2008 the total of VC investments in Latvia was 68.2 million EUR. This compares with just 16.5 million EUR in 2004, so in terms of stock of investments the Latvian market grew by more than 300% in nominal terms between 2004 and mid 2008. Table 2 shows a comparison of the size of the venture capital market as measured by investments in Latvia and two European comparator countries – Hungary and Finland[21].

[20] Out of the 13 participants in the market, 11 responded.

[21] It would be interesting to have a broader European comparison, but data are not available for all countries, e.g. for Estonia and Lithuania, which would have made an interesting comparison. The choice of Hungary and Finland enables a comparison of developments since 2004.

Country	Investments by venture capital funds EUR mln*		GDP EUR mln*		Ratio: venture capital/ GDP*		Population Mln*		Ratio: venture capital/ per capita*	
	2004	2007/8	2004	2007/8	2004	2007/8	2004	2007/8	2004	2007/8
	(a)	(b)	(c)	(d)	(e) = (a)/(c) *100%	(f) = (b)/(d) * 100%	(g)	(h)	(i)= (a) /(g)	(j) = (b)/(h)
Latvia (LV)	16.5	68.2	9104	23 160	0.18%	0.29%	2.3	2.27	7	30
Hungary (HU)	643.3	2800	111 667	121 000	0.58%	2.31%	10.1	9.93	64	282
Finland (FI)	1773	4774	139800	185 900	1.27%	2.56%	5.2	5.24	341	911

Table 2. Venture capital in Latvia, Hungary and Finland compared
Source: Dijokas and Vanags (2004) modified and updated by the authors of this report. VC data for Hungary and Finland are from the respective country Venture Capital Associations and for Latvia from the questionnaires and from official data from the ERDF funded Latvian venture capital programme. Data on GDP and population are from the statistical bureaus of Latvia, Hungary and Finland.

*For Latvia data are for 2008 and for Finland and Hungary for 2007.

The absolute value of investments in both Hungary and Finland remains much higher than in Latvia, as was the case in 2004. Growth of VC investments was high in all three countries, reflecting growing use of this instrument. At 335%, growth was highest in Hungary, while in Finland growth was only 170%, which is less than both Hungary and Latvia.

A more meaningful cross country comparison requires some sort of scaling and we offer two such scaled measures – one in terms of GDP and the other per capita. On both measures the Latvian venture capital market lags well behind both Finland and Hungary. In terms of the ratio of VC to GDP Hungary is nearly 8 times as 'VC intensive' as Latvia and actually close to the Finnish indicator (variable "f" in the table). In per capita terms 'VC intensity' (variable "j") in Hungary is more than 9 times higher than in Latvia and in Finland it is more than 30 times higher than in Latvia. In other words the Latvian market remains significantly underdeveloped as compared with both its fellow new EU member state Hungary and even more so as compared with Finland.

2.3. Supply

The supply side of the venture capital market may be characterised as follows:

Supply = private equity/venture capital funds + business angels + banks + state supported funds.[22]

[22] Dijokas and Vanags (2004).

Annex 1 provides data on venture capital available to the Latvian market. In order to come up with concrete figures it has been necessary to make some assumptions:

- How to treat pan-Baltic funds? We have assumed that all their capital is in principle available for investment in Latvia.

- How to treat the two funds – NCH Advisors Inc and SIA "Imprimatur Capital Baltics" – who claimed that the total capital they have available for investments in Latvia is unlimited? Here, we use an ad hoc procedure to infer that these funds are ready to invest respectively up to 43 and 4 million EUR in Latvia[23].

Therefore the total supply of venture capital made available by funds in Latvia is approximately 256 million EUR, made up of approximately 209 million EUR as reported by the funds[24] plus the 47 million EUR imputed to NCH Advisors Inc and SIA "Imprimatur Capital Baltics".

Business angels also represent a problem since there are no data official or unofficial on the scale of their involvement. Somewhat arbitrarily we have assumed that business angels supply an amount that is 10–20% of the total committed capital provided by formal venture capital funds. Putting a numerical value on this implies a business angel supply in the range 26–52 million EUR, or a single point 'guesstimate' of 39 million EUR.

As already noted, the commercial banks and pension funds participate in the venture capital market through their funds "ZGI" (SEB Banka) and "Hanseatic Capital Latvia" (Swedbank) and thus the contribution of banks is already included.

In Latvia venture capital has received state support under the Single Programming Document 2.4 Measure "Access to Finance for SMEs" which has provided a state financed supply of 34.4 million EUR plus over 50% of financing provided by private co-investors in three venture capital funds that have participated in the support programme.[25] All of this finance is made available through the funds and hence is already included.

In summary, this suggests an approximate total supply of venture capital in Latvia of 295 million EUR up to June 2008.

2.4. Demand

Quantifying potential demand for venture capital is fraught with difficulties. On the one hand we might suppose that since there appears to be plenty of capital available everyone who would

[23] We have assumed that for these funds in practice their ratio of invested to available capital is the same as the average ratio of invested to available capital for other funds in Latvia (approximately 28%). Since we know how much the funds have invested we can infer how much capital they have available.

[24] It should be noted that as of mid-2008 Baltcap Management and Hanseatic Capital reported much reduced available capital which would imply that the available supply from the funds was only 92.7 million euro as of that time. However, for the purposes of the exercise we need to compare what was available previously with the accumulated investment.

[25] Agreements were signed with three funds, but in April 2008 one of the funds, INVENTO, managed by SIA TechVentures Fondu Vadibas Kompanija, withdrew.

like to receive VC funding has been able to obtain it and that the figure of 68.2 million EUR realised investments represents the total of current demand. However, this would be to ignore the 'equity gap' for small enterprises as well as cultural factors (lack of trust) that may inhibit the owners of small businesses from ceding shares in their business to VC investors.

It could be that Latvian demand for venture capital funds is potentially higher than the current investment of 30 EUR per capita. This may be because attitudes may change – as indeed they must have in the period since 2004 when per capita investment more than quadrupled. The recession and drying up of bank finance as well as the growth of 'necessity driven' entrepreneurship may also increase willingness to use VC finance. How far might this go? We can take Hungary as a benchmark of a fairly VC intensive former communist new EU member state. It is not unreasonable to suppose that the Latvian market might eventually absorb an invested venture capital per capita ratio of say 50% of that in Hungary, in which case potential demand in Latvia can be calculated as follows:

Potential demand = 50% (Invested capital by VC funds (HU) / Population (HU)) * Population (LV) = 320 million EUR.

Thus, while the actual current situation appears to represent excess supply, with supply at 295 million EUR and observed demand at just over 68 million EUR, if demand for VC finance in Latvia were to reach a level of 50% of that in Hungary then current availability of funding would no longer be sufficient to meet demand and we would observe a shortage of venture capital in Latvia.

3. The potential role of state supported programmes in development of the PE/VC market

In recent years there has been considerable policy activity in the EU and in Latvia aimed at promoting development of venture capital, in particular venture capital aimed at innovative SMEs. In part at least this has been prompted by the belief that there exists a market failure in the provision of such finance that needs to be corrected. The next subsection considers some of the arguments relating to the market failure issue. This is followed by a section on state supported VC initiatives in the EU and other countries and then by a section on the Latvian experience of state supported VC initiatives.

3.1. Is there market failure in the venture capital market?

Harding and Cowling (2006), in a paper which attempts to assess the market for start-up finance in the UK for high growth potential entrepreneurial firms, argue that there appears to be a potential market failure in the venture capital market that manifests itself in the paradox

of an overall oversupply of capital alongside an inability of small firms to access appropriate amounts and types of growth finance. This shortage of finance for small and early stage firms is sometimes referred to as the equity gap. According to the European Commission (2005) the equity gap arises from both supply and demand side market failures.

On the supply side a number of factors are at work. Firstly there is what is sometimes referred to as the finance gap. This is where the risks of making lower end investments are regarded as too high relative to the rate of return from the investment with the result that investors are unwilling to incur the necessary transaction costs associated with a smaller deal size because these are high in comparison to larger deals with safer returns. Accordingly, small investments are not made. Moreover there is evidence that the average size of profitable investment deals has drifted upwards over time.

Secondly, information asymmetries may result in a knowledge gap: This is where market participants are unsure about the potential benefits of making smaller scale investments because of an institutional failure that prevents effective communication. The knowledge gap affects some sectors, particularly technology-based ones, more than others because of the intrinsic difficulty in communicating the growth potential of a particular business idea. Here, the knowledge gap distorts investment portfolios by biasing them toward non-technology, lower risk profile investments.

Moreover, as the European Commission (2005) argues "The lack of investment and fundraising in the seed and early-stage can become a self-reinforcing cycle downwards: because few venture capital funds are active in the seed and early stage area, the knowledge of how to operate there is disappearing, discouraging future entry. This leaves informal private investors (business angels) as one of the few sources of private risk capital in seed and early stages" (p 9).

Problems on the demand-side take two forms. Firstly, entrepreneurs are often reluctant to dilute their ownership or cede a share of control to equity investors and instead try to borrow or simply accept the implied constraints on growth. Secondly, there may be insufficient awareness or understanding on the part of entrepreneurs about equity finance and the concerns and needs of the investors who supply it.

The role of the government in addressing supply side gaps is to provide some form of guarantee or subordination in order to encourage venture capital investors to look further down the scale for high growth potential investments. Also business angel investments can be encouraged similarly. At the same time it is important that public funding should not crowd out private sector investment and should not contribute to proliferation of small funds. Accordingly the European Commission (2005) argues: "Leveraging existing early-stage investment through public and private co-investments is one way of addressing the early-stage problem" (p 11).

However, empirical assessment of market failures and gaps is difficult. A European Investment Fund (EIF) assessment[26] argues that lack of data compromises the feasibility of measuring the

[26] European Investment Fund (2007), "JEREMIE Report for Latvia".

gap between current supply and potential demand for financially engineered instruments. The EIF report suggests that the task is inherently impossible because demand is latent and unobservable until supply appears.

However, if we look at informal face value analysis of both the Latvian and European markets the evidence does point to an asymmetry of provision. Thus, according to our questionnaire responses, typical investments of most Latvian venture capital funds are in the range 200 000–500 000 EUR or 500 000–1 000 000 EUR. Only one fund, SIA MVKAF or "Business Support Fund", reported making investments in a range less than 50 000 EUR. This can be explained by the fact that it was founded by the Latvian Development and Investment Agency (LIDA) which is also the sole owner of the Fund. Only two funds, SIA Pribalt and UAF, make investments in the range 50 000–200 000 EUR.

Figure 2 shows Eurostat data on venture capital/private equity investments in the EU15 from 2000 to 2008. It is clear that early stage investments have remained the 'poor relation' throughout the period.

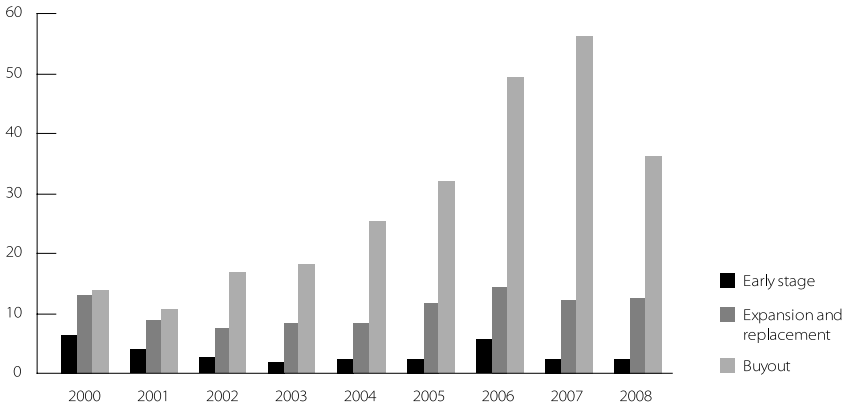

Figure 2. VC/PE investments by stage in Europe from 2000 to 2008
Source: Eurostat

It is recognised that the equity gap is almost certainly partly covered by business angels. We do not know much about business angel activity in general but in communication with a representative of a Latvian business angel network it was it was suggested that a business angel investment in Latvia would not exceed 170 000 EUR and would not take more than 40% of the shares.

Box 3. The Valley of Death

In Latvia as well as in the rest of Europe and North America, most start-up capital, i.e. seed funding, comes from the individual entrepreneur's personal savings and small investments from family and friends – the latter being referred to as informal investments (see Box 2).[27] Once the company is established, research and development money may also be obtained from various governmental sources. These initial sources of funding are usually depleted before the entrepreneur has been able to commercialize the product or service leaving the entrepreneur in a funding gap situation which has been labelled the "Valley of Death" from which many ventures (in particular technology ventures) never emerge.

To survive the Valley of Death the entrepreneur has to find capital to develop ideas into innovation that can eventually be commercialized. This problem is not unique to Latvia and there are several reasons why it is difficult to obtain financing at this stage, e.g. very little government funding is available at this stage. However, the main reason is that there is no ready prototype, model or product to be shown to and evaluated by the potential investor, making the project very difficult to evaluate and hence risky to an outside investor. In most cases it is only the entrepreneur who recognizes the potential of their idea. Hence, potential investors operate under conditions of much less than perfect information (i.e. asymmetric information) about the ultimate value of new ideas, leading to unwillingness to fund risky unvalidated ideas even though they might look highly promising.[28]

In other words, there is no reason to suppose that good ideas will automatically attract the capital needed to commercialize them. As discussed in Wessner (2005), venture capitalists themselves acknowledge that they possess limited information about new firms and ideas and that if they invest at this stage they tend to follow the herd in terms of picking trends and products. Hence, there is a role for the government in the process of supporting innovative firms across the Valley of Death since private capital markets may not bridge the valley. In the United States public-private partnerships have played a key role in creating bridges. In this context a range of programmes has been developed, several of which aim at rewarding innovation. By rewarding innovation, the programmes play a key role in early stage financing by signalling information to potential investors about the commercial and technological potential of the new ideas awarded and hence reducing the information gap between the entrepreneur and the potential outside investor, making an investment less risky[29].

The role of the public sector has been discussed in a report by a joint working group set up between the European Commission Directorate-General Enterprise and Industry and the United States Department of Commerce International Trade Administration (2005) which concludes that "there is a fundamental market failure in the provision of early-stage financing in both the US and the EU" and recommends that any policy action should "aim for programmes that work with the markets but do not crowd out private investment. . .". The report also recognizes the need to educate policy makers about the venture capital market and its importance in supporting wealth generation.

[27] As discussed in the Global Entrepreneurship Monitor 2006 Latvia Report (see Dombrovsky et al 2007), approximately 70% of start-ups in Latvia mentioned at least one informal investor as a source of financing. Furthermore, reliance by Latvian entrepreneurs on informal investors is higher than in most other GEM surveyed countries, in particular when it comes to "other relatives" as a source of financing.

[28] For a discussion of the information gap between investors and entrepreneurs, see Lerner (2000).

[29] Two of these award programmes are the Advanced Technology Program (ATP) and the Small Business Innovation Research Program (SBIR).

3.2. Publicly supported programmes

Governments in many countries have addressed perceived shortcomings in the venture capital market with a variety of programmes: see O'Shea and Stevens (1998) or the European Commission (2005) for discussion. Indeed, many countries have had many schemes, some running concurrently. Table 3 illustrates some of the types of scheme indicating the purpose and the country in which it was applied.

Instrument	Purpose	Country
Direct Supply of Capital		
Government equity investment	To make direct investments in venture-capital firms or small firms.	Belgium – Investment Company for Flanders (GIMV).
Government loans	To make low-interest long-term and/or non-refundable loans to venture-capital firms or small firms.	Denmark – VaekstFonden (Business Development Finance) Loan Programme.
Financial Incentives		
Loan guarantees	To guarantee a proportion of institutional loans to qualified small businesses.	France – Société Française de Garantie des Financements des Petites et Moyennes Entreprises (SOFARIS).
Equity guarantees	To guarantee a proportion of the losses of high-risk venture-capital investments.	Finland – Finnish Guarantee Board.
Tax incentives	To provide tax incentives, particularly tax credits, to those investing in small firms or venture-capital funds.	United Kingdom – Enterprise Investment Scheme and Venture Capital Trust Scheme.
Investor Regulations	To allow institutions such as pension funds or insurance companies to invest in venture capital.	United States – modifications of Employment Retirement Income Security Act.

Table 3. Types of venture capital programmes
Source: OECD Observer No 213 August/September 1998

Schemes are very diverse. Instruments range from direct supply of capital by the public sector, either to venture capital firms or directly to enterprises, to financial incentives, such as guarantees or tax allowances, for the supply of venture capital. The latter schemes create an incentive for the supply of high-technology or SME investments by lowering their cost. Clearly financial incentives represent less of a budget burden than does direct supply. Another kind of instrument which has no direct budgetary impact is where rules applied to investing institutions changed e.g. lifting of restrictions on pension funds and insurance companies regarding investing in venture capital funds.

3.3. Public support for venture capital in Latvia

Latvian Government intervention in the venture capital market has been predicated on the presumption that an equity gap exists in the Latvian venture capital market.

The main state support for financial engineering instruments in Latvia has been provided within the framework of EU Structural Funds assistance. In particular, support has been provided through the Objective 1 Programme for 2004–2006, 2. Priority "Promotion of Enterprises and Innovation" which aimed to stimulate entrepreneurial activity and competitiveness by creating a favourable environment for a knowledge-based economy. The programme had total public financing of EUR 208.5 million.[30] Out of this total, allocations to financial engineering instruments for supporting SME finance[31] were:

- Loan guarantees managed by the Latvian Guarantee Agency (LGA)[32] (EUR 5 million).
- Venture capital investments managed by the LGA (EUR 15.8 million of public funding).
- SME loans with reduced requirements for collateral managed by the Latvian Mortgage and Land Bank (EUR 14.7 million).

The venture capital scheme was publicly financed, with approximately EUR 15.8 million invested in LGA equity. In December 2006, three funds targeting early-stage and SMEs with growth potential were created with a total capitalisation of EUR 32.1 million (thus about 50% of the capital was raised from the private sector). In this context, it has to be stressed that public funding is subordinated to private investments and acts as downside protection with restricted profit interest. Thus the aim is to not crowd out private investment. Fund management companies were selected through an international open tender procedure.

The investment limits of the three funds were as follows: for the first tranche there was a maximum of EUR 300 000; after 6 months, follow-up investments up to an additional EUR 700 000 could be made. The maximum investment in any one company was EUR 1 million. The type of financing could be equity and quasi-equity, not exceeding 49% of total enterprise equity. However, the funds had a very short investment period since they were created within the framework of the 2004–2006 EU Funds Programming period. Thus 2008 was the last year for eligible expenditures.

[30] Programme Complement for Latvia Objective 1 Single Programming Document 2004-2006.

[31] Under the measure "Access to Finance for Small and Medium Size Enterprises" developed by the Ministry of Economics, the Ministry is also responsible as the first level intermediate body for development and coordination of instruments supporting and promoting entrepreneurship and business activities.

[32] The Latvian Guarantee Agency as a second level intermediate body is a limited liability company owned by the State and supervised by the Ministry of Economics. It aims to stimulate access to loan financing through guarantees for SME loans and access to venture capital financing by acting as a fund-of-funds for investing in venture capital funds targeting SMEs.

The three funds were:

- The ZGI Fund (managed by Zalas Gaismas Investicijas Ltd). The ZGI fund had capital of EUR 7.4 million. The investors were two local pension funds and a number of wealthy local individuals. This represented the first time that local institutions invested in a VC fund in Latvia.

- INVENTO (managed by TechVentures Fondu Vadibas Kompanija Ltd). This fund had capital of EUR 9.4 million. The investors were Zernike Group (a Dutch early-stage fund), and several wealthy local individuals.

- The Second Eko Fund (managed by Eko Investors JSC). This had capital amounting to EUR 14.3 million.

However, the INVENTO fund pulled out of the programme in April 2008 and it proved impossible to find an alternative investor. As a result, by the time the programme closed only about EUR 0.8 million had been invested.

The rationale for creating three funds rather than one larger fund was twofold. Firstly there was a desire to promote competition in the venture capital market and secondly, it was thought that training three teams would provide more people with experience of fund management. However, *ex post,* the feeling is that in order to be sustainable and successful funds need to have a critical mass in order to be able to employ a truly professional team with adequate incentives and also to have adequate funds for follow-on investments.

The activity levels of the funds were initially low, but grew considerably in 2008. Thus, as of the end of 2007 only 27% of the programme's planned lending indicator was reached but by the end of 2008, 80% of the target investment levels had been achieved. A major factor in the perhaps disappointing activity level was the short lifecycle of the programme i.e. only 2–3 years, which contrasts with the average of 5–6 years for typical venture capital investments. On the other hand, slow initial progress may have been just a consequence of lack of demand – the period 2006–2007 was very much an era of cheap and easy bank credit.

Despite problems encountered with the ERDF programme, it is good to see that the idea of supporting venture capital in Latvia has not been abandoned: see discussion in the next section.

Other public sector actors, the European Investment Fund (EIF) and the European Bank for Reconstruction and Development (EBRD) have also been involved in the Latvian venture capital market. EIF is a public-private partnership whose shareholders are the European Investment Bank (66%), the European Commission (25%) and a number of European banks and financial institutions (9%). EIF has invested in two Pan-Baltic venture capital/private equity funds run

by Baltcap Management: EUR 5.5 million in Baltic Investment Fund III and EUR 2.5 million in Baltic SME Fund LP. EBRD has also taken an active role in a number of Latvian venture capital funds.

3.4. Ongoing public support for venture capital in Latvia

The European Commission has created two main European Union instruments for the purpose of promoting entrepreneurship and innovation and improving the access of SMEs to finance. These are the Competitiveness and Innovation Framework Programme (CIP) and the Joint European Resources for Micro to Medium Enterprises (JEREMIE).

JEREMIE is a joint initiative of the European Commission, the European Investment Bank (EIB) and the European Investment Fund (EIF). JEREMIE is the mechanism through which Latvia has chosen to support SMEs in the 2007–2013 EU Funds programming period
JEREMIE has the following objectives:

- to facilitate the process of drawing and utilising European Regional Development Fund (ERDF) funds earmarked for financial engineering operations, by avoiding those administrative difficulties which were partly responsible for the sub-optimal levels of utilisation in previous periods;

- to encourage Member States to shift their focus from grants to revolving financial engineering instruments, which allow for re-utilisation of part of the funds, while promoting a more entrepreneurial attitude.

The JEREMIE concept is based on creation of a holding fund in which ERDF resources will be matched by national contributions and possibly leveraged by other sources of financing (e.g. an EIB loan). The holding fund should be managed by an independent manager who will, among other things, select/set-up financial engineering instruments managed by public or private intermediaries (e.g. guarantee agencies, venture capital teams, banks). The holding fund would also monitor operations and prepare the reporting for the European Commission. These financial instruments include: venture capital funds, guarantee schemes, export insurance, micro finance, and technology transfer operations.

The holding fund structure allows for a high level of flexibility throughout the programme period, since it will be possible to reallocate resources from one instrument to another, depending on the degree of success and absorption capacity as well as on changing market conditions.

Latvia has developed the holding fund initiative within the Operational Programme "Entrepreneurship and Innovations"[33] where under Priority 2.2. "Access to Finance" supports facilitation of access to financial resources to enhance business development for new enterprises

[33] Approved by European Commission on 25th September 2007.

and SMEs[34] and one of the main activities of Priority 2.2 is "Holding Fund for investment in guarantee, high-risk loans, venture capital funds and other financial instruments"[35]. The target group of this activity are business start-ups, SMEs and investors.

After considerable discussions on selection of a holding fund manager, the Latvian government decided in March 2008 on a mixed approach similar to that chosen by Lithuania. Accordingly, for the first three years the EIF acts as the holding fund manager and then the Latvian Guarantee Agency will take over all of the obligations and commitments and will eventually close the programme. On July 16th, 2008 an agreement with the European Investment Fund established the Latvian JEREMIE investment fund with two financial instruments: loans[36] and venture capital.

The venture capital instrument is to be implemented by two funds:

- SIA BaltCap Management Latvia which will provide venture capital financing (EUR 30 million in total, of which EUR 20 million is public [ERDF + government] and EUR 10 million own private co-financing). It is intended that this fund will provide financing to SMEs for development of new products and enterprise enlargement.

- SIA Imprimatur Capital, which will provide seed and start-up capital with total financing of around EUR 20.4 million (EUR 14.7 million publicly financed [ERDF + government] and EUR 5.7 million are private).

BaltCap Management successfully raised its required private capital and signed an agreement with the EIF in January 2010. It envisages investments in the range of EUR 0.3–3 million so that the total of EUR 30 million will be invested in 15–20 projects. The activity period started January 22nd, 2010 and ends by the end of 2013.

Imprimatur Capital Baltics aims to provide financing at the beginning stage of enterprise development for innovative micro and SMEs in the technological sphere and which have international potential. It has "sub-funds":

- A seed fund will provide financing of up to EUR 100 000.

- A start-up capital fund that will provide up to EUR 1 million for one enterprise.

Imprimatur plans to support 14–16 ventures and after considerable efforts to raise capital in the face of reluctance by investors was able to sign an agreement with the EIF on June 14th 2010.

[34] Operational Programme "Entrepreneurship and Innovation" http://www.esfondi.lv/page.php?id=493
[35] Activity 2.2.1.1.
[36] The loan instrument will be implemented in cooperation with Swedbank and SEB Banka. Potential total funding is EUR 104 million (50%/EUR 52 million ERDF and government financing with the remaining 50% being bank financing), but actual lending will depend on the banks.

3.5. The role of the public sector

Lerner (2009) discusses the role of the public sector in terms of supplying or encouraging supply of venture capital. In this context he emphasizes that usually a shortage of demand (from good projects) rather than a shortage of supply of venture capital represents the problem. If this is the case, it implies that the role of the policy maker is to create incentives and an institutional structure that generate good projects, thereby increasing demand for venture capital, rather than to increase the supply of venture capital as such. This further implies that tax incentives and regulatory measures aimed at increasing the supply of venture capital should be avoided. However, if the government is involved in directly providing venture capital, it should be on market conditions, i.e. without soft financing. Furthermore, any public policy to be implemented should neither crowd out private capital nor finance projects which cannot attract private financing. This represents a basic benchmark, though exceptions can and should be made in the event of clear market failures that result in less than the socially optimal number or mix of projects.

In this context, a revealing example is provided by Svensson (2008) who, in a Swedish setting, studies the links between various forms of external financing and performance in profit terms when patents are commercialized. The results show that projects with soft government financing have a significantly inferior performance as compared with projects without such financing whereas projects with government financing on market conditions perform as the average.

Anecdotal evidence coming out of conversations with (potential) Latvian venture capitalists seems to suggest that there is capital but no or very few projects to invest in. If this is the case, then the findings by Lerner (2009) put in a Latvian context seem to suggest that attention has to be paid to institutional factors as well as to overall incentives to become involved in entrepreneurial activities. An example of the former is given by Dombrovsky et al. (2010), showing that only 1% of the entrepreneurs surveyed were able to provide correct answers throughout to six basic questions on the Latvian tax system and its impact on the entrepreneur's business. An example of the latter could be taken from Mets (2010), who investigates patenting among university researchers in a sample of five universities in four different countries (Estonia, Finland, the Netherlands and Sweden). The main finding of empirical analysis is that the productivity of Swedish university researchers in terms of patenting is more than 10 times higher than in Finland. Mets partly attributes this to the Swedish institutional framework, which gives Swedish university researchers a privileged role *vis-à-vis* university researchers in the other countries of the sample in terms of patent ownership. Since patenting is the first step towards commercialisation (and hence demand for venture capital), the findings of Mets if put in a Latvian context suggest that a revised policy in terms of patent ownership is desirable. This will in turn creative larger incentives for patenting and hence commercialization of university research, which in turn will increase the demand for venture capital.

4. Concluding remarks

By the end of 2008 the Latvian venture capital sector had expanded by more than 300% in terms of cumulative investments since 2004. Much of the expansion occurred in 2007 and 2008 within the framework of the ERDF funded venture capital programme which (after management expenses are deducted) funded a total of 43 investments in 28 companies worth just over 16 million EUR. All of these investments took place in 2007 and 2008. The state programme also had a direction and a mission to target different kinds of companies from those funded by Latvian VC companies earlier with the result that this shifted the composition of recent investments in the direction of more high tech and knowledge intensive enterprises than had previously been the case. In this sense the programme has been a success. Nevertheless, in the end less than 70% of planned investments were carried out, while one fund withdrew with only 8.5% of its capital invested. These observations seem to confirm that there is more of problem when it comes to demand for venture capital than to its supply. This suggests that the Latvian Government has an important role in terms of creating more demand for venture capital by for example improving the overall institutional framework and strengthening incentives to undertake and to commercialize research.

We also know very little about how successful the investments have been, though it is early days yet and of course many investments were made just as Latvia was entering a massive recession. In general, we also know very little about exits and the success of earlier investments. Two early success stories that can be mentioned are: SAF Tehnika A/S and SIA Kviteks. SAF Tehnika is a designer, manufacturer and distributor of telecommunications and data transmission equipment which received a business angel seed investment in 1999 and which went public in 2004. The business angel Normunds Bergs is still running the business in collaboration with the other shareholders. SIA Kviteks, now one of the Latvia's best known bread and confectionary producers, received a VC investment in 1996 from what is now UAF, which successfully exited in 2001 by selling the VC investment to the other owners.

Finally, contrary to some expectations the recession has not been good for venture capital in general as can be seen from the growth in the share of write-offs in total European divestments and not good for venture capital in Latvia. In Latvia there was some hope that VC might provide an alternative to loan finance in a context where banks had become extremely conservative in their lending policies. Thus the two EIF (European Investment Fund) supported funds have been regarded as a potentially crucial counter-cyclical instrument to offset lack of bank finance especially for small and medium sized enterprises. However, in practice the funds, especially the seed and start-up funds, have also faced difficulties in finding investors.

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Appendix 1

Company/ Fund	Registration country	Type of enterprise, stage of enterprise	Size of investment EUR	Duration of investment	Capital available EUR	Capital invested EUR	Capital invested in LV EUR	Number of investments	Number of employees	Typical way of exit	IRR
Baltcap management	LV/EBRDEIF/ Scand.	Medium/ expansion, buy-out	1 000 000–5 000 000/ > 5 000 000	> 5 years	158 (as of QIII, 2008 – 49.7)	63.7	19	10	6	Trade sale	Conf
ZGI	LV	Micro, small/ early stage, expansion	500 000–1 000 000	3–5 years	0.5	11.154	11.154	12	2+5	Trade sale	n/a
EKO	LV	Micro, small/ early stage, expansion	200 000–500 000/ 500 000–1 000 000	3–5 years	14.3	11.613	11.613	31	12	Trade sale, liquidation	Conf
Hanseatic capital	LV/US	Small, medium, large/ expansion, buy-out	1 000 000–5 000 000	3–5 years	20 (as of QIII, 2008 – 10)	13	3.3	2	6		Conf
NCH Advisors	LV/ US (+RU, AL, BL, MD, RO, UA)	Micro, small, medium, large/ early stage, expansion	500 000–1 000 000/ 1 000 000–5 000 000	3–5 and > 5 years	No limit	Conf	14.73	7	42	Trade sale, sale to other financial	20–25%
PriBalt*	LV	Micro/ early stage	50 000–200 000	3–5 years	5	0.4	0.4	2	4	Sale to other financial	25–30%
Imprimatur Baltic	UK	n/a	200 000–500 000	> 5 years	No limit	3	<1	1	2		n/a
TechVentures	LV/US	n/a	200 000–500 000	3–5 years	9.4	0.612	0.612	3	n/a		n/a
MVKAF	LV	Micro/ early stage	<50000	30–5 years	0.3	0.192	0.192	2	1	Trade sale, repurchase, sale to other financial, liquidation	16
UAF	LV	Micro, Small/ early stage, expansion	50 000–200 000	3–5 years	2	2.19	2.19	38	2	Trade sale, repurchase, sale to other financial, liquidation	0
GildBankers	EE	Small, Medium/all	500 000–1 000 000/ 1 000 000–5 000 000	> 5 years	0	100	5	4	10	Trade sale	n/a
Total					**209 (92.7)**	**205.861**	**68.191**				

* Data on PriBalt was provided only up to QIII, 2008

Appendix 2

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
1	Crop and animal production, hunting and related service activities		1					1								**2**
9	Mining support service activities													1		**1**
10	Manufacture of food products	3	4	1		1	1									**10**
11	Manufacture of beverages		1	1												**2**
14	Manufacture of wearing apparel	1														**1**
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials			1	1	1			1							**4**
17	Manufacture of paper and paper products										1					**1**
20	Manufacture of chemicals and chemical products		1											1	1	**3**
21	Manufacture of pharmaceutical products and pharmaceutical preparations														2	**2**
23	Manufacture of other non-metallic mineral products							1						1		**2**
25	Manufacture of fabricated metal products, except machinery and equipment		1		1								1			**3**
26	Manufacture of computer, electronic and optical products		1						1					1		**3**
31	Manufacture of furniture													1		**1**
35	Electricity, gas, steam and air conditioning supply	1						1								**2**
38	Waste collection, treatment and disposal activities; materials recovery							1	1	2	3				5	**12**
39	Remediation activities and other waste management services							1								**1**
41	Construction of buildings				1											**1**
43	Specialised construction activities		1													**1**
45	Wholesale and retail trade and repair of motor vehicles and motorcycles								1		1					**2**
47	Retail trade, except of motor vehicles and motorcycles									1		1				**2**
56	Food and beverage service activities				1									1	1	**3**
58	Publishing activities													3		**3**
59	Motion picture, video and television programme production, sound recording and music publishing activities									1						**1**

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
61	Telecommunications											1			1	**2**
62	Computer programming, consultancy and related activities			1		1							1	3	2	**8**
63	Information service activities													2	1	**3**
64	Financial service activities, except insurance and pension funding												1			**1**
68	Real estate activities					1	1		1				1		4	**8**
72	Scientific research and development													1		**1**
73	Advertising and market research								1							**1**
82	Office administrative, office support and other business support activities											1				**1**
84	Public administration and defence; compulsory social security							1								**1**
86	Human health activities													1	2	**3**
87	Residential care activities														1	**1**
93	Sports activities and amusement and recreation activities				1										1	**2**
96	Other personal service activities		1													**1**
	Total	**5**	**11**	**4**	**5**	**4**	**2**	**6**	**6**	**4**	**5**	**3**	**4**	**16**	**21**	**96**

* Data summarized from all the investment funds except Pribalt

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