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GAP ANALYSIS OF VENTURE CAPITAL MARKETS

Abstract:

Venture capital is one of most important alternative sources of capital for early stage of enterprise development. It is largely acknowledged that there occurs a market gap in European venture capital markets as there are much more companies in search for an investor than that actually obtain investment. Some authors find this an example of a market failure in the access to finance of micro to medium sized enterprises. There are also authors saying that identification of a market gap does not automatically establish a market failure, as the investors balance both risk and potential gain. We found out that at the supply side of venture capital, the market gap is caused by risk aversion and imperfect information on future development or market acceptation of innovative products in some European countries. At the demand side, imperfect information occurs as young entrepreneurs have often limited knowledge in alternative sources of financing or low level of strategic management abilities, which again discourages potential investors.

Keywords:

venture capital, asset management, private equity, financial markets

JEL Classification: G24

1.   Introduction

This paper aims at description of gap analysis approach to describe possible size of market failure on the venture capital markets of Europe. The basic hypothesis is that such methods exist and market failure is present on European venture capital markets.

Theoretical background focuses on the definitions of venture capital and market gap. Results describe the main features of European venture capital markets and using a case study of the Czech Republic. Conclusion formulates the level of satisfaction of the research question and the hypothesis.

2.   Theoretical Background

Despite its relative importance in terms of ability to help start-ups develop in multinational companies and specific differences from other sources of capital, there is still insufficient background of theoretical economics in the field of venture capital. Therefore, we have to adapt to this situation and we have to deal with definitions of basic terms first. Despite there have been many attempts to describe the processes of venture capital, the terminology is still not unified.

The researched literature always considers Venture Capital as an asset class, mainly as a *subset* of Private Equity[1]. But, sometimes is Venture Capital perceived also as a *synonym* to Private Equity. Generally, the literature shows that there exist at least two stages of venture capital – early stage investments in developing businesses and later stage investments in mature companies.

Private equity means generally investing capital in unquoted businesses.[2] Private equity investors, mostly institutional, typically do not acquire businesses to realise take-overs, as strategic investors mostly do, but invest as financial investors and realise yields not in the form of regular dividends, but by exiting the investment in a period of usually 3-6 years.

The term Risk Capital is often used as homonym to Venture Capital, but not always. For instance, Merton and Perold (1993) define risk capital as "the smallest amount that can be invested to insure the value of the firm's net assets against a loss in value relative to the risk-free investment of those net assets" (p. 17). This definition is very different and is related to risk management in financial institutions.

We will now operate with terminology brought up by the European Private Equity and Venture Capital Association (EVCA), as the paper is oriented mainly on European venture capital markets and EVCA is the most important association in this field on the old continent. Another important player in this field in Europe is the European Commission, which has presented its own definitions in the EC (2006). The Commission definitions for the purpose of state aid rules have to be taken into account particularly when public capital is invested beside private sources or other

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[1] See for instance EVCA (2007).
[2] See for instance EVCA (2007).

advantage (such as tax reliefs or guarantees) is provided to private venture capital investors in the EU.

Due to EVCA, venture capital has two stages – early-stage and later-stage. EVCA (2007) distinguishes venture capital as "a subset of PE, refers to equity investments made for the launch, early development or expansion of a business" (p. 6). However, the growth segment is not included, as EVCA (2012) refers to expansion of "relatively mature or developed companies" (p. 40). But, to make it even more complicated, "additionally, most investments made by buyout funds into venture stages would be defined as growth capital" (p. 40). This example shows how challenging it is to distinguish individual stages of PE/VC in practice.

We should focus on the main indicators of venture capital market activity derived from the stages of common venture capital transaction pipeline to select the right ones for the purpose of equity gap calculation. This pipeline is defined e.g. in Wright and Robbie (2003) as firm level of venture capital including deal generation, initial and second screening, valuation and due diligence, deal approval and structuring, post-contractual monitoring, investment realisation and entrepreneurs' exit and recontracting with venture capitalists followed by a review of the evidence on the performance of venture capital firms.

These processes are commonly aggregated into three main market activity indicator groups: fundraising activity, investment activity and divestment activity. For the purpose of market gap calculation, we will work mainly with amount of investments in monetary terms per period of time.

3. Case Study: Venture Capital in the Czech Republic

3.1. Market Development

So, the situation in the venture capital does not observe similar trend as PE as a whole. Albeit, the development of investments value has been observing an upward trend since 2007 peaking in 2009 and decreasing in 2010 (as regards investments, the financial crisis has hit PE in the CEE region later than in the rest of Europe) and the position of the Czech VC market within the CEE region is still.[3]

Table 1: Investments in PE segments (EUR) in the Czech Republic as GDP (current prices, EUR) percentage by year, data source: EVCA, EUROSTAT

	2007	2008	2009	2010	2011	2012	Average
Seed	0,000%	0,000%	0,000%	0,000%	0,000%	0,000%	0,000%
Start-Up	0,000%	0,000%	0,000%	0,009%	0,002%	0,000%	0,002%
Subtotal Early-Stage	**0,000%**	**0,000%**	**0,000%**	**0,009%**	**0,002%**	**0,000%**	**0,002%**
Later-Stage Venture	**0,003%**	**0,020%**	**0,020%**	**0,007%**	**0,005%**	**0,003%**	**0,010%**
Subtotal all VC	**0,003%**	**0,021%**	**0,020%**	**0,015%**	**0,007%**	**0,003%**	**0,012%**
Growth	0,088%	0,047%	0,135%	0,077%	0,005%	0,003%	0,059%

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[3] See EVCA (2010) and EVCA (2012).

Rescue/Turnaround	0,000%	0,000%	0,000%	0,000%	0,000%	0,000%	0,000%
Replacement Capital	0,000%	0,097%	0,098%	0,000%	0,000%	0,000%	0,033%
Buyout	0,046%	0,110%	0,702%	0,060%	0,081%	0,063%	0,177%
Total PE	**0,137%**	**0,274%**	**0,955%**	**0,153%**	**0,093%**	**0,069%**	**0,280%**

But, share of amount of VC investments on total PE investments in the Czech Republic was only 5.7% on average in 2007-2012, which is far below the European level, although even in the Czech Republic significant progress have been made in venture capital in 2010-2012[4], but mainly as regards later-stage investments.[5] Due to EVCA findings, in 2007-2013, the venture capital investment to total PE investment ratio was 10.3% in Europe, almost two times higher, but, vice versa, declining from 12.2% in 2008-2010[6]. For more detailed information, see Table 2. Furthermore, because the CEE PE markets are still even more buyout oriented, the whole CEE region VC investments represent only 5.9% of the European VC market in 2007-2012[7]. However the Czech Republic ranks among regional champions in VC, it still represents a developing market in the European context.

Figure 1: Seed capital investments features in Europe, 2000-2011, in: Saublens C. (2013), data source: EVCA

SEED CAPITAL

Year	Amount in €1000	% of total venture capital market	Number of enterprises	Deals average in €
2000	819.680	2.3	833	984.000
2001	530.839	2.2	551	963.500
2002	305.135	1.1	535	570.500
2003	150.107	0.5	334	449.500
2004	147.771	0.4	355	416.250
2005	96.847	0.2	362	267.500
2006	197.704	0.3	350	564.900
2007	177.061	0.2	499	354.800
2008	321.385	0.6	569	564.800
2009	139.383	0.6	381	361.200
2010	122.927	0.3	394	312.000
2011	168.871	0.4	428	394.600

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[4] Due to EVCA (2010), the share was 3.5% in 2007-2010.
[5] See EVCA (2010) and EVCA (2012).
[6] But this may be caused by slump in buyouts by 2/3 in 2009 due to crisis. Venture capital investments went down by „only" ½ between 2008 and 2009.
[7] But, the financial crisis has striked CEE PE/VC markets less then the rest of Europe, as this percentage is almost 3 times higher then in 2007-2010. Compare EVCA (2010) and EVCA (2012).

Figure 2: Start-up capital investments features in Europe, 2000-2011, in: Saublens C. (2013), data source: EVCA

	START-UP			
Year	Amount in €1000	% of total venture capital market	Number of enterprises	Deals average in €
2000	5.843.723	16.7	3.843	1.520.500
2001	3.652.960	15.0	2.755	1.326.000
2002	2.614.436	9.5	2.738	955.000
2003	1.974.248	6.8	2.372	832.500
2004	2.230.233	6.0	2.160	1.032.500
2005	2.334.050	6.0	2.127	1.097.300
2006	5.666.756	8.0	1.905	2.974.600
2007	2.156.693	3.1	1.665	1.359.500
2008	2.538.830	4.7	2.013	1.261.200
2009	2.029.273	8.7	1.888	1.074.800
2010	1.798.070	4.3	1.682	1.069.000
2011	1.794.552	4.1	1.740	1.133.000

Another good indicator suitable for measuring the differences in VC markets of the Czech Republic, CEE and Europe is ratio of VC investments value to GDP in current EUR. In 2012, this was 0.003% in the Czech Republic (see Table 1), 0.018% in the whole CEE region and 0.024% in Europe.

3.2. Market Gap

We can use both indicators mentioned above (share of VC investments value on total PE investments value and VC investments to GDP ratio) to look into the VC markets even in more detail later.

Early-stage venture capital financing is very low in the Czech Republic and is following a negative trend since 2001, as show the statistics.[8] Seed and start-up capital only amounted 4% of the EU 25 average in 2004 with the situation to worsen in the following years. In 2007-2012, no investments were located in seed stage in the Czech Republic compared to 67 companies invested in CEE region[9], see Table 2 and Table 3. However seed capital share ranks the least in PE markets around the world, in the CEE region, it is almost invisible, including Czech Republic. As the PE market of the Czech Republic is otherwise very strong within the CEE region, this shows lack of interest of investors in this particular segment.

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[8] See EVCA (2010) and EVCA (2012).
[9] Seed capital has 0.5% share on total PE investments, 3,5 times more than in 2007-2012.

Table 2: PE investments by region, € x 1000, 2007-2012 totals, data source: EVCA

	Total Czech Republic	% of total	Total CEE	% of total	Total Europe	% of total
Seed	0	0,00%	22 005	0,50%	1 030 201	0,40%
Start-up	16 760	1,35%	265 796	5,57%	12 089 052	4,83%
Subtotal Early-stage	**16 760**	**1,35%**	**287 800**	**6,07%**	**13 119 252**	**5,23%**
Later-stage venture	**86 305**	**4,36%**	**439 566**	**4,89%**	**13 564 725**	**5,08%**
Total venture	**103 065**	**5,71%**	**708 634**	**10,39%**	**26 683 977**	**10,31%**
Growth	507 801	25,91%	2 364 639	30,37%	31 406 288	12,80%
Rescue/Turnaround	475	0,01%	18 295	0,28%	2 799 031	1,22%
Replacement capital	289 965	7,63%	517 134	4,41%	9 329 771	3,88%
Buyout	1 539 369	60,75%	6 698 770	54,55%	200 544 333	71,79%
Total	2 445 367	100,00%	10 312 164	100,00%	270 763 400	100,00%

Table 3: Number of companies receiving venture capital, 2007-2012, data source: EVCA, CVCA

	Czech Republic	CEE
Seed	0	67
Start-up	8	281
Subtotal Early-stage	8	348
Later-stage venture	19	206
Total venture	**27**	**554**

The situation is similar in start-up stage. Only 1.35% of total PE capital invested over the years 2007-2012 in the Czech Republic falls within this segment compared to 5.57% in CEE and 4.83% in Europe (see Table 2). Compare total 281 start-up investments in CEE with only 8 investments in the Czech Republic.

In general terms, early-stage enterprises receive only a little venture capital in the Czech Republic. The legislation does not encourage PE investors enough to enter the venture capital market as well. This is particularly evident from the data on PE/VC funds investing in the Czech Republic (full CVCA members). Only a few of them are oriented on early-stage investments and only one fund with total sources of only € 20 million prefers also investments under € 1 million. The total amount of funds managed in the Czech Republic is about € 4.5 billion and the average fund size is € 373 million. On average, the minimum deal size is € 6.5 million and maximum € 50 million.

Furthermore, business angels' networks do not adequately take the place of lacking early stage venture capital funds due to CVCA findings. According to CVCA, there may be only a very limited amount of early-stage investments made off the statistics, restricted to investment agreements with individuals[10]. Ventures already having research and development results must still seek funds for their commercialization among friends and family or rely on bank loans and grants.

Specifically, in the CEE region, the VC investments hold only about 30% of total number of invested companies in 2010, whereas the European average is about 65%. The reason of such differences behind the figures is the major concentration of CEE PE market on later-stage, and therefore larger, investments. Stronger representation of early stage is lacking in the region. Early stage otherwise form the vast majority of companies financed through VC in pan-European statistics.[11]

Later-stage venture investments do not suffer from such large lack of interest of venture capitalists, as the average deal value is higher and generally exceeds the limit of € 1 million. Despite this, there is still a large gap in the comparison of European data, mainly as regards investments of lesser values. In 2007-2012, only 19 later-stage venture and 8 early-stage companies obtained VC investments in the Czech Republic totalling € 103 million, which represents an average of € 3.8 million. Compared to CEE data, the average value of investment per venture company is almost 3 times higher in the Czech Republic[12]. Thus, seed, start-up and even smaller later-stage venture projects cannot fulfil the threshold of minimum investment values required by VC funds investing in the Czech Republic.
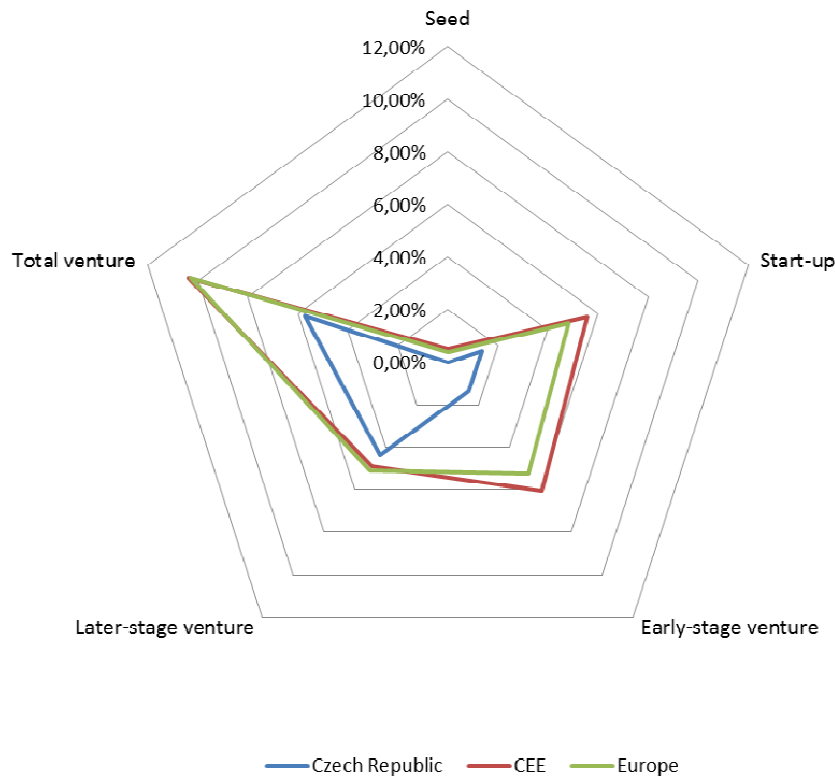
The following chart 3 shows venture capital investments to PE investments ratio by stage and region in 2007-2012. The gap in both early stage and later stage venture is evident even in compare of Czech and CEE data, which may be quite surprising, as the Czech PE market is among regional leaders.

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[10] See EVCA (2010) and EVCA (2012).
[11] See EVCA (2010) and EVCA (2012).
[12] See EVCA (2010) and EVCA (2012).

Chart 1: Venture capital investments to PE investments (EUR) percentage ratio by stage and region, 2007-2012 means, data source: EVCA

The following Chart 4 depicting investments value to GDP ratio confirms the results of the equity gap identification: as regards venture capital, the Czech market is underdeveloped in the European context. Early-stage deals do not even reach the CEE values in the Czech Republic. In this particular statistics, the influence of economic output differences on the market size is adjusted by using GDP PPP in current prices as denominator in the calculation.

Chart 2: Venture capital investments (PPP) to GDP PPP (current prices) percentage ratio by stage and region, 2007-2012 means, data source: EVCA, World Bank
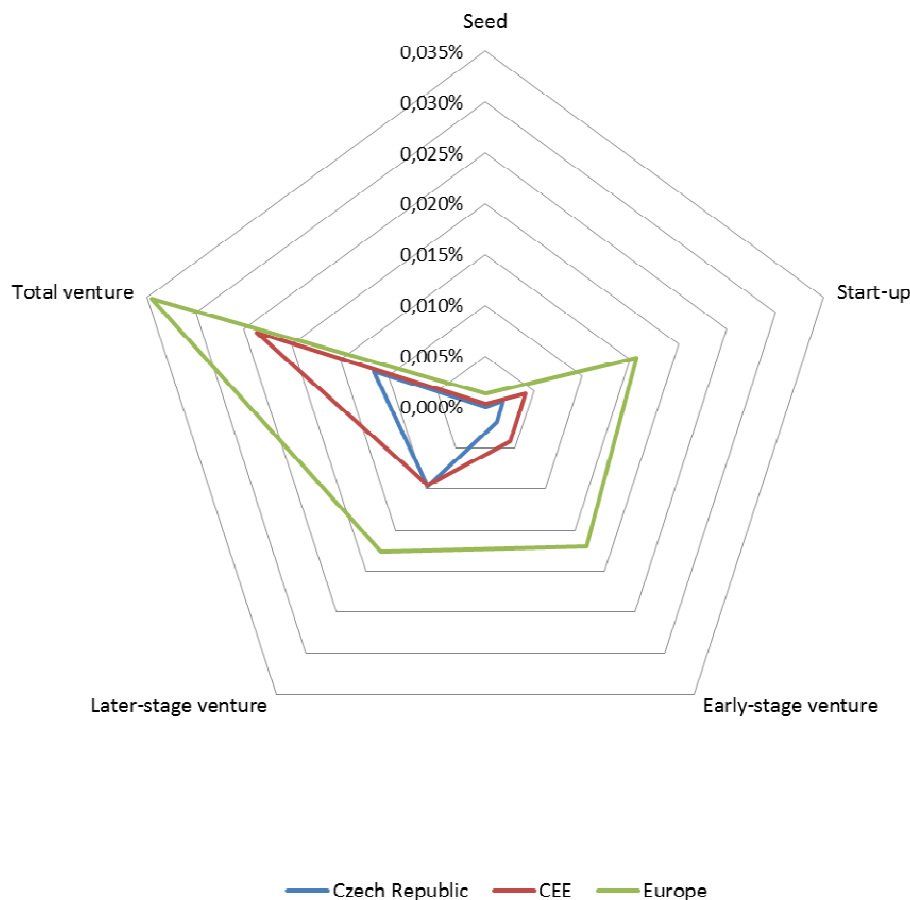
The comparison of both charts 3 and 4 indicates that whereas the early-stage venture shows much lower investments to PE investments ratio in the Czech Republic than in the whole CEE region, the later-stage venture investments value to GDP ratio is quite similar in the Czech Republic, in CEE and in the rest of Europe. This is caused by the above cited feature of the venture capital market in the Czech Republic – average deal value is much higher in the Czech Republic than in the rest of the CEE region (or even in Europe as a whole as regards later-stage venture). Thus, this creates a burden for companies seeking equity financing of lesser values.

According to CVCA findings[13], PE/VC investing has not yet become a common investment method in the Czech Republic. Such funds are still regarded as alternative financing sources that entrepreneurs seek out only after they are rejected at a bank. One of the reasons for this is insufficiency of domestic sources of investment funds, upon which especially smaller venture capital oriented funds throughout Europe depend.

3.3. Market Failure

Financing sources for PE/VC funds include in particular pension funds, insurance companies, banks, funds of funds, and government agencies. In the Czech Republic,

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[13] See CVCA (2010).

the participation of pension funds and insurance companies in PE/ VC investing is significantly restricted by law. While large regional private equity funds are able to obtain funding from foreign institutions, smaller domestic funds oriented toward venture capital are too small and therefore uninteresting for such investors. Domestic sources for these funds are thus lacking. This is a problem throughout CEE region, though, as only 4% fundraising comes from domestic private investors. But, whereas in the rest of the CEE region, government agencies became very active after 2009 and belong to the most important fundraisers, this is not the case of the Czech Republic. This seems to be crucial for the growing differences between the Czech Republic and some other CEE countries, mainly as regards early-stage venture capital investments, which are still almost invisible in the Czech Republic. Another reason lies in legal barriers to establishing PE/VC funds within the Czech Republic. In the Czech Republic, we still encounter funds headquartered and based in foreign countries and which were established under different legal systems.

Furthermore, the future impact of current development in the financial markets on the Czech VC may not be very positive. The recent regulatory measures tend to influence negatively the capital available from the funds' LPs. Less new money in the global PE market should influence even the Czech capital market, as most of the PE investors in Czech companies are represented by foreign PE/VC funds[14]. This adds another risk and uncertainty to the future development of the so far poor performing Czech VC market, mainly as regards investments under € 1-3 million. Leastwise, there is a lot of space for positive changes in legislation in the Czech Republic.

Given the evidence in the previous chapter, the Czech financial market is not able to allocate resources effectively to its venture capital segments mainly due to[15]:

- Risk aversion on the supply side leading to high minimum investment threshold

- Imperfect information on the demand side

- Overall unsufficient mass of the market

One of the main reasons is that the investment criteria applied by the VC funds operating in the Czech Republic actually exclude investments in the seed and start-up stages of SME development.[16] Even investments through the later-stage are limited given the minimum investment size of ca. € 1 million for most funds. Consequently, the majority of realized transactions are management buyouts or buy-ins and replacement or secondary purchase transactions.

The gap amount shall be calculated with regard to the real demand. There occurs imperfect information on the demand side, as the entrepreneurs are lacking practical knowledge on VC (including its indirect positive effects on business) and are usually not willing to share equity with external investors. This obstacle has to be removed as well, if the Czech market should fill-in the equity gap.

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[14] Compare with The McKinsey Global Institute (2011) and Di Carlo (2010).
[15] Compare with Pazour, Marek (2011)
[16] For instance due to higher expected IRR etc., compare with Zinecker, Rajchlová (2010)

If the Czech Republic pursues reaching the European average as benchmark, it has to fill-in a yearly gap in VC investments values of about 0.023 % GDP according to 2007-2012 figures, which represents € 35.1 million yearly. Stage-by-stage, the possible yearly equity gap amount is about € 2 million in seed, € 21 million in start-up and € 12.1 million in later-stage venture.

There is a thread that the future development would outcast the Czech Republic off the main stream in Europe and even in CEE, as Poland, Hungary or Slovakia have strengthened their positions very fast after financial crisis. On the other hand, success stories such as AVG Technologies IPO at NYSE in 2012 and suitable public sector intervention, such as the prepared but not yet functional Seed fund project, could help the Czech venture capital market attract more private investors, fundraisers and also high quality business plans, which are largely missing as well.

4.   Conclusion

The analysis of international data has approved the existence of a gap in European venture capital markets.

To address the remaining problems and barriers, economic policy actors should view the different measures as complementary and combine different actions. Both the direct and indirect measures affecting the venture capital ecosystem are of crucial importance. In addition, both the demand side and the supply side must be taken into account when establishing conditions for an active VC industry with a high number of successful innovative portfolio companies. As many papers have been already developed on the public interventions in venture capital, we can conclude on the following features of public initiatives on venture capital markets in Europe, according to one of them[17]:

- Public policy initiatives should target larger VC funds or funds of funds. In addition, these funds should be experienced and highly professional.

- In the short and medium term, public policy should focus on experienced international VC funds from overseas.

- In countries with less developed VC industries and ecosystems, public policy initiatives should focus on VCs with industry-specific experience.

- In countries with more developed VC industries and entrepreneurial ecosystems, public initiatives should support VCs with rather general experience.

- Public policy initiatives should support a greater involvement of large corporations in the European ecosystem.

- Policy makers should provide clarity about expected capital adequacy requirements.

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[17] Tykvová T., Borell M., Kroencke T. (2012)

- The European passport is an appropriate tool to reduce the complexity of cross-border VC fundraising. It should:[18]

    - allow for investors beyond the definitions of financial institutions, i.e. high net wealth individuals, family offices, and business angels,

    - allow for investments other than SMEs,

    - consider an exempt rule from AIFMD (Alternative Investment Funds Managers Directive) for funds holding the passport.

- The European passport could be used to clarify the EU definition of SME. It is also advisable to address the problem of linked enterprises.[19]

- A pan-European fund structure should be a long-term goal, providing tax efficiency for all original investors.

- The public sector should initiate financial instruments that attract (crowd in) a greater amount of private finance and close the "equity gap" in investing in SMEs and in research and innovation.

- The public contribution should have clear objectives independent from political pressures and short-run goals.

- Public funding should ensure market conformity, efficient management and simple access for enterprises.

- Public funding programmes should take place on the country or EU level, not on a regional level.

- Public initiatives should aim at creating synergies between different instruments at different levels.

- Public policies should encourage (public and private) R&D investments.

- Public policy measures should support and stimulate the provision of support services (e.g., business incubators, technology transfer offices, coaching, mentoring, etc.)

- Bankruptcy laws should be amended to encourage serial entrepreneurship as well as first-time entrepreneurship.

- In the long term, policy measures should shape the educational and cultural system to become more supportive of risk-taking and an innovation-prone attitude.

- Policy measures should support entrepreneurial mobility, lower bureaucracy requirements and diminish labour market rigidities.

- The EU may consider the provision of selective subsidies on a competitive basis on the EU level.

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[18] This passport already exists thanks to the EUVeCa (European Venture Capital Fund) Regulation
[19] This problem is still in place as SME definition has not been amended since 2003 and linked and partner enterprises are newly and more complicated to deal with under the new *de minimis* regulation.

- When modernising EU public procurement policy, a reduction of hurdles for SMEs is reasonable.

- EU-wide patent costs should be reduced.

- In addition, policy measures should favour the creation of liquid exit markets for VC investments.

- EU should support the collection of reliable data (particularly on fundraising and public policy programmes) and related research.

The perspective for future research is to analyse in more detail the causes of the situation on the market and to suggest steps that should help to bridge the gap and help prospective venture business plans to find adequate financing to strengthen the competitiveness of European countries.

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