

STATE OF INNOVATION FINANCE IN CESEE

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April 2020

Disclaimer

This report summarises the conclusions of the Working Group on Financing for Innovation, which was established in March 2018 in the context of the Vienna Initiative. The conclusions included in the report are, as any Vienna Initiative product, voluntary, public and nonbinding on the participating institutions. They are intended to inform market participants, policy makers and the general public about suggested approaches and best practices. They shall be in no way interpreted as a restriction on future policy options, including regulatory decisions.

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Executive summary

Risk capital

- CESEE risk capital ecosystem is actively developing, with traction especially in seed-early stage financing. Yet nascent and small as compared to the EU market.
- More funding is needed, particularly for mid-stage/growth financing in the region¹.
- There is a need for continuing public support to risk capital activities in CESEE. Public intervention should aim at crowding in private investors.
- Interconnection of risk capital hubs in CESEE and across Europe is needed to help companies in their scaling-up and internationalisation efforts.
- Capital market development should be fostered through complementary measures taken at national, regional and EU level.
- Barriers to entry and information asymmetry, which restrict the development of a sufficiently large number of business angel investors, should be addressed.
- National authorities should take steps to support the sustained development of crowdfunding in CESEE.
- More data collection on VC and business angel activity would be highly beneficial for developing risk capital markets in CESEE.

Bank finance

- Debt is a suitable instrument to support company's financing needs at later stages of the company life cycle.
- Lessons from innovation focused credit guarantee programmes could be carried forward into the next EU budgeting period.
- There is further potential to develop a venture debt offering in Europe and in CESEE region.
- Venture capital activity of banks (in the form of corporate venture capital) has increased, but is likely to remain limited in scale, due to capital requirements, and scope, targeting strategic segments, such as FinTech.
- Specific steps would be needed to encourage intangibles-backed financing, which is currently practically non-existent in the region.

Framework conditions

- Dynamic linkages between business and academia remains a challenge: support should address development.
- Targeted advisory support for innovators can be a catalyst for improving local framework conditions.
- Business and labour market regulations rank highly as investment hurdles in the CESEE region: obstacles to start a business, resolve insolvencies, and exit from investments should be addressed.

¹ We define mid-stage/growth financing as a form of private equity financing that aims at ensuring the continuity of funding along the maturity development of tech companies. Hence the focus is on series B rounds and beyond.

Background

On 12 March 2018, the Vienna Initiative Steering Committee decided to set up a Working Group on Financing for Innovation. All interested Vienna Initiative members, i.e. representatives of both public and private institutions from the CESEE countries, as well as international institutions such as EIB, EBRD, EIF, IMF and World Bank were invited to take part in this Working Group. The EBRD and EIB were tasked to coordinate the work.

Rationale

A new, more balanced growth and financing model is needed in CESEE with a stronger focus on innovation and increased productivity.

There are still significant gaps in the framework conditions, demand, and supply sides of the innovation ecosystem. Most of the CESEE countries remain moderate or modest innovators.

Against this background, the key objectives of the Working Group are the following:

- Identify the ecosystem gaps and policy priority areas to facilitate (private and public) investment for innovation activity, with a focus on (i) innovation and productivity drivers and constraints, (ii) mapping, review, and evaluation of the existing policy mix that targets innovation and entrepreneurship;
- Investigate the role of banks and alternative providers of financing (such as venture capital) in funding different (i) forms of innovation (from adoption/adaptation of technology to frontier innovation) and (ii) stages of firm development (from start-ups to mature firms);
- Support the development of appropriate tools for banks to identify, screen, and assess innovative firms and combine instruments to meet investment needs for the CESEE region;
- Assess how to strengthen the cooperation amongst IFIs, banks and alternative providers of financing for innovative firms, such as venture capital and private equity funds, FinTechs and crowdfunding platforms.

Chapter 1: Introduction

The rapid economic growth and fast convergence process that many countries in the CESEE region² experienced during the 1990s and early 2000s has slowed down in the aftermath of the global economic and financial crisis. Productivity growth has sharply declined during the past decade. This suggests a certain exhaustion of the model that fuelled much of the previous growth and was characterised by a combination of factors such as the rapid expansion of global supply chains that drove much foreign direct investment, thriving trade and high commodity prices, but also buoyant credit growth in most countries of the region.

Sustaining high levels of economic growth going forward will require a shift in the growth model in the region to a model that will need to be increasingly based on innovation and innovation diffusion. This innovation imperative will be crucial if rising prosperity is to be sustained and a fall into the middle income trap is to be avoided. The situation across the region is diverse as many countries find themselves at different stages of development. However, most countries in the region seem to face a development ceiling that can only be broken through innovation driven productivity growth. It is this innovation imperative that serves as a motivation for this report.

Almost all countries in the CESEE region can be considered only as moderate or modest innovators³ and with some notable exceptions, their digital capacities which will form the basis of future competitiveness, are low. A number of factors are holding back the region's potential to boost its innovation performance. These include low investment in R&D, some skills gaps⁴, and low performing scientific and innovation systems that hinder the ability to transform innovation investment into scientific and technological capacity. This calls for increased policy focus, provision of risk capital, additional ecosystem-supporting activities such as advisory, as well as reforms in many of these systems if overall innovation performance is to be improved.

CESEE innovators rely on bank finance, which is traditionally less structured to support innovation financing. Venture and growth capital markets are at early stage of development as compared to European average. Funding for venture and growth capital is coming largely from outside CESEE, and from European public sources, through several programmes/initiatives. There is substantial public support available at the pre-seed, seed and early revenue stage, but support could more strongly address later stage VC and growth stage financing. Continued and further improved cooperation between public and private players is crucial to effectively respond to evolving market demands. However, even though the market maturity has improved, it will take time until the region develops a fully-fledged VC market. In addition, successful companies and frequent exits are needed in order to attract more private capital to the region.

The report is structured as follows: Chapter 2 offers a framework for analysing the innovation finance ecosystem. This framework proposes that a well-developed ecosystem is centred on firms and entrepreneurs. Chapter 3 reviews the reasons behind the region's moderate levels of innovation performance to date. By doing so, it provides the stylized facts that underpin the rest of the report. Chapter 4 introduces the available supply of innovation finance in CESEE. It focuses on what sources of finance innovators in CESEE use. Chapter 5 maps the risk capital providers (e.g. VCs, angels) that cater to earlier/growth-stage firms. It also explores additional non-bank sources of finance, including the capital market, crowdfunding and debt funds. As the financing gap in the CESEE region is prevalent at all enterprise development stages, but particularly pronounced for the later stages of the firm life cycle, opportunities for broadening scale-up finance in the region are explored. Chapter 6 introduces the role of banks that provide debt finance to more established innovative firms. It maps the

² Unless stated otherwise, depending on data availability, CESEE refers to the group of new EU member states and the Western Balkans.

³ See European Commission (2019) and Chapter 3.

⁴ See Chapter 3.

application of an EU credit guarantee scheme in CESEE. It also explores the role of banks' in providing capital to a segment of innovative firms (FinTechs) through their corporate VC fund efforts and looks at the venture debt instrument. Chapter 7 looks at the framework conditions of the innovation ecosystem from the firms' perspective, including support for enhancing investment readiness, incentives for increasing supply of innovative finance, and business environment conditions at every firm life cycle stage (i.e., entry, growth and exit) in the CESEE region. Finally, chapter 8 provides a menu of policy options for strengthening the innovation ecosystem with a focus on suppliers of financing and framework conditions.

Chapter 2: Innovation Finance Ecosystem: a conceptual framework

This chapter offers a framework for analysing the innovation finance ecosystem. This framework proposes that a well-developed ecosystem is centred on firms and entrepreneurs.

Defining Innovation

Innovation is a new or improved product or process (or combination thereof) that differs significantly from the previous products or business processes and that has been introduced on the market or brought into use by the firm.⁵ Innovation can come in the form of either introduction of new products, services and processes developed based on R&D (inventive) or adoption of non-R&D dimensions of capabilities (incremental or imitative). The impact of the innovation process is manifest in firm growth, productivity growth, and economic diversification.

Innovation is not limited to new inventions but also the introduction of existing technologies in a new industry, firm, or national context. In neither developed nor developing economies do investments in R&D alone translate into new products and services that transform industries or regional economies. Defining innovation solely in terms of research might skew public policies and programmes toward an unbalanced concentration on knowledge generation while neglecting the adoption and upgrading of capabilities that enable firms to absorb new technologies. The non-R&D dimensions include adoption of existing technology, quality standards and management practices and are more likely to be new to the firm (but not necessarily new to the market or the world). This is important in emerging ecosystems where research capabilities, infrastructure, and funding are constrained and enterprises lack technological and managerial capabilities.

Conceptual framework

A mature innovation ecosystem can be sustainably supported with innovation inputs (R&D investments, qualified and skilled personnel, research and technology equipment, etc.) that foster the creation of a dynamic private sector. The private sector, represented by firms, entrepreneurs and investors, create a push-pull for investments. These non-linear interactions among actors within the ecosystem and across the boundaries (regional and international collaborations) over a sufficient period of time lead to the creation of an environment where innovative businesses compete and grow. Supportive framework conditions and institutions, represented by intermediaries, brokers, specialized service providers, enforceable intellectual property (IP) regimes, and other factors are needed for such interactions to grow and come to fruition. The ultimate outcome of these interactions and investments in skilled labor, technology, and intangibles is increased productivity and economic growth. Figure 1 provides an illustration of this conceptual framework.

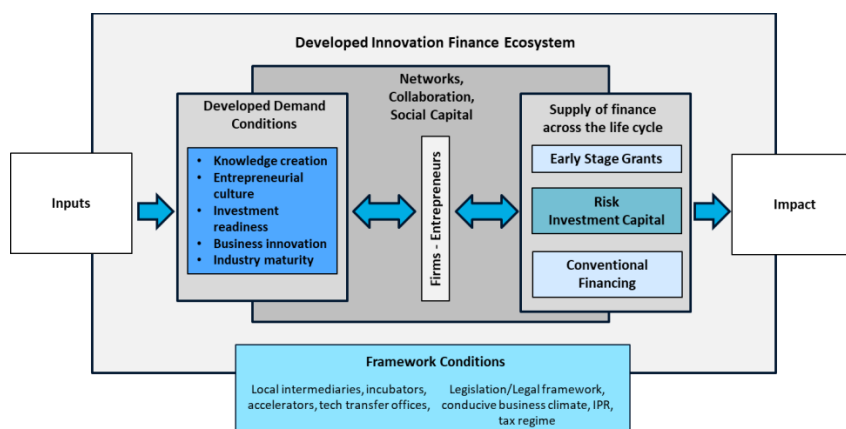
At the center of this framework is the firm and the entrepreneur ready and willing to receive financing. Diversified and competitive industries, dynamic knowledge creation institutions, and innovative businesses create an ideal pull on the demand side for investments. Investment-ready firms and entrepreneurs are ones that:

- (i) are willing to consider equity financing or other risk financing capital;
- (ii) have good business management skills (teamwork and leadership, etc.);
- (iii) are able to pitch their ideas to investors (good presentation skills);
- (iv) have a good understanding of what makes their ideas an investable business (have ideas about how to grow and exit the market);

⁵ OECD & Eurostat (2019).

- (v) address issues related to investor engagement (clear understandings of the investment process and how to prepare for it).

Figure 1: Framework of Analysis for the Innovation Finance Ecosystem



Source: adapted from Aridi et al. (2018)

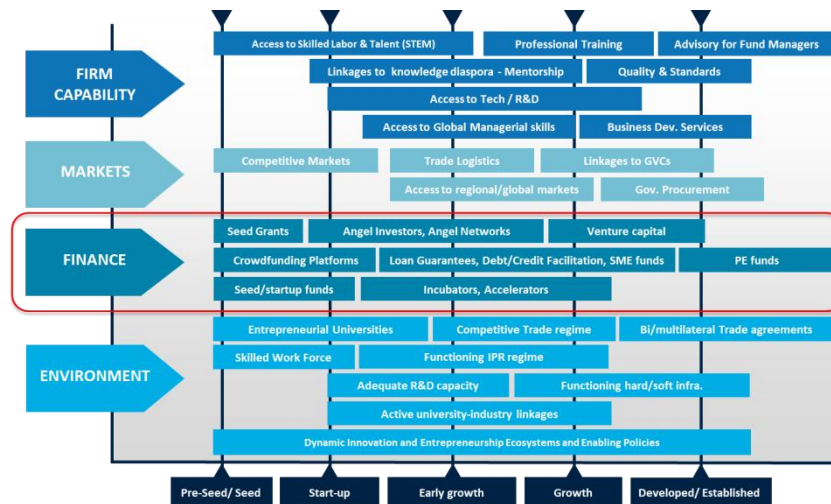
On the investment supply side, the right type of financing depends on the firms' position along the life cycle. Financing can come in the form of early stage grants (public financing), risk financing (e.g., public-private seed or venture capital funds, business angels, guarantee loans, etc.), or conventional bank financing. The capacity and competence of investors (e.g., business angels or venture capitalists) to provide financing is an important component to be considered on the supply side. Figure 2 illustrates the different components for productive growth of ventures across various stages of the firm life cycle.

A well-functioning innovation finance ecosystem is also shaped by a set of framework conditions that complement and enable both the demand and supply-sides. These include:

- local supporting intermediaries like incubators and accelerators or advisory platforms;
- availability and dynamism of market exit options such as mergers and acquisitions (M&As) and functioning capital markets such as initial public offerings (IPOs) free of regulatory or legal ambiguities; measures regulating the implementation of financial instruments such as contract enforcement
- a well-defined legal framework regulating the implementation of financial instruments including contract enforcement and minority protection for investors;
- a conducive business climate including investment friendly tax incentives for entrepreneurs and investors, and a well-functioning IP regime. These are cross-cutting conditions that mediate the interactions between demand and supply of finance and shape entrepreneurs and investors' behavior.

Networks, collaboration efforts, and social capital are further important components developed over time between firms, entrepreneurs, investors, and other actors to cultivate a vibrant ecosystem. More success stories, for example, on national and regional levels encourage other investors to come into the market. Young entrepreneurs are also more inspired to follow the path of their role models. Further, these components build trust in the ecosystem, as the lack of which may serve as a significant inhibitor in emerging ecosystems especially.

Figure 2: Ecosystem Components for Productive Growth of Ventures at Various Stages of the Lifecycle



Source: Adapted from Aridi et al. (2018)

Following this framework, an underdeveloped risk finance activity in a given national or regional market could be explained by these factors:

- (a) The absence or low capacity of angels, venture capitalists, and crowdfunding platforms (supply);
- (b) The lack of deal flow of investable ventures that demonstrate capacity to grow and capture markets; weak entrepreneurial culture; low levels of business innovation and knowledge creation (demand);
- (c) Weak incentive structures among supporting intermediaries (e.g., incubators/accelerators, TTOs, universities) and investors to engage in early-stage, high-risk activities (e.g., tax, co-investment funds); weak business regulatory conditions; and dysfunctional exit markets (framework conditions).

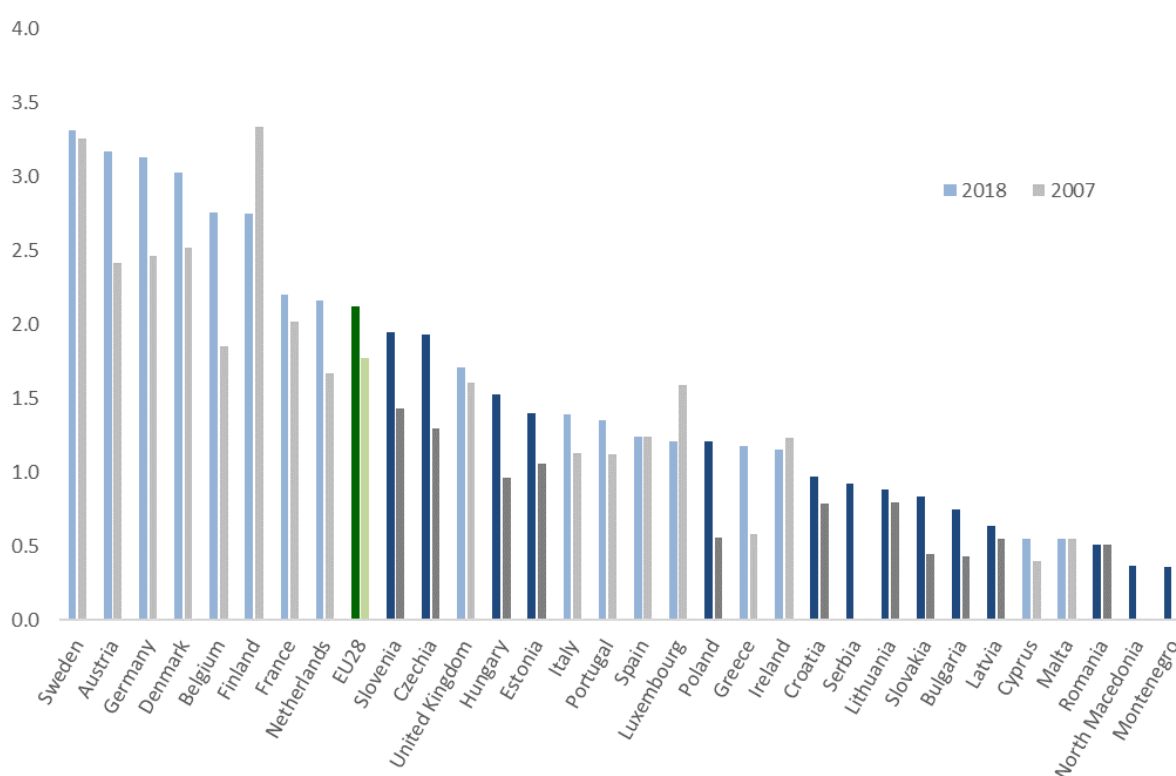
These assumptions of potential gaps will shape our assessment of the current innovation finance ecosystem in the CESEE region.

Chapter 3: Why does CESEE lag behind in innovation activity?

This chapter reviews the reasons behind the region's moderate levels of innovation performance to date. By doing so, it provides the stylized facts that underpin the rest of the report and maps the types of companies that are active innovators in CESEE.

CESEE countries lag significantly behind the EU in terms of R&D investment as a key ingredient to innovation process. In most of the CESEE country investment in R&D is below the 3% level. Only Slovenia and the Czech Republic are investing around EU average values as a share of GDP (Figure 3). However, most countries have been increasing their R&D intensities, particularly after 2007. Increases in R&D investment in the region have been typically driven by foreign sources, notably the European Structural and Investment Funds.

Figure 3: R&D investment intensity in 2007 and 2018 (% of GDP)



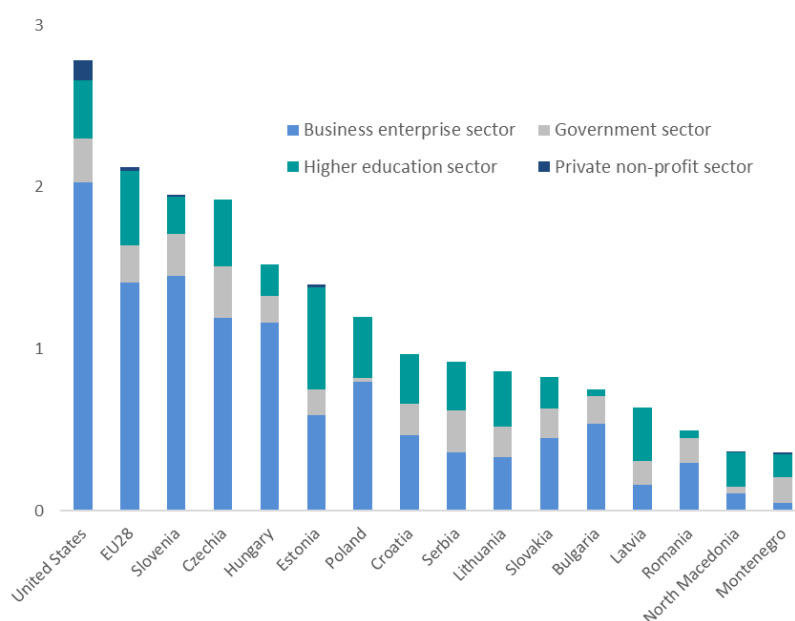
Source: Eurostat

Note: GERD (Gross domestic expenditure on R&D) as a percentage of GDP. Countries are ordered based on the 2018 data.
Albania's R&D share of GDP is 0.4% in 2017 (INSTAT, 2017).

Investment in R&D mostly comes from the private sector. Like for the EU as a whole, and for the United States, the driver of R&D spending in CESEE (with some exceptions) is the private sector, irrespective of the source of funding (Figure 4). In fact, between 2009 and 2018, the main factor behind the increase in the share of R&D on GDP in CESEE was private sector R&D spending.⁶ Nevertheless, government R&D spending tends to play a bigger role in CESEE than in the EU as a whole, particularly in countries with low total R&D spending on GDP.

⁶ Source: Eurostat.

Figure 4: Composition of R&D expenditures as a share of GDP in 2018 (% of GDP)



Source: Eurostat

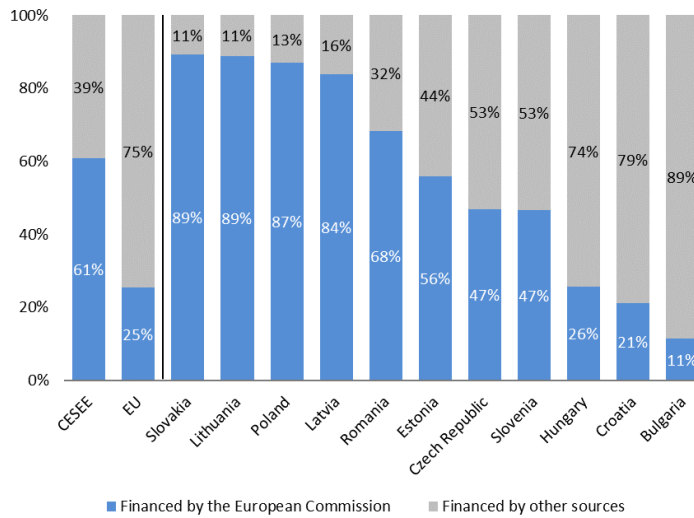
Note: 2017 data is shown for United States

The R&D financing in the CESEE region remains dependent on European Structural and Investment Funds.⁷ Looking specifically into the sources of R&D expenditure financed from abroad, the role of the European Structural and Investment Funds, as the main source of EU R&D funding in the region, becomes evident: 61% of all funding coming from abroad is from the European Union funds, in comparison to 25% for the EU average (Figure 5). However, in countries with a strong presence of manufacturing Foreign Direct Investment, such as the Czech Republic, Slovenia and Hungary, foreign investment is the primary source of R&D investment from abroad.

⁷ The crucial role of EU (ESIF) programmes to finance innovation in the CESEE countries may be worth reporting (also in light of the expected reduction of this source in the next programming period 2021-27):

- European Regional Development Fund: the Smart specialisation approach is integrated into the cohesion policy for 2014-2020. Smart specialisation strategies are about enabling regions to turn their needs, strengths and competitive advantages into marketable goods and services, with a view to support research, innovation and entrepreneurship. They aim at prioritising public research and innovation investments through a bottom-up approach for the economic transformation of regions, building on regional competitive advantages and facilitating market opportunities in new inter-regional and European value chains. For the period 2014-2020, in aggregate more than EUR 40 billion (and more than EUR 65 billion including national co-financing) are allocated to regions through the European Regional Development Fund. In CESEE countries, a portion of this budget is dedicated to financial instruments aimed at improving finance for innovation or directly at financing innovation projects.
- European Social Fund: in addition, EUR 1.8 billion has been programmed under the European Social Fund for strengthening human capital in research, technological development and innovation. Even under European Social Fund, some member states have backed financial instruments aimed at improving finance for innovation.

Figure 5: R&D expenditure financed from abroad, 2015



Source: European Commission - DG Research and Innovation, Eurostat
 Note: CESEE: BG+CZ+EE+HR+LV+LT+HU+PL+RO+SI+SK

Innovation activity in the CESEE countries is broadly driven by manufacturing firms and large companies. Looking at firms with active R&D spending, about 64% of active innovators are large firms, almost 18% are medium-size firms and about 14% are among small firms (Figure 6).⁸ 65% of active innovators are manufacturers, 20% are in the infrastructure, 11% in services and less 4% in the construction sector (Figure 7).⁹

Figure 6: CESEE - Active innovators by firm size, 2019

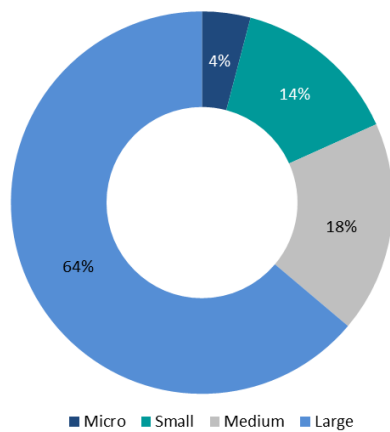
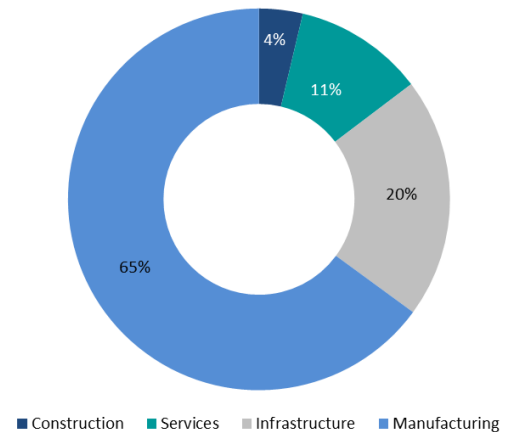


Figure 7: CESEE - Active innovators by sector, 2019



Source: EIB Investment Survey, 2019

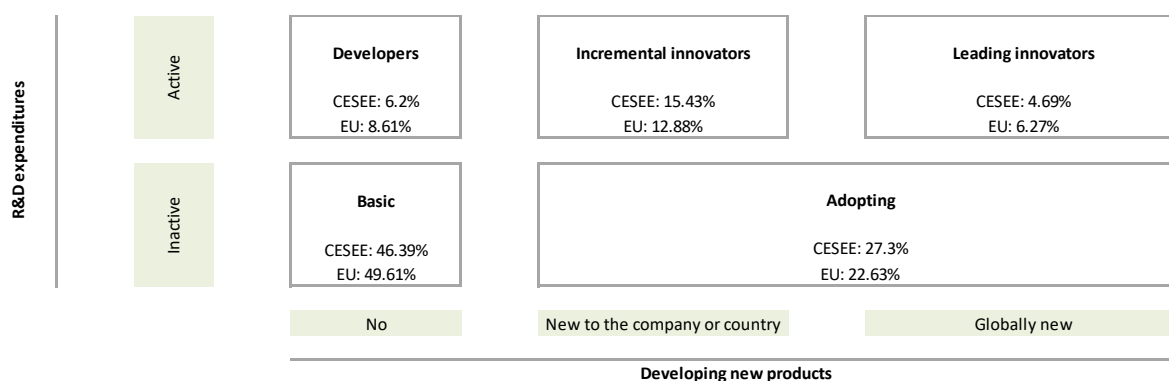
Note: CESEE: BG+CZ+EE+HR+LV+LT+HU+PL+RO+SI+SK. Active innovators refer to those that spend actively on R&D (i.e. at least 0.1% of firm turnover) and fall into the categories of leading innovators, incremental innovators and developers.

⁸ In EIBIS, large companies have more than 250 employees, medium-sized companies have 50-249 employees, small companies have 10-49 employees, and micro companies have 5-9 employees.

⁹ Foreign owned firms account for a significant share of value added in the countries in the CESEE region, but they are not necessarily more innovative. Their share in value added range from 10% to 33%. The highest shares are recorded in the Czech Republic and Slovakia. Foreign ownership is most prevalent in the manufacturing sector and among larger firms in the CESEE. However, when compared to similar firms that are domestically owned, foreign owned firms in the CESEE are, according to EIBIS, not more innovative. Foreign owned firms seem more innovative on first sights, with a higher share firms innovating (i.e. having introduced a new product or service in the last financial year), higher share of patenting firms, and having more leading innovators among foreign owned firms than among domestically owned ones. Once we control for sector and size, however, these differences disappear.

The CESEE region hosts a relatively lower number of leading innovators compared to EU as a whole.¹⁰ In comparison to the EU average, more innovation activity lies in the form of adoption (27.3% vs 22.6% for the EU, see Figure 8).¹¹ Whereas CESEE countries have more incremental innovators than the EU average (15.4% vs 12.9% for the EU), incremental innovators are developing products that are new to the company or to the country, where the bar to succeed is in many CESEE countries lower than on the global marketplace. On the other hand, the lack of leading innovators (4.7% vs 6.3% for the EU), i.e. firms that develop products new to the global market, shows that the CESEE region still has gaps when it comes to competing globally.

Figure 8: Innovation profiles for firms in the CESEE region and the EU (% of all firms)



Source: EIB (2019)

The innovation profiles are as follows:

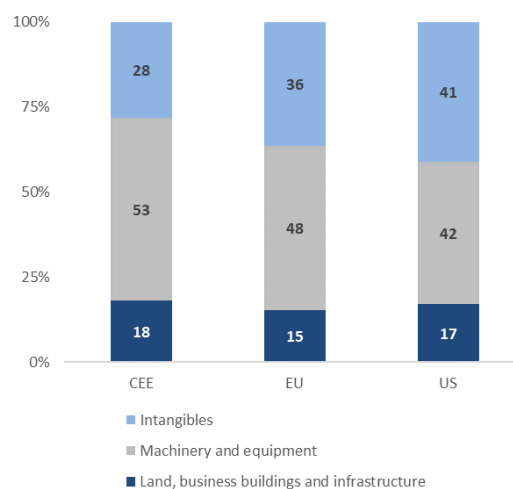
- **leading innovators**, i.e. firms that develop products and processes new to the global market and report substantial R&D expenditures;
- **incremental innovators**, i.e. firms that develop products and processes new to the country or firm and report substantial R&D expenditures;
- **adopting innovation**, i.e. firms that report no substantial R&D expenditures and that develop products and processes that are new to the firm, country or global market;
- **developing innovation**, i.e. firms that report substantial R&D expenditures, but that do not yet develop products and processes new to the firm, country or global market;
- **“basic” firms**, i.e. firms with no substantial R&D expenditures and no development of new products and processes.

Looking at overall corporate investment in intangible assets – also an important contribution to innovation process – CESEE firms report lower shares of intangible investment than the EU average. According to the EIB Investment Survey, firms in CESEE report that intangible investment (i.e. R&D, data, software and IT networks, training of employees, organisation and business process improvements) represents only about 28% of their total investment (compared to 36% for EU and as much as 41% for the US, see Figure 9).

¹⁰ The EIB Investment Survey (EIBIS) is a unique, EU-wide survey of some 12 500 firms that collects information on firm characteristics and performance, past investment activities and future plans, sources of investment finance, financing constraints and other challenges that businesses face (EIB, 2017b). EIBIS is representative across all 28 Member States of the EU, as well as for firm size classes (micro, small, medium-size and large) and four main sectors (manufacturing, services, construction and infrastructure). The data is weighted by value-added to better reflect the contribution of different firms to economic output. For EIBIS methodology and questionnaire see here: <https://www.eib.org/en/about/economic-research/surveys-data/about-eibis.htm>

¹¹ See Chapter 9 from EIB (2017). Firms can be classified in five different innovation profiles based on R&D investment and innovation activities: basic firms, adopters, developers, incremental innovators, and leading innovators. The development of new products is based on questions 18 and 19 of EIBIS, namely “Q18. What proportion of the total investment was for developing or introducing new products, processes or services?” and “Q19. Were the new products, process or services (A) new to the company, (B) new to the country, (C) new to the global market?” R&D activity is defined as firms reporting substantial R&D (amounting to at least 0.1% of firm turnover).

Figure 9: Composition of investment, EIBIS 2019

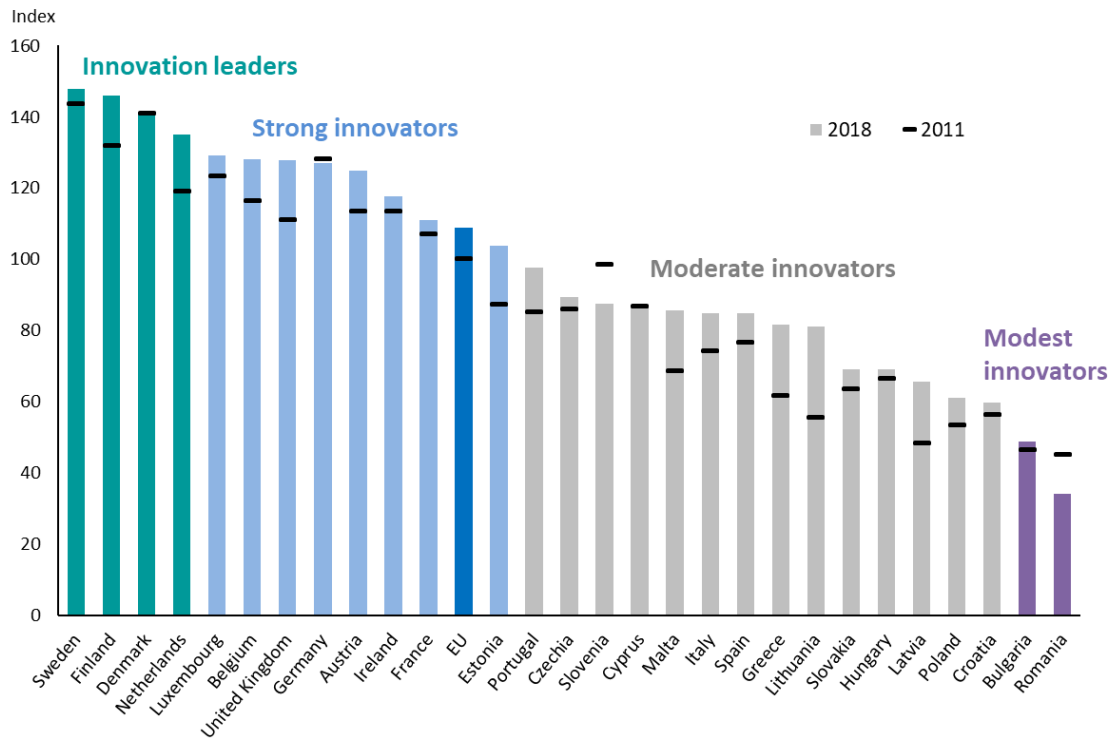


Source: EIB (2019)

Most CESEE countries are underperforming on the European Innovation Scoreboard when compared to EU average. With the exception of Estonia – a “strong innovator”-, all of the other CESEE countries fall under the categories of “moderate innovators”, or “modest innovators” (Bulgaria and Romania) (Figure 10).¹² Most CESEE countries have increased their innovation capacities in 2018 compared to 2011, while in some – Slovenia, Romania – innovation performance has decreased between 2011 and 2018.

Figure 10: Innovation performance in CESEE vs. EU / selected countries in 2018 (vs. 2011)

¹² The European Innovation Scoreboard (EIS) is an annual ranking that provides a comparative analysis of innovation performance across EU Member States. For details and definitions see http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en

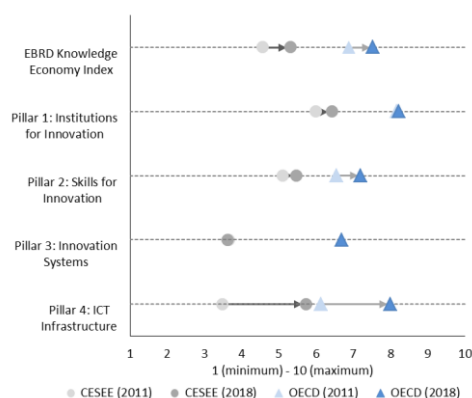


Source: European Commission - DG Research and Innovation, EIS 2018

Despite this innovation gap, the CESEE region benefits from pockets of excellence around some key institutions. The gap of the CESEE region to the OECD average is the smallest when it comes to institutions and to some extent also skills for innovation.¹³ As illustrated by EBRD Knowledge Economy (KE) Index on Figure 11-12, the most substantial gap vis-à-vis the OECD average is relative to the innovation system, signalling weak innovation inputs, such as low R&D expenditure, low levels of innovation outputs, such as patent applications, and relatively poor linkages within the system. A component that contributes to the low overall ranking is the limited availability of venture capital (see also Chapter 5 below). There is a large heterogeneity across the countries of the region. For example, Estonia represents the strongest knowledge economy in the CESEE region, almost ranked at the same level as France, while Kosovo displays the least developed knowledge economy across the region with a score of less than half of that of Estonia.

¹³ EBRD Knowledge Economy (KE) Index is made up of 38 indicators compared to seven advanced OECD economies. The index comprises of (1) institutions for innovation, (2) skills for innovation, (3) the innovation system and (4) the ICT infrastructure. For each indicator, a distance-to-frontier score ranging from 1 to 10 is calculated: 1 represents the economy whose performance between 2011 and 2018 is the weakest and 10 the best performing economy. These scores are subsequently aggregated at dimension and pillar level. Finally, an aggregation of the pillar-level scores leads to the KE Index.

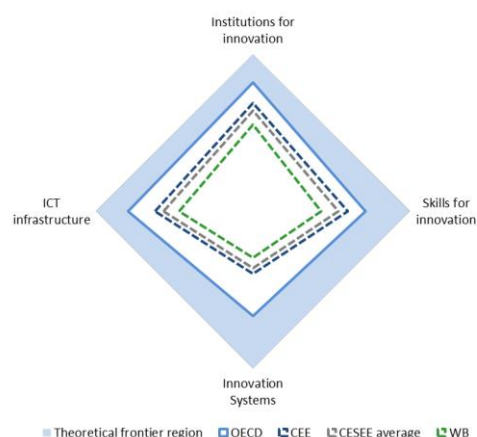
Figure 11: The Knowledge Economy Index in the CESEE region in comparison to OECD comparator countries, 2011-2018



Source: EBRD calculations.

Note: The OECD countries that are used as comparators are Canada, France, Germany, Japan, Sweden, United Kingdom and United States. Pillar 3 showed almost no change between 2011 and 2017

Figure 12: The four pillars of the Knowledge Economy Index by region



While there is convergence in innovation activity towards advanced economies, the speed of this convergence is slow. Overall, the gap to the OECD narrowed only slightly between 2011 and 2018, and in 2018 the CESEE region’s knowledge economy remains substantially less developed than the OECD’s in 2011 (Figure 12).

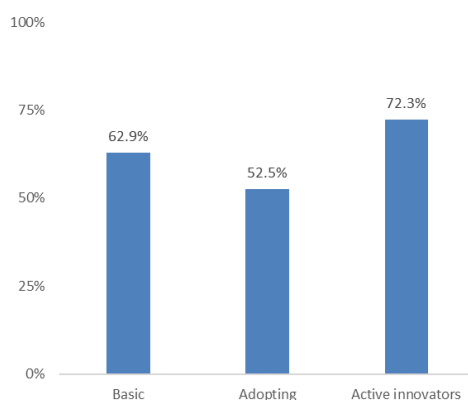
In addition to the low level of intangible investment, the weaker innovation performance of the CESEE countries is hindered by additional factors. According to the views of the Working Group participants, these include:

- skill shortages
- the overall poor quality of scientific and technological production in the region
- low digital penetration (including low digital adoption rates among manufacturing firms)
- lack of commercialization and entrepreneurship (including low start-up and scale-up density).

The lack of skilled staff is burdensome for innovative firms in CESEE. Firms’ readiness to innovate is closely linked to the availability of staff with the right skill sets. According to EIBIS, more than 72% of active innovators in the CESEE countries are constrained in their investment decisions by the lack of staff with the right skills (Figure 13).¹⁴ This can negatively affect the potential of CESEE firms when it comes to boosting their innovation activity. While the share of new university graduates in the CESEE region was similar to or above the EU average over the past decade, there has been a sharp decline in the past few years, which further accentuates skills gaps and shortages in the region on top of the already negative demographic and migration trends.

¹⁴ In general, according to EIBIS 2019 data, the availability of skilled staff is the most commonly cited long term barrier to investment for CESEE firms (86% of firms in the CESEE region versus 77% for the EU as a whole).

Figure 13: Availability of staff with the right skills as a major long-term obstacle to investment, by innovation profile of firms 2019



Source: EIB Investment Survey, 2019

Note: CESEE: BG+CZ+EE+HR+LV+LT+HU+PL+RO+SI+SK

Question: To what extent is each of the following an obstacles to the success of your business?

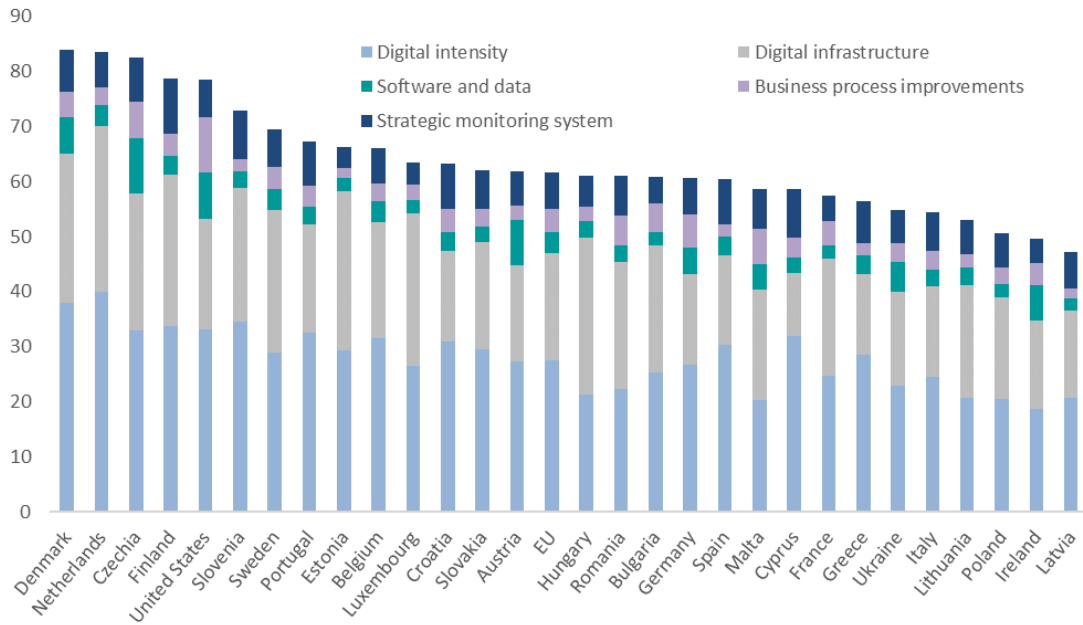
The low overall quality of the scientific and technological system also hinders a stronger innovation performance. The region only manages to score less than half in terms of the share of national scientific publications within the top 10% of most cited publications worldwide, or about a fourth in the number of PCT patent applications.¹⁵ Apart from weak research outputs, these are not necessarily applied towards commercialisation—thus explaining the lack of critical mass of innovators (knowledge-intensive spinoffs). For example, while the Czech Republic has among the highest public R&D (as share of GDP) in the region, these are mostly focused on basic research instead of commercialization of ideas. Moreover, researchers tend to be evaluated primarily on scientific publication outputs with less emphasis on commercialisation.¹⁶

Most CESEE countries still lag behind in their digital competitiveness - with some exceptions. Measured by the EIBIS Digitalisation Index, most CESEE countries fall below the EU average and are far behind the United States (Figure 14). The exceptions are the Czech Republic and Estonia, and to some extent also Croatia and Slovakia, where the Digital Environment Index is above the EU average and above other CESEE countries.

¹⁵ See European Commission (2018). See also Correia et al. (2018).

¹⁶ See Srholec & Sanchez-Martinez (2018). See also Correia et al. (2018).

Figure 14: EIBIS Digitalisation Index, 2019



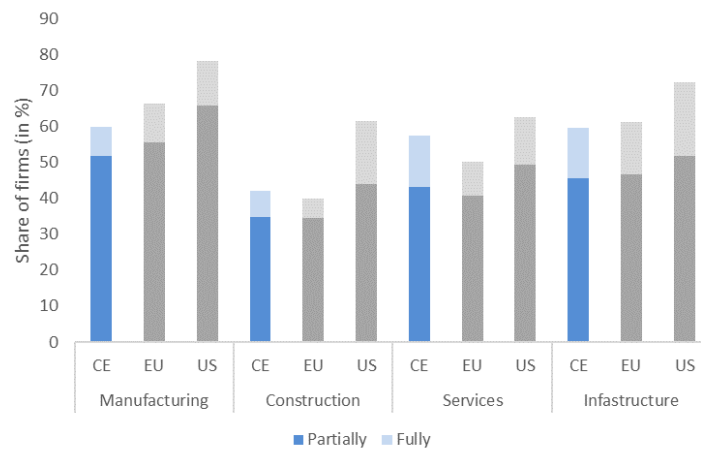
Source: European Investment Bank, 2019

Note: Digital intensity is based on a score assigning value 1 if a firm has implemented in part of its business at least one of 4 digital technologies specific to the sector, and value 2 if the firm's entire business is organised around at least one of the 4 technologies. The results are then summed up, creating a score ranging from 0 to 8, with 8 assigned to the firms that have organised their business around all 4 digital technologies. Digital infrastructure is based on a question whether access to digital infrastructure is an obstacle to investment or not. Investments in software and data and in organisation and business process improvements are measured as a percentage of total investment in the previous fiscal year. Strategic monitoring system is based on a question asking whether the firm uses a formal strategic business monitoring system or not. The five components of the EIBIS digitalisation index are aggregated at the country level and given the following weights: 0.4 to digital intensity, 0.3 to digital infrastructure and 0.1 to the other 3 components.

Digital adoption rates among manufacturing firms in the CESEE are lower than in the EU or US.

Path dependency in innovation may create challenges for the long-term competitiveness. Only 52% of manufacturing firms in CESEE, compared to 56% in EU and 66% in the US, report having adopted at least one digital technology (Figure 15). On the positive side, more CESEE firms in the services sector than in the EU services sector have reported partial or full digital adoption.

Figure 15: Digital adoption comparison

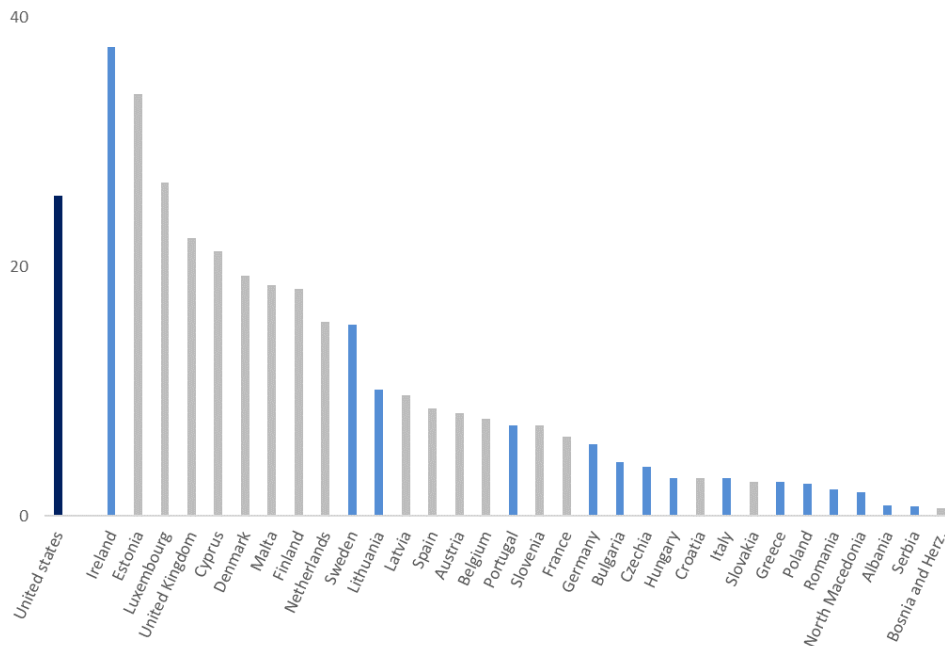


Source European Investment Bank, 2019

Note: Firms are weighted using value added. The figure is based on a question asking to report for four different digital technologies whether they have heard about them, not heard about them, implemented them in parts of their business, or whether their entire business is organised around them. A firm is identified as partially digital if at least one digital technology was implemented in parts of the business; and fully digital if the entire business is organised around at least one digital technology.

The CESEE region has a low start-up and scale-up density. This is true in absolute numbers and as share of the total population as shown in Figure 16 below. Estonia is an exception, with a higher start-up and scale-up density than the US. It is important to note that this dynamic is changing. Today there are more accelerators, incubators in the region / in each country – in more sophisticated format – than before. Also, CESEE founders may be setting up companies abroad (for various reasons) – which may not be captured in these statistics.

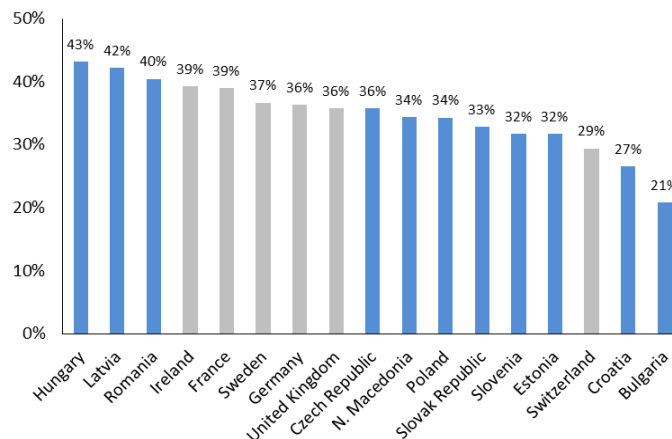
Figure 16: Start-ups and scale-ups per 100,000 inhabitants, founded between 2008-2018



Source: Crunchbase; author’s calculation. We refer to young innovative firms with high growth ambitions as either start-ups or scale-ups depending on their own assessment on which stage best describes the current stage of their business. Base: Firms founded between 2008 – 2018 that are still active

There are also weaknesses in CESEE’s entrepreneurial culture, which can be characterised as risk-averse and inward thinking, thus hindering the development of a strong pipeline of investable innovators. Compared to more developed markets, CESEE entrepreneurs and investors tend to be more risk-averse. There is a strong stigma on failure, which creates disincentives for pursuing the entrepreneurial route. Nevertheless, only three CESEE countries have fear-of-failure rates higher than the more developed markets. An inward thinking mind set also cripples mentoring and sharing of ideas. Yet, notwithstanding cultural limitations, the small size of the CESEE domestic market leaves entrepreneurs with limited choice and calls for a change of thinking beyond national borders in order to capture larger international markets and increase their chances of accessing risk capital.

Figure 17: Fear of failure rate, 2017

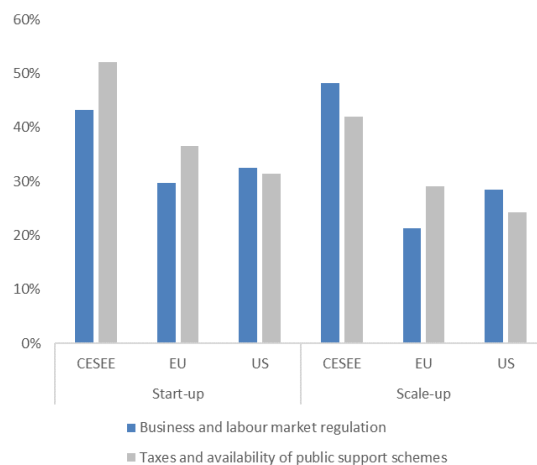


Source: GEM (Global Entrepreneurship Monitor)

Note: Fear of failure is the percentage of 18-64 population perceiving good opportunities to start a business who indicate that fear of failure would prevent them from setting up a business

In addition, the gap in start-up and scale-up densities between the CESEE region and other EU countries is made worse by migration pattern of firms. Firms in CESEE are very sensitive to adverse changes in the business and labour market regulation or taxes and the availability of public support schemes (Figure 18). Start-ups and scale-ups in the CESEE region are more likely to state that they consider to move or close their business when compared to EU and US peers.

Figure 18: Reaction to adverse change, share of firms likely to move or close in case of deterioration



Source: EIBIS Start-up and Scale-up Survey 2019.

In 2019, the Add-on Model of EIBIS surveyed 1100 start-ups and scale-ups in the EU27, the UK and US. Eligible respondents were Chief Executive Officers, Financial Managers and Heads of Accounts. The Survey was administered by telephone (in local language) and took on average less than 20 minutes to be completed. The fieldwork started in April 2019 and continued until July 2019. Firms has to be listed on Crunchbase Database, have been founded between 2008 and 2018, and still be active. Survey answers from the add-On Module on Start-ups and Scale-Ups in this report are aggregated using firm weights based on the Cunchbase Database. See EIB (2019) for more details.

Question: Thinking about your current main location, how likely would a deterioration of each of the following make you consider a move or close your business?

Note: CESEE: BG HR CZ EE HU LV LT PO RO SK SI, EU excluding UK and CESEE.

Despite the shortcomings in the enabling factors for innovation, the CESEE region has a promising and relatively vibrant start-up market. There are currently about 9,000 start-ups in the CESEE region. Some of the most prominent unicorns that originated from the region, primarily in the ICT sector, include (see Figure 19): Avast and AVG (founded in the Czech Republic), UiPath (Romania), Teleric (Bulgaria), Allegro and CD Projekt Red (Poland), TransferWise and Skype (Estonia), and LogMeIn

(Hungary). Visible success stories particularly in the ICT sector are possible due to a high quality of talent pool in technical fields as well as the presence of multinational players which are usually a source of knowledge spillovers and spin outs. The presence of global support players further enhances the creation of success stories, such as Startberry, Campus Warsaw, and Hub Raum.

Figure 19: CESEE founded unicorns

\$5-10B											
\$2-5B											
\$1-2B	 										
Rising stars	 	 	 	 	 	 	 	 	 	 	
	Estonia	Poland	Romania	Hungary	Slovenia	Slovakia	Czechia	Latvia	Lithuania	Belarus	Croatia

Source: Dealroom Co

Box 1: Funding journeys of CESEE unicorns from the ICT sector – AVG, LogMeIn and UiPath

AVG. Jan Gritzbach and Tomáš Hofer founded Grisoft, later renamed to AVG Technologies, in 1991 in Brno, Czech Republic as an IT solutions provider which developed the AVG AntiVirus product in early 1990s. By 2015, over 200 million active users used AVG software products and services which include internet security, performance optimization, and personal privacy and identity protection applications.

Early Stage financing: Grisoft grew organically and became profitable quickly. It did not receive any external money to finance its growth (all transactions, with the exception of the 2011 debt, were share purchases). In other words, its customers and clients were the sole early investors.

Debt: In 2011, AVG secured a five-year term loan amounting to \$235 million. The credit agreement was led and arranged by J.P Morgan and Morgan Stanley. In 2013, AVG also secured a \$75 million credit facility from HSBC involving a \$25 million six-month term loan and a \$50 million three-year multicurrency revolving credit fund.

Private equity: High net worth individuals grouped in Benson Oak, a Prague-based private equity firm, acquired Grisoft from its founder in 2001. In 2005, Enterprise Investors (EI) invested \$52 million. EI strengthened the company's management team, supported its expansion in terms of acquisitions and product development, and helped AVG IPO. EI fully exited from AVG in 2014. In 2009, TA Associates led a \$200 million investment in the company. In total, AVG has raised \$252 million in private equity funding in 3 rounds (i.e., 2004, 2005, 2009).

Exit: AVG went public on the New York Stock Exchange in 2012 with a valuation of over \$1 billion. It was then acquired by AVAST to the tune of \$1.4 billion in 2016.

LogMeIn. A Hungarian computer engineer Márton Anka created RemotelyAnywhere, a PC remote access application, in late 1990s. In 2003, serial entrepreneur Michael Simon joined him as the CEO to establish 3AM Labs Ltd with operations in Budapest, Hungary with a plan to offer remote access on Software-as-a-Service (SaaS) basis. The Company was later renamed into LogMeIn and the headquarters were relocated to Boston, USA. In 2009 LogMeIn listed on Nasdaq and has continued to grow very well – today its team of 3,000 people generate approx. €1bn annual revenues by serving more than 2 million daily users with various cloud applications in the fields of communications & collaboration, engagement & support and identity & access.

Early Stage financing: In 2003 a group of Hungarian and international angel investors lead by incoming CEO Michael Simon helped the Company to raise approx. €450k and to achieve €1.9m of revenues.

Expansion funding: 3TS Capital Partners became the first institutional investor in LogMeIn in mid-2004 by investing €3 million of growth capital. Later that same year two US based investors Prism Venture Partners of Boston and Integral Capital of Menlo Park joined 3TS to complete the \$9.5 million Series A funding round. LogMeIn completed two more funding rounds. In the 2005 \$10 million Series B round a new investor Polaris Venture Partners, Boston participated alongside the Series A investors. A \$10 million pre-IPO funding was raised from Intel Capital in 2008. In total, LogMeIn raised only \$30 million in these 3 private equity funding rounds prior to the IPO (i.e., 2004, 2005, 2008).

Exit and continued growth: LogMeIn went public on Nasdaq in July 2009 in a 20x oversubscribed IPO with a valuation of around \$355 million, which also marked the exit of 3TS, and has continued to grow extraordinarily well also as a listed company both organically and through acquisitions. In 2017 LogMeIn took over the GoTo business line from Citrix, which had been one of its' main competitors. On the back of this LogMeIn's market cap peaked at around \$6.7bn making it the most valuable technology company with Eastern European origins. 10 years after going public, LogMeIn is being acquired by a private equity firm to support further growth (deal pending as of 2019).

Early and expansion stage investors were able to achieve stellar cash-on-cash returns of more than 100x, compared to the excellent 10-20x returns achieved by the investors who exited at the IPO or shortly thereafter. Many of the founding team members, early employees and investors have since funded dozens of other companies both in Hungary and abroad, so LogMeIn has acted as a true multiplier for the regional start-up ecosystem in addition to being one of the most successful technology businesses from the CESEE region.

UiPath. The company was founded in 2005 in Bucharest, Romania as DeskOver, by the Romanian entrepreneurs, Daniel Dines and Marius Tirca. The desktop automation product was launched in 2013. In 2015, the company introduced its enterprise platform along with its new name.

Early Stage financing: In August 2015, UiPath closed an initial seed funding round of US\$1.6 million led by the Earlybird Venture Capital, with Credo Ventures and Seedcamp as backers.

Expansion funding: In April 2017, UiPath received a \$30 million investment in one of the biggest Series A rounds of funding in Europe, led by Accel. Previous investors Earlybird Venture Capital, Credo Ventures and Seedcamp also joined.

Global player: On March 6, 2018, UiPath received a \$153 million investment from Accel, CapitalG, and Kleiner Perkins Caufield & Byers, valuing the company at \$1.1 billion. On September 18, 2018, UiPath raised \$225 million in the funding round led by CapitalG and Sequoia Capital at a \$3 billion valuation. On April 30, 2019, UiPath raised \$568 million in a Series D round of funding led by hedge fund Coatue Management, with participation from Alphabet's CapitalG, Sequoia, Accel, Madrona Venture Group, IVP, Dragoneer, Wellington, Sands Capital, and funds advised by T. Rowe Price & Associates. The company also now claims a valuation of \$7 billion. UiPath is one of the fastest-growing enterprise software companies globally. The employee base has grown to over 2,900 employees today, across 25+ offices.

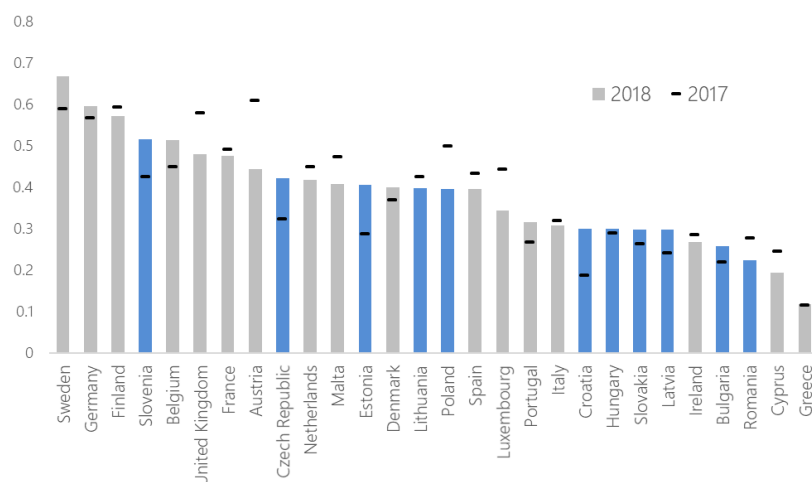
Sources: Company websites, news sources.

Chapter 4: Innovation finance in CESEE – a bird’s eye view

This chapter introduces the available supply of innovation finance in CESEE from the perspective of the EIB Investment Survey. It focuses on what sources of finance innovators in CESEE use, which will be further developed in Chapters 5 and 6 below.

Access to finance is in general worse in the CESEE region than in other European countries. In the EIF SME Access to Finance (ESAF) Index, most CESEE countries rank in the bottom half among all EU countries, which reflects comparatively poor access to finance conditions.

Figure 20: EIF SME Finance Index

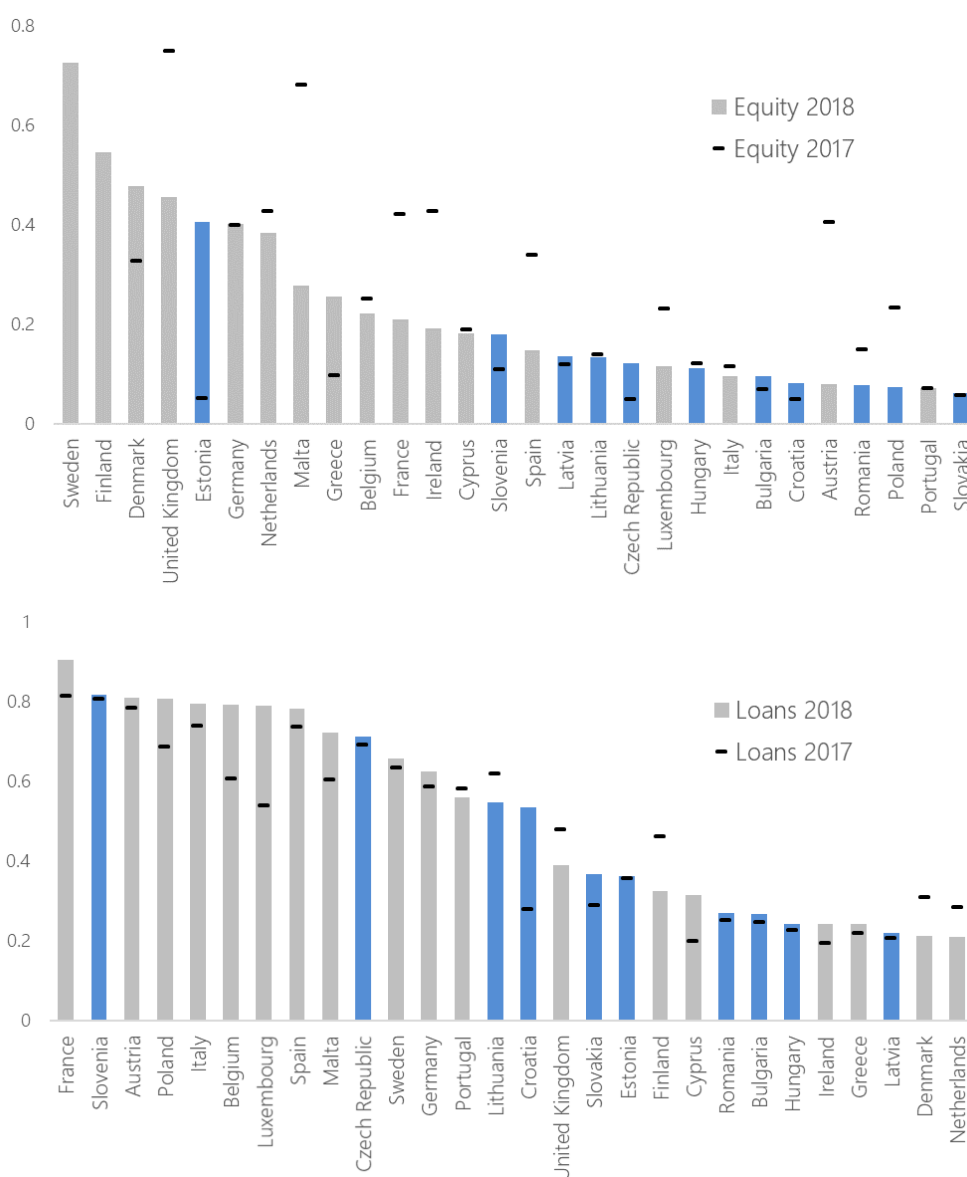


Source: The EIF SME Access to Finance (ESAF) Index, June 2019 update.

While access to bank financing is generally comparable to other European countries, risk capital is much less available in the CESEE region. The results of the ESAF *loan* sub-index for the CESEE countries are, on average, on par with the other EU countries. In contrast, all CESEE countries but Estonia rank only mid-table or worse in the *equity* sub-index of the ESAF.¹⁷ This reflects the comparatively poor performance of the risk capital markets in the region, which play an important role in the financing of innovating enterprises in other geographies of the world.

¹⁷ The EIF SME Access to Finance (ESAF) Index comprises sub-indices for loans, equity, credit & leasing and the macro environment. See Torfs (2019). The ESAF is a composite index based on several data sources, e.g. the ECB SAFE survey. See Gvetadze et al. (2018) for more information.

Figure 21: ESAF sub-indexes: equity, loans, credit & leasing and the macro environment



Source: The EIF SME Access to Finance (ESAF) Index, June 2019 update.

CESEE active innovators rely predominantly on bank finance, similarly to all CESEE firms. As to the sources of external finance, CESEE active innovators stand out as being predominantly funded by banks, either in the form of direct bank loans or other forms of bank finance. Capital markets funding – i.e. newly issued bonds and equity – play a relatively stronger role in financing basic firms, in comparison to active innovators. This reflects both (i) the fact that in CESEE most innovation takes place in adoption and among larger companies, where banks are more active¹⁸, and (ii) the underdeveloped capital markets in CESEE.¹⁹

¹⁸ See Chapter 6 on bank finance.

¹⁹ Vienna Initiative (2018).

Figure 22: CESEE - Source of finance by innovation profile (weighted percentages), 2019

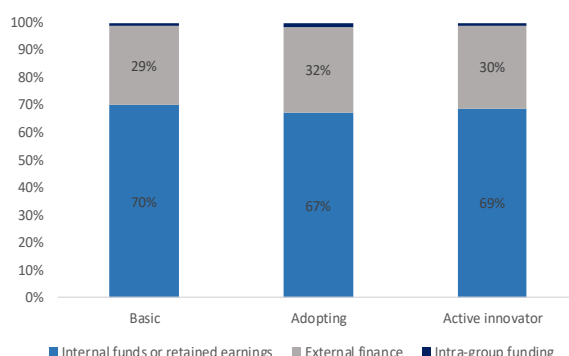
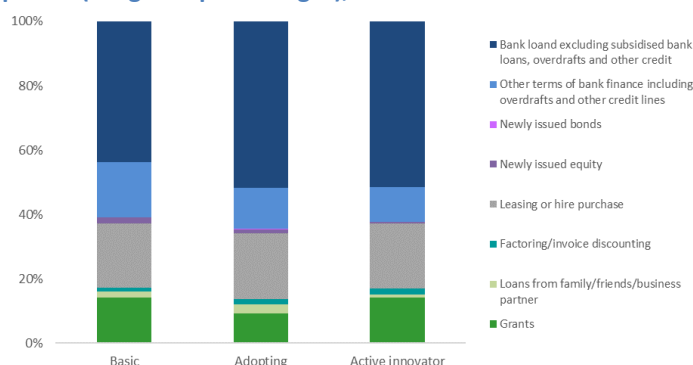


Figure 23: CESEE - Source of external finance by innovation profile (weighted percentages), 2019



Source: EIB Investment Survey, 2019
 Note: CESEE: BG+CZ+EE+HR+LV+LT+HU+PL+RO+SI+SK

While the adopters in the CESEE make the most use of intra-group financing, grant financing is tapped most by active innovators. About 32% of investment by active innovators is financed by grants. Active R&D spenders in the CESEE use marginally more grant financing to fund their investment than firms who are adopting innovation and basic firms.

Figure 24: Grant use, intra-group financing and share of financially constrained firms, by innovation profile

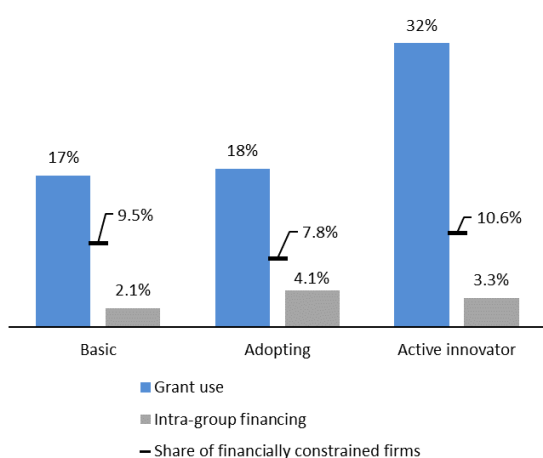
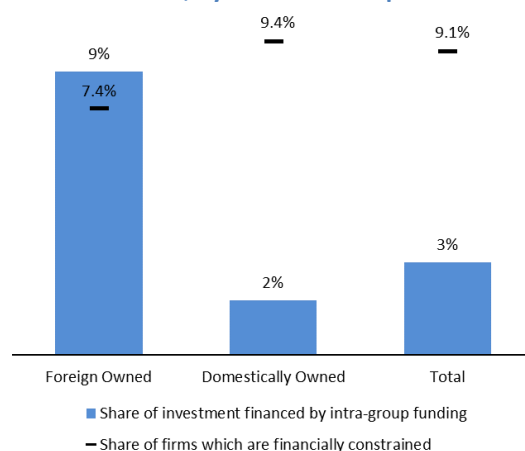


Figure 25: Share of investments financed by intra-group funding and share of financially constrained firms, by firm ownership



Source: EIB Investment Survey, 2019
 Note: CESEE: BG+CZ+EE+HR+LV+LT+HU+PL+RO+SI+SK

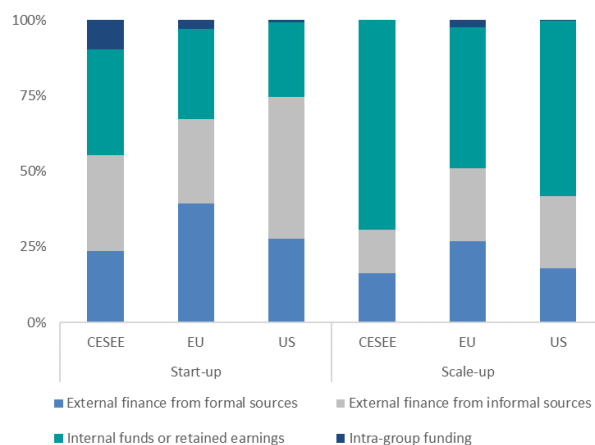
Active innovators face somewhat tighter financial constraints than other firms. In particular, about 11% of CESEE active innovators are external finance constrained in one way or another. In addition, firms that have high shares of intangible investment are relatively more constrained by price and quantity of credit, which opens a role for IFIs' products that target price and/or quantity of credit for the innovative companies.

Foreign-owned firms have the means to access an additional source of funding for their investment activities in the form of intra-group sources. This can serve both as a buffer in times when credit conditions get tighter (e.g. during a crisis) or as an internal "within-firm" pool of funding available for expansion and innovation. Currently, financing conditions in most of the CESEE countries are broadly accommodative, hence there is not much difference in the share of credit-constrained firms when distinguished by ownership. Nevertheless, foreign-owned firms are less financially constrained than

domestically-owned firms, and they report access to finance as barriers to investment much less often than their domestically owned peers.

Start-ups and scale-ups in the CESEE region rely less often on external finance from formal sources (i.e. banks, private or public equity) than their counterparts in other EU countries. What is more, scale-ups in CESEE rely more often on internal funds or retained earnings than scale-ups in the other regions. The availability of external finance is more often cited as an obstacle by scale-ups in the CESEE region than in other EU countries and the US.

Figure 26: Funding mix, proportion of funding share



Source: EIBIS Start-up and Scale-up Survey 2019.

Question: Approximately what proportion of your business activities have been financed by each of the following?

Note: CESEE: BG HR CZ EE HU LV LT PO RO SK SI, EU excluding UK and CESEE.

Box 2: High Growth Enterprises in CESEE

A subset of innovative firms are high growth firms. High growth firms are firms which have demonstrated consistent growth in terms of common metrics such as output/value added sales and jobs created (e.g., at least 10% annual growth in sales/jobs created) over a 3-year period.

The study by Ferrando, Pal & Durante (2019) shows that high growth enterprises (HGEs) in the CESEE countries are younger, smaller and with a strong innovative profile, having the highest concentration among adopting firms. For leading innovators there is a relatively higher concentration of small and medium sized HGEs. The JRC technical report by F. Flachenecker et. al (2020) also finds that on average HGEs appear to be medium-sized companies (50-249 employees) and they are not a rare phenomenon (representing 11% of all firms, 2016) even if the duration of a high-growth period for a firm can be limited. They also highlighted that HGEs can be found across the entire economy, nevertheless there is a significantly higher concentration (above 20% of total enterprises of the given industry) in the high-tech knowledge intensive services, more specifically in 1) administrative and support service activities, 2) professional, scientific and technical services and 3) information and communication.

HGEs in the CESEE invest more than other companies and they generate a higher than average cash flow. Moreover, HGEs in the CESEE with an innovation profile (introducing new products) are relatively more financially constrained than other companies in CESEE. Access to equity and venture capital for SMEs of CESEE countries (except Estonia) is below the Western European countries (see Flachenecker et. al, 2020).

Figure 27: HGEs in CESEE by age

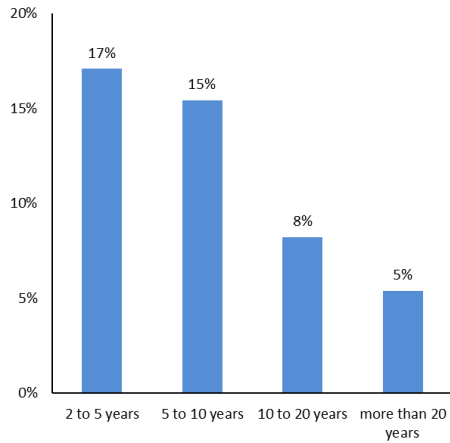


Figure 28: HGEs in CESEE by size-class and innovation profile

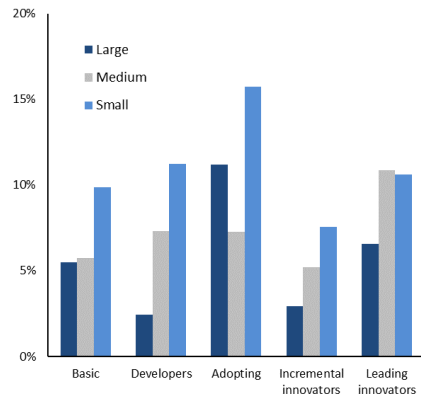


Figure 29: Net investment (% growth of fixed assets) of CESEE enterprises

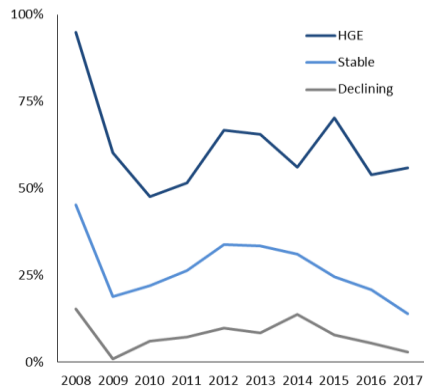


Figure 30: Profitability (cash flow to total assets) of CESEE enterprises

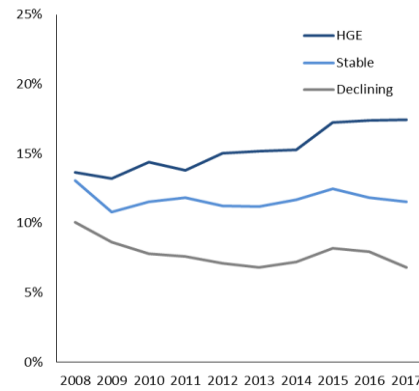
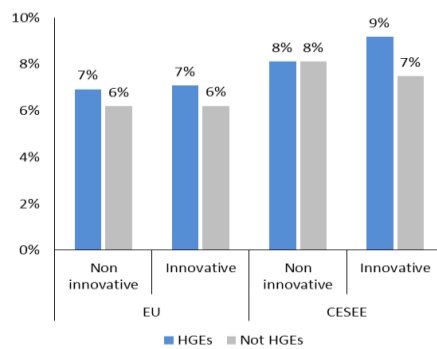


Figure 31: Financially constrained firms in the EU and CESEE



Source: EIBIS 2016-2018, Orbis 2003-2017. HGEs represent about 7.8% of all innovative firms in CESEE.
 Note: Financing constrained back-casting for the whole 2003-2017 period (Ferrando, Pal & Durante, 2019)

Chapter 5: Non-bank sources of innovation finance

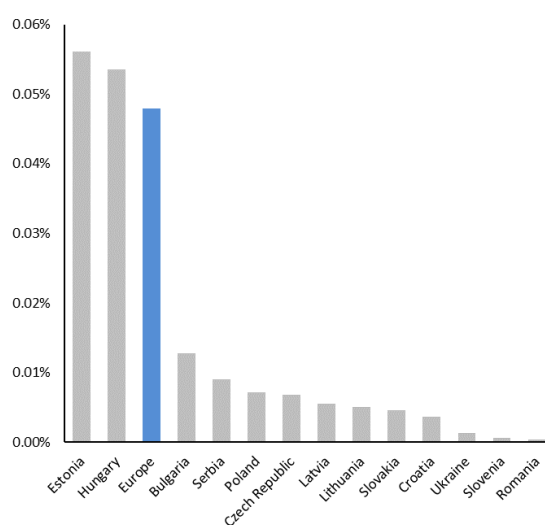
This chapter maps the risk capital providers (e.g. VCs, angels) that cater to earlier/growth-stage firms. It also explores additional non-bank sources of finance, including the capital market, crowdfunding and debt funds. As the financing gap in the CESEE region is prevalent at all enterprise development stages, but particularly pronounced for the later stages of the firm life cycle, opportunities for scale-up finance/growth capital in the region are explored.

Venture capital and growth capital funds

Venture and growth capital is an essential financing source for start-up, young and innovative companies with high growth potential to create value. These financing forms, notably provided in the form of external equity, are not to be seen as a substitute for traditional, mainly bank-centred, SME financing instruments. Rather, they serve a specific and restricted group of SMEs and mid-caps (including start-ups), which, nevertheless, significantly contribute to the innovativeness, productivity and development of the overall economy.²⁰

Venture and growth capital markets in CESEE still lag behind the European average. While the share of VC investments over GDP was at a level of 0.048% in Europe as a whole in 2018, in most of the CESEE countries the VC market is much smaller compared to the overall economy (see Figure 32). There are impediments to the development of a vibrant venture and growth capital market, not only in the CESEE countries, but also in Europe as a whole, where the “presence and accessibility of alternative funding avenues is underdeveloped for SMEs, e.g. venture capital & angel investing”²¹.

Figure 32: Venture Capital - Investments as % of GDP, 2018 (by country of destination of investment)



Source: EIF, based on Invest Europe data

The comparatively low development level of the risk capital markets in the region is also reflected in the EIF SME Access to Finance (ESAF) index. In the ESAF equity sub-index (Figure 21), all CESEE countries but Estonia rank only mid-table or worse, and two thirds of the countries in the bottom half are part of the CESEE region.²²

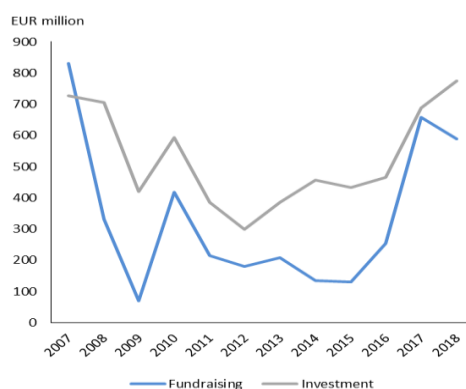
²⁰ See Kraemer-Eis et al. (2019).

²¹ See AFME & BCG (2015) and AFME (2017).

²² The EIF SME Access to Finance (ESAF) Index comprises sub-indices for loans, equity, credit & leasing and the macro environment. See Torfs (2019). The ESAF is a composite index based on several data sources, e.g. the ECB SAFE survey. See Gvetadze et al. (2018) for more information.

Nevertheless, the VC and growth capital market situation in the CESEE region is improving. The recent investment and fundraising activity confirms the positive trends of the previous years, despite the significant influence of a limited number of large transactions. Since 2013, VC and growth capital investment amounts in CESEE-based companies increased, on average, by 17% per year. In 2018, they exceeded the levels reached in 2007 (i.e. before the crisis) for the first time (see Figure 33). While fundraising had not significantly increased for many years since the crisis, it caught up in 2016 and 2017, but experienced a setback in 2018. In 2018, VC and growth funds raised EUR 588 million. During the same year, VC and growth capital investment into portfolio companies in the CESEE region amounted to EUR 774million.

Figure 33: Venture and growth capital fundraising and investment activity volumes in CESEE



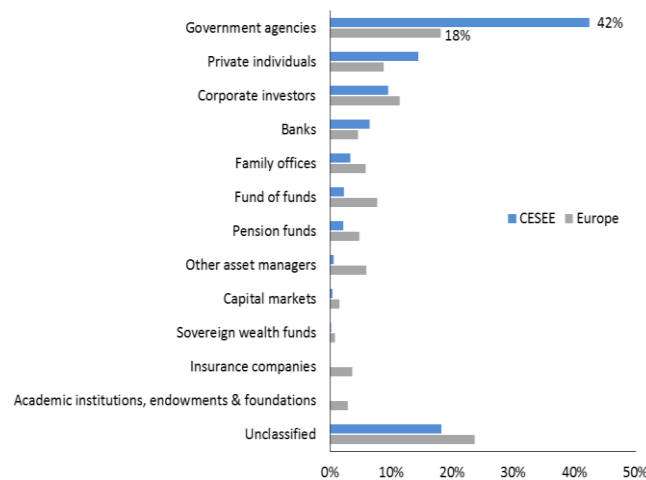
Source: EIF, based on Invest Europe data. Incremental closings during the year.

In terms of investor composition, funding for venture and growth capital is coming largely from outside CESEE, and from public sources. According to Invest Europe data²³, 21% of all new fundraising amounts for PE funds targeting the CESEE region were raised from sources within the CESEE region over the 2007 to 2018 period.²⁴ In contrast, for Europe as a whole, the average share of annual PE fundraising amounts coming from European sources amounted to 53%, and the share of funds coming from sources within the same country was at an average level of 31%. In the venture capital segment of the PE market, funds targeting the CESEE region raised 52% of their fundraising amounts from sources within the CESEE region, on average, over the 2007 to 2018 period; in Europe as a whole, the average share that VC funds raised from European investors amounted to 68%. In the years 2015 to 2018, government agencies contributed, on average, 42% of the total amounts raised by VC funds targeting the CESEE region (see Figure 34). At the same time, public VC investors' role was much less pronounced in Europe as a whole, where the average share of government agencies' contribution to VC funds amounted to 18%.

²³ The methodology used by Invest Europe for the statistics provided in this report is slightly different from the Invest Europe standard methodology for fundraising. In addition to funds located in the CESEE region, it has been taken into consideration those funds located elsewhere, but whose investments focus is the CESEE region. Invest Europe's formal definition for this approach is: The vast majority of private equity funds raised for CESEE were for the region as a whole rather than for any specific country. Therefore, fundraising is presented in this paper as a total pool of capital raised for the region. Moreover, fundraising is limited to capital raised by funds that have declared CESEE to be their target region. The data does not include those funds that may allocate a portion of their capital to the CESEE region but whose primary focus is elsewhere. Source: Invest Europe.

²⁴ Share represents the unweighted average annual share of PE fundraising amounts raised from sources outside the CESEE region.

Figure 34: Sources of capital raised for VC funds in 2015-2018 (% of total)



Source: EIF, based on Invest Europe data

Box 3: Landscape analysis: Venture Capital and Private Equity Firms in the CESEE Region – a practitioner’s view

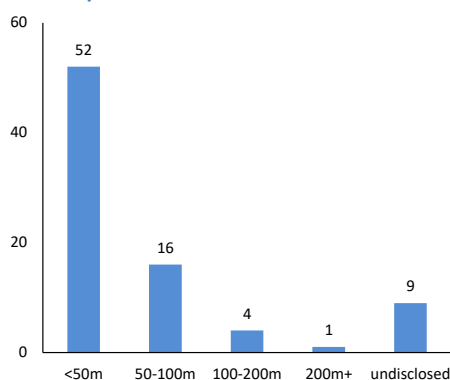
Based on a research study conducted by 3TS Capital Partners between January-April 2019, there were **88 venture capital and private equity firms active in the CESEE region**. The study has encompassed all the firms, which mainly target ICT and other technology companies in pre-seed, seed, early, expansion, growth or even buyout phase.

These firms have historically managed a total of **141 funds with a total AUM of less than €5.3 billion**, which means that the average fund size has been less than €38 million, which is very subscale in international comparison.

Most active VC funds are fairly small and there are only a few funds larger than €100m.²⁵ According to the study more than 70% of the active funds are smaller than €50 million (52 out of 73 funds which have disclosed the fund size) and most of these are really subscale at around €15-30 million fund size. In total 93% of the funds (68 out of 73) are smaller than €100 million. These small VC funds mostly make seed, early stage and Series A investments ranging from €100,000 to about €2-3 million maximum per company. There are currently only five funds larger than €100 million. The main reason for predominantly small fund sizes is there are only very few CESEE local LP investors investing in the local or pan-regional funds. Most funds rely on IFIs and/or local government organizations for substantial part of their fund commitments and local private wealthy individuals have contributed the rest of the commitments. Only fund managers able to attract foreign LP investors from outside of the region have been able to raise funds larger than €100 million. Historically for all VC and PE funds in the region more than 90% of the LP commitments have come from outside of the region, especially as the larger private equity funds do not normally have any local investors.

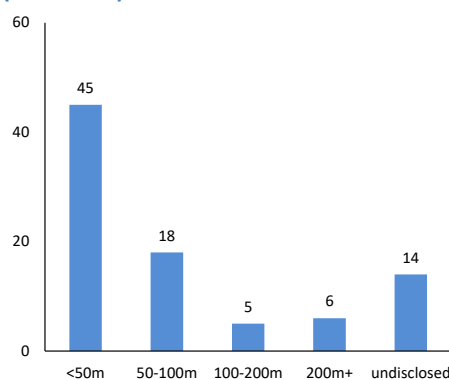
²⁵ Typical legal forms for VC funds used in CESEE countries are Dutch, Luxembourgish or Channel Island structures, because local legal vehicles and related legislations and tax matters are not (yet) adequately suited for fund managers raising money from non-domestic LP investors for alternative closed ended funds (Source: EIF.)

Figure 35: Active Funds – Total fund size (€ millions)



Source: Company websites and news sources

Figure 36: Active VC Firms: Total historical AUM (€ millions)



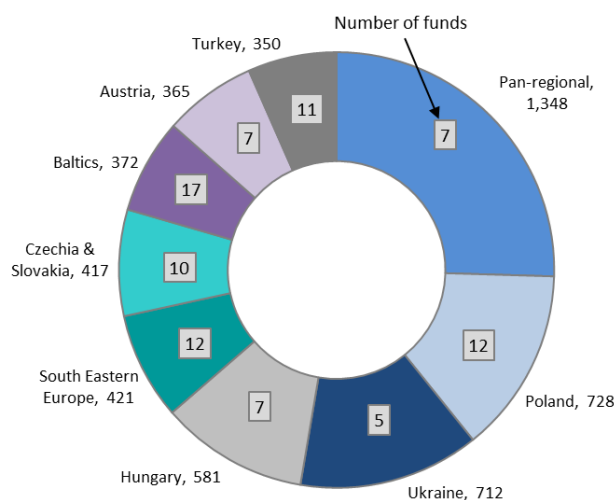
Each country or sub-region has on average around 10 active managers. According to the study the most active VC sub-region are the Baltic States (Estonia, Latvia, Lithuania) with 17 active managers. All other countries or sub-regions have between 5-12 active VC managers. This total number of managers could be considered enough for the seed and early stage opportunities in most of the CESEE countries, although some of the smaller countries in South Eastern part of the region have very few if any active funds.

There are also 7 pan-regional VC firms, which have collectively managed 16 funds with a total of AUM of €1.35 billion (so approx. €85 million per fund or €193 million AUM per firm).

Furthermore, more than 100 VC firms from Western EU, USA or other regions globally have made at least one investment in an ICT company from the CESEE region in the past 15 years. But only a handful of these international VC firms are continuously actively pursuing additional investments in the region. Most of the prior investments have been in companies, whose management has been actively marketing the investment opportunity in London, Paris or somewhere in the USA.

These CESEE VC Funds have financed almost 1,900 portfolio companies, out of which about 2/3 will seek follow-on funding. Many of these portfolio companies are still quite small and during 2019-2020 only less than 20% of them will cross the annual revenue threshold of €3m, which practitioners often consider to be the eligibility threshold for growth stage financing. 3TS estimates that this pool of 300-350 companies will try to raise expansion funding rounds ranging between €5-15 million, although a successful outcome may be difficult to achieve in many cases. Main reason is that there are currently only five active funds larger than €100 million capable of doing such investments and many of these have a larger geographic remit than just the CESEE region. Thus, these funds collectively are likely to make only 15-20 growth stage investments per annum in the CESEE countries. Additionally, there are likely to be annually another 10-15 similar investments lead by funds, which are either global or have a pan-EU mandate. In a successful year, approx. 30 companies or 10% of the qualifying pool will be able to attract growth funding between €5-15m. In order to address this funding gap and this very large attractive opportunity the IFIs and CESEE governments, financial institutions and corporates should, inter alia, direct substantially more capital to the larger funds managed by the experienced venture capitalists.

Figure 37: Assets under management and number of funds per country split (EUR millions)



Source: 3TS Capital Partners analysis; Company websites and news sources

Note: South Eastern Europe include Slovenia, Croatia, Serbia, Bulgaria and Romania. Of which, total AuM in Romania is estimated at EUR 169 million in 4 funds.

Strengths and Opportunities of the VC ecosystem in the CESEE region

The VC environment in CESEE is maturing and showing potential to become one of the up-and-coming hubs for innovation in Europe. The CESEE innovation environment is recognised worldwide for the quality of its engineering and coding/programming talent pool. An important part of the labour force is highly skilled and highly trained, which has attracted international companies to implement their R&D facilities in the region. This has the potential to initiate a positive spin, as the local talent gets trained and exposed to the highest standards, thereby creating a pool of potential entrepreneurs as well as affordable talents for start-ups. In addition, the labour market has remained relatively cheap compared to larger hubs such as Berlin, London, Paris, and the Nordics. One strong example is the traction achieved by the Baltic ecosystem (see Box 5). However, there is still a huge gap compared to more developed European start-up hubs.

Momentum in the broader European context has been attractive for the development and extension of the CESEE ecosystem. Given their proximity to the European markets, CESEE companies can benefit from access to capital and exit opportunities. In this sense, the growth of this broader European market continues to be a positive driver for the CESEE ecosystem (see Box 4).

Accelerators in the CESEE region connect start-ups to networks and resources on an international scale.²⁶ Many of them are funded by corporates, and the presence of global players supporting the ecosystem has grown (e.g., hub:raum, Campus Warsaw, Startberry, and Samsung). In addition, new pre-acceleration start-up initiatives can serve as a source of future deal flow for VC financing.

²⁶ CES Awards (2018). CEE: The resourceful region: An overview of the startup ecosystem in Central and Eastern Europe.

In the CESEE countries, the VC market has been characterised by the prevalence of public resources, in part due to the presence of certain market failures^{27, 28} IFIs and government agencies represent a key component of the VC market. A key feature of the VC market in the CESEE countries is the relatively easy access to seed-stage funds that are mainly backed by EU programmes and the European Structural and Investment Funds (ESIF), e.g. under the JEREMIE initiative in the 2007-2013 programming period and its successors.²⁹

The public involvement attracted additional private financing in the early-stage financing of VC funds. Public equity schemes increased the VC supply to a number of young, innovative SMEs in several countries of the CESEE region.³⁰ The public equity contribution managed to crowd in private investors in a market segment that had not previously been attractive to them. Alongside these developments, the performance of local VCs is gradually improving, with some players able to compete with the best VC players from Western Europe. All this can help to provide a deal flow for later stage VCs.

Box 4: European VC ecosystem

European VCs doubled amounts raised between 2014 and 2018, with increased share of non-European investors; this momentum has continued through to 2019 1H. European VC and growth funds³¹ raised EUR 19.2 billion in 2018, more than double the amount raised in 2014. This includes several large VCs closing sizeable funds targeting investments in European innovative companies³². Over the same period, the number of VC and growth funds to reach first, intermediate or final closing increased from 250 to 339³³. The composition of investors into these funds has also changed, with a growing share of non-European LPs, mainly from North America or Asia, which accounted for 20% of VC funds raised in 2018, up from an average of 10% in 2014-17.³⁴ The traction of fundraising by funds focused on European ecosystem has continued in 1H 2019. One of the drivers for increased investor appetite in European funds are the competitive returns – which have been on par with US VC returns over a ten-year horizon.³⁵

Investments by VC and growth funds into European companies peaked in 2018, topping EUR 20 billion for the first time, as compared to EUR 13.6bn in 2014.³⁶ The European average VC penetration ratio increased to 0.048% of GDP in 2018, in terms of investments (vs. the 2014-2018 average of below 0.04%).³⁷ The increase in investment volumes in Europe (10% CAGR 2014-2018) also reflected an increase of average deal size from EUR 2.2 million in 2014 to over EUR 3 million in 2018

²⁷ The justification for public support in the area of SME financing in general, and external equity financing in particular, is rooted in a number of factors, such as the presence of information asymmetries in the relationship between financier and recipient, the presence of fixed costs of investment and the existence of positive externalities originating from SMEs' innovation activities. See Kraemer-Eis et al. (2019) for an overview of the rationale for public intervention in SME financing.) In the PE/VC markets, the long investment cycles can also deter private investors, especially in early-stage financing, while public agents can be considered as more "patient" investors (Kraemer-Eis et al., 2019).

²⁸ See Karsai (2018).

²⁹ JEREMIE was a joint initiative set up in 2007 by the European Commission in co-operation with the EIB Group and other financial institutions to enhance cohesion across the EU. The JEREMIE instrument was set up to deploy part of the EU Structural Funds allocated to the regional and national Managing Authorities through new risk finance initiatives for SMEs. In this regard, JEREMIE is a predecessor to the current European Structural and Investment Funds (ESIF) backed programmes managed by EIF under the 2014-2020 programming period. See https://www.eif.org/what_we_do/resources/jeremie/index.htm for more information about JEREMIE and https://www.eif.org/what_we_do/resources/jeremie_romania_equity/index.htm for information about a new JEREMIE reflows equity instrument in Romania.

³⁰ Kraemer-Eis, H., Signore, S., & Prencipe, D (2016) provide preliminary evidence towards an effective crowding-in effect, based on EIF data. With regard to EIF activities, the EIF VC Survey, provides further insight. Fund managers stated that the EIF's presence in their market helps to crowd-in private investors. Funds in South European and CESEE countries in particular rated even more highly the presence of the EIF in their market and the EIF's contribution in filling the financing gap for companies, in attracting other VC investors and in bringing first-time teams to the market. See Kraemer-Eis, H., Botsari, A., Gvetadze, S., & Lang, F. (2018b).

³¹ Invest Europe classifies fund type by stage of portfolio company and reports on VC and growth funds separately. For purpose of this report, both contribute to VC, unless referenced otherwise.

³² For example, Atomico and Accel, raised \$765M and \$575M respectively in funds focused on Europe in 2017-18. .

³³ Invest Europe (2019b).

³⁴ Atomico (2019).

³⁵ Atomico (2019).

³⁶ Investments by VC funds only accounted for EUR 8.2bn. Investments in European portfolio companies are counted in terms of location of portfolio company.

³⁷ For comparison, the VC penetration in the UK is c.0.08% of GDP and in the US is 0.552% of GDP as of 2018 (Data extracted from OECD Stat Website: https://stats.oecd.org/Index.aspx?DataSetCode=VC_INVEST)

(vs. average of c. USD 9 million in the US over the same period).³⁸ While the majority of capital invested in European portfolio companies came from European VCs (country and pan-European funds), the share of capital from outside of Europe increased to 14% from less than 10% two years prior.

VC activity in Europe remains concentrated in several key markets – while CESEE so far has accounted for only a small share of both funds raised and investments. UK, France, and Germany are the key markets both in terms of fundraising and investments: for the cumulative period 2014-2018, they accounted for 30%, 21%, and 13%, respectively of funds raised and similarly, over 60% (jointly) of investments. CEE based funds raised less than 4% of European VC volume and accounted for a similar share of European VC investment volume in 2017 and 2018. As for investments, unlike pan-European/global focus of UK funds, 97% of CEE funds have a local mandate only.³⁹

Figure 38: VC and growth fundraising and investments in Europe, 2017-18

Funds raised (EUR million)						
	2017			2018		
	VC	Growth	Total	VC	Growth	Total
CEE	586	72	659	521	67	588
Europe	10,300	7,400	17,700	11,400	7,800	19,200
CEE share of Europe	5.7%	1.0%	3.7%	4.6%	0.9%	3.1%

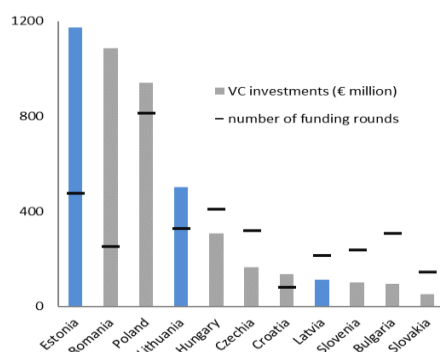
Investments (EUR million)						
	2017			2018		
	VC	Growth	Total	VC	Growth	Total
CEE	121	566	687	160	615	774
Europe	7,200	11,900	19,100	8,176	11,914	20,090
CEE share of Europe	1.7%	4.8%	3.6%	2.0%	5.2%	3.9%

Source: Invest Europe (2019a)

Box 5: Baltic VC ecosystem

Within the CESEE region, the Baltic ecosystem (Estonia, Lithuania, and Latvia) stands out across all metrics. The Baltics captured a disproportionate share of investments in CEE in 2018 – 38% of cumulative VC investment since 2013 (while representing only 6% of the region's population⁴⁰). At the same time, and the three countries are responsible for 28% of the region's funding rounds. Estonia is leading the region in terms of VC investments.⁴¹

Figure 39: Invested venture capital and number of funding rounds since 2013



Source: Dealroom.co (2019)

The numbers are based on Dealroom.co and can therefore differ considerably from Invest Europe data.

³⁸ Investment amount divided by number of companies in both VC and growth stage (Invest Europe, 2019b). In the VC stage the average is EUR 1.8 million as of 2018, in the Growth stage the average deal is EUR 5.6 million (National Venture Capital Association, 2019).

³⁹ Atomico (2019).

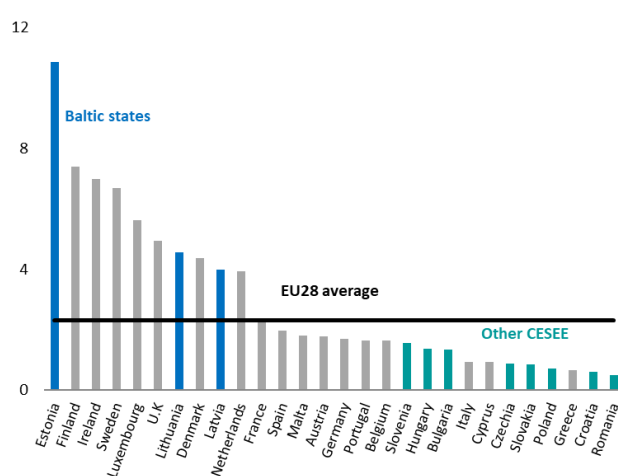
⁴⁰ EU11 countries: the Baltics, Poland, Hungary, Czech Republic, Slovakia, Croatia, Slovenia, Bulgaria and Romania.

⁴¹ See Dealroom.co (2019).

Several factors contribute to the Baltic's emergence as a hub for innovation and entrepreneurship. According to the EBRD's Knowledge Economy Index, the three Baltic States rank among the top 5 in CESEE in both Institutions and Skills for Innovation, and are on par with several OECD comparators. On the institutions side, this reflects a favourable business environment and a high level of governance effectiveness and regulatory quality. The ecosystem is also supported by a network of local accelerators operating in all three countries, some of which with a pan-Baltic approach,⁴² culture of serial entrepreneurship and presence of active angel community (comprised of former entrepreneurs).

Together with generally favourable access to finance and other background conditions, **the Baltics have the highest start-up concentration in CESEE, and a high quantity of start-ups on an EU-perspective as well.** All three states positioned above EU average in terms of number of start-ups that raised a seed-round since 2013, scaled by population, with Estonia leading the EU in this metric. 5 out of the 13 unicorns that originated in CESEE were founded in the Baltics, four of which in Estonia. These include Skype, money transfer service TransferWise and ridesharing company Bolt. The latter is responsible to one of the largest fundraising deals in the region, raising EUR 175 million in 2018. In late 2019, online retailer Vinted became Lithuania's first unicorn, after successfully raising EUR 128 million Series E.

Figure 40: Number of start-ups that raised a seed round between 2013-2019, per 100,000 inhabitants



Source: Dealroom.co; population - Eurostat

Weaknesses and threats of the VC ecosystem in the CESEE region

Government VC programmes (often financed by EU funds) in the region are often characterised by short time frames and burdensome administrative requirements, which led to a reluctance of investors to participate. Long set-up times were especially prevalent in the CESEE region's programmes (often supported under the ESI funds) as a consequence of the exhausting regulation system and inexperience of actors. This induced a shorter period for investing. In addition, requirements in terms of geographical focus and obligations for VC players to invest in regions with opportunities of limited quality left VC fund managers with no reserves for supporting their best companies. Moreover, small fund sizes have frequently prevented efficient operation. Overall, the aim to support innovation has not been reached to a desirable extent.

Despite the availability of public financing schemes, CESEE remains underfinanced and far from achieving its full market potential. The VC ecosystem is not yet complete, in particular with regard to later stage VC. While VC funds operating in a broader set of CESEE countries can provide larger investment sizes, VC investors with regional focus often share an investment round by means of co-investment amongst them. According to the *EIF VC Survey 2019*⁴³, fundraising has remained among the top challenges for VCs in the CESEE region, together with the number of high-quality

⁴² See Startup Wise Guys & EIT Digital (2019).

⁴³ Botsari, Crisanti & Lang (2019). The EIF VC Survey is a survey among VC fund managers active in Europe. In the first wave, performed in November/December 2017, 379 VCs responded to the survey, of which 41 were located in CESEE countries. See Kraemer-Eis et al. (2018a).

entrepreneurs and the exit environment. VCs headquartered in the CESEE region evaluated, on average, their fundraising environment and the availability of funding far less positive than VCs located in other European countries. Successful companies often (have to) move away from the region, partly because of the lack of growth capital funds and a low appetite for the region by non-CESEE and “pan-European” funds.

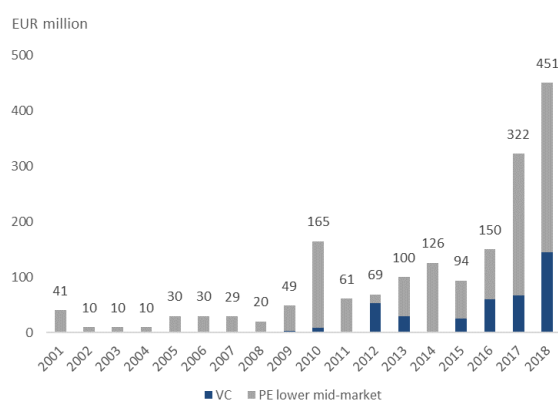
Support services could cover capacity building of local partners (banks, fund managers, business angels) as well as other stakeholders (the innovation eco-system including: incubators, accelerators, techno-parks, science parks, technology transfer offices) and should also consider targeting innovative SMEs to raise their entrepreneurship culture and the investability of their companies.

Box 6: Intervention at the EU level – the role of the EIF in the venture and growth capital market in the CESEE region

The EIF has an important role in the CESEE region by implementing EU and other funds⁴⁴, often acting as a countercyclical investor. Since 2001, the EIF invested in over 100 CESEE funds, both with pan-regional and domestic focus, and provided more than EUR 1.8bn of committed capital. The amounts committed have significantly increased since 2010 (2010-2018 represents 85% of the total amounts committed). In the VC segment of the PE market, the EIF committed EUR 0.5bn over the last 10 years in CESEE, of which half were made since 2018.

The EIF has also enabled funds to reach critical mass by validating the proposals and attracting other public and private investors. The EIF’s support, which is principally backed by resources from its main shareholders, the EIB and the European Commission, is particularly crucial for first-time managers, at first closing and/or during difficult vintage years, allowing a stabilisation of the market landscape. The EIF’s countercyclical action ensures the presence of resources for fund managers also in difficult fundraising periods. The EIF’s long-standing and continued presence in the market makes it a reference for other LPs. Its due diligence process and active monitoring ensures high governance standards and results in a recognised validation effect of supported proposals. This contributes to a signalling effect, which effectively helps to crowd-in additional investments. In regions with comparatively less developed markets, as in the CESEE countries, the EIF’s presence is even more relevant. This has been confirmed by the results of the EIF VC Survey, in which responses from CESEE countries were more positive than those from the rest of Europe. Moreover, the impact of EIF on the VC ecosystem, in particular its crowding-in effect, is larger in less developed VC markets.⁴⁵

Figure 41: EIF commitments to CESEE funds



Source: EIF

⁴⁴ See www.eif.org for more details about the EIF. The EIF’s equity activity is principally backed by resources from its main shareholders, the European Investment Bank (EIB) and the European Commission. See https://www.eif.org/what_we_do/equity/index.htm for more information about the EIF’s equity activities.

⁴⁵ Kraemer-Eis, Signore & Prencipe (2016).

Box 7: EU policy support - the InvestEU Programme

The European Commission has planned to address the financing and ecosystem issues faced by the CESEE and other countries through – inter alia – an ambitious and overarching programme of investment support, the InvestEU. The InvestEU Programme is one of the proposals for 2021-2027 tabled by the Commission with the aim of boosting private and public investment. The programme will bring together under one roof investment support programmes in the Union (building on the European Fund for Strategic Investments, the EFSI, and 13 existing financial instruments under the current multiannual financial framework, including the ones focusing on SMEs, such as InnovFin or COSME).

The InvestEU Programme consists of the InvestEU fund, which will provide an EU budget guarantee of €38 billion with the aim to trigger at least €650 billion in additional investment in four policy areas: sustainable infrastructure; research, innovation and digitisation; small and medium-sized businesses; and social investment and skills. The SME window is intended to provide a continuation, with necessary evolution taking on board lessons learnt, for a number of current financial instruments focusing on SMEs.

The InvestEU Advisory Hub will provide technical support and assistance to help with the preparation, development, structuring and implementation of projects, including capacity building. The InvestEU portal will bring together investors and project promoters by providing an easily-accessible and user-friendly website.

The InvestEU Programme will provide support to innovation in different geographical areas and different sectors. Under InvestEU the climate objectives target is set at 30% of the overall InvestEU financial envelope (subject to MFF agreement). Targets under the sustainable infrastructure window are even more ambitious. For this window, at least 55% of investment shall contribute to meeting climate and environment objectives. The key novelty of the InvestEU Fund is that it is open to implementing partners other than the European Investment Bank (EIB) Group. 25% of the EUR 38 billion EU guarantee will be open to other international financial institutions (such as European Bank for Reconstruction and Development, Council of Europe Bank) and to national promotional banks and institutions (NPBIs). The aim of this direct involvement of implementing partners other than the EIB Group (the only implementing partner under the EFSI and for most of existing financial instruments) is to enhance geographical and sectoral diversification of projects supported by reaching out to a wider range of local promoters.

The value added of public support

A majority of the EIF VC Survey respondents from the CESEE countries still sees a need for increased public support at all investment stages. However, compared to respondents from other European regions, CESEE respondents are relatively more in favour of an increase in public support for the early and later stage: 66% and 49% called for public support in the early stage and later stage respectively, compared to seed (close to 40%).⁴⁶ The respondents from the CESEE countries were the least satisfied with the availability of public support programmes, in particular with those at the national and regional level. In contrast, the level of satisfaction with programmes at European level is, on average, positive (i.e. more positive than negative responses), but still less positive compared to other regions.

Continued and further improved cooperation between public and private players is crucial to effectively respond to evolving market demands. There is substantial public support available at the pre-seed, seed and early revenue stage, but support could more strongly address later stage VC and growth stage financing, as well as the further development of professional technology transfer structures associated to universities. At least in some countries, local incubation/acceleration programmes do not have sufficient capital at their disposal to meet demand and to generate a transformational effect on the start-up ecosystem. In order to leverage national/regional funding, there is room for facilities that co-invest with regional VC funds and drive international expertise and additional funding to the local market. In addition, there are companies founded in the 1990s that are

⁴⁶ In the analysis of the EIF VC Survey results, respondents from the Baltics, Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Croatia, Romania, Bulgaria, Greece and Turkey were grouped as CESEE country respondents. See Kraemer-Eis et al. (2018a).

experiencing a generational change and succession issues, which leads to a need for replacement capital.

While there is a need for additional support, public intervention should always aim at crowding in private investors. Moreover, the strings attached to certain programmes (e.g., constraints related to the use of ESIF means) should be reduced, whenever possible, in order to increase the effectiveness of public support programmes. It is also crucial to take into account the specificities of start-up development. Innovative start-ups are often based in certain hubs, which VCs also focus on. In Europe, such hubs act as the beating heart of a complex network of national and international investments.⁴⁷ It is important to contribute to the development and the interconnection of these hubs, which also helps companies in their internationalisation efforts. However, even with improved public support measures, patience will be needed, as it will take time until the region develops a fully-fledged PE/VC market. Most importantly, successful companies and frequent exits are needed in order to attract more private capital to the region.

Business angels

Alternative early stage risk financing, particularly business angel investing, increased by 8.2% in the region between 2017-18 (compared to 15% between 2016 and 2017), driven by Poland and Hungary. The European Business Angel Network (EBAN) estimates⁴⁸ that total angel investment reached EUR 62 million in 2018, up from EUR 57 million in 2017 and EUR 49 million in 2016. This shows that 8.8% of total visible angel investments in the EU went to the CESEE region in 2018.

Average investment deal size in the region was over EUR 150,000 in an estimated 407 investments (compared to EUR 110,000 and 518 investments in 2016-17). However, except for Poland, CESEE countries generate less angel transactions in larger deal sizes (e.g., EUR 588,000 in Croatia compared to over EUR 38,000 in Estonia⁴⁹). This may indicate a lack of syndication (more than one business angel doing the same investment deal) in some CESEE countries, which is encouraged in mature ecosystems as it reduces financial risks for the business angel. Figure 42 shows a breakdown of these visible investments by CESEE country.⁵⁰ The European average investment per BAN is 1.81 million Euros, but the average deal size is 303,447 EUR.

⁴⁷ See Kraemer-Eis, Signore & Prencipe (2016). The study shows, inter alia, the networks created by hubs. Data on investment amounts originated by hubs shows that 23% of these remains in the hub, 40% reaches out to other in-country locations and the remaining 37% travels beyond the national frontier. Higher cross-border investments can be interpreted as a signal of deeper integration of the European VC market, fostering the consolidation of a European-wide VC ecosystem, to which EIF's activities have contributed.

⁴⁸ Considering difficulties in measuring the size of business angel investments (as many investments tend to be undisclosed/invisible), EBAN provides an estimate of the visible and invisible angel activity. In its 2017 data for example, EBAN assumes that the overall business angel investment size is 10 times the value of the visible market activity. In practice, the value of actual investments is unknown.

⁴⁹ In Estonia for example, 87% of business angel investments were syndicated with the rest (13%) being solo investments in 2017. For more information, see <http://www.estban.ee/about/annual-reviews/2017>

⁵⁰ EBAN (2019).

Figure 42: Angel Investments by CESEE country, 2017-2018

	No. of investments	Total BA investments	Average deal size	Total BA investments
		2018		2017
		(EUR million)	(EUR)	(EUR million)
Poland	34	16.8	494,117	14.5
Hungary	43	7.6	176,744	4.4
Czech Republic	28	7.4	264,285	6.1
Estonia	186	7.1	38,172	11.3
Bulgaria	35	5.6	160,000	7
Slovenia	21	3.8	180,952	2.5
Lithuania	12	3.12	260,000	1.9
Romania	13	2.9	223,076	3.4
Slovakia	18	2.5	138,888	1.8
Croatia	4	2.35	587,500	1.1
Latvia	11	2.3	209,090	2.9
North Macedonia	2	0.25	125,000	0.02
CESEE Total	407	62	151,646	56.9

Source: EBAN (2019)

Equity investors, especially angel investors, bring ‘smart money’ to high-growth innovative firms. Smart money is essentially a mix of financing as well as expert advice, mentorship and market connections. Non-financial assistance is notably crucial for the early development stages of innovative but inexperienced (in terms of management) firms.

There are however barriers to entry that restrict the development of a pool of business angel investors. Angel investing is associated with high levels of risk. For example, 70 percent of angel investments (e.g., USA) fail to recoup capital, although economic growth and spill overs tend to be significant, on average, based on success cases. Given the positive externalities that may potentially accrue at the societal level, this implies the need for policy support to develop the business angel market. Thus, potential business angels have to learn new investment skills and this can be time-consuming. As an example, business angel ecosystem diagnostic conducted in the Czech Republic found that there are no visible business angel networks (BANs) in the Czech Republic, particularly those of the type typically found in developed European markets (e.g., Ireland, Scotland)⁵¹. Moreover, there is a general lack of syndication of investments (more than one investor involved in funding the company to mitigate risk) as well as few individual investors in the Czech Republic. Yet, this concentration of angel activity with few individuals (rather than syndicates) suggest that angel investing is subject to an even higher levels of risk. For instance, a few investors withdrawing from the market due to bad experience may have a disproportionate impact on availability of early stage investment funds.

Policy measures to boost business angel investments could include the following:

- a. *Data collection and mapping to understand the early stage market for angel investments:* Collected data (on an annual basis) can be used to monitor the risk finance market to better inform policymaking. Data collection can be performed by the public sector or business angel

⁵¹ See Aridi et al (2018).

associations (see examples of data collection on supply of and demand for angel activity in Aridi et al. (2018)).

- b. *Addressing the lack of knowledge that one can be an angel investor.* Angel promotion can be done through the establishment of National Angel Associations, which in turn could become members of wider European networks (such as the Business Angels Europe). Such networks can give practical guidance for boosting NAA activities in each country and create connections with NAAs of other CESEE countries and more developed markets.
- c. *Establishing co-investment funds:* With the aim of supporting more individuals to become angel investors, and for existing investors to invest more, this is often used by governments to stimulate behavioral changes and helps lower the risk of investments by encouraging syndication of investments and providing portfolio diversification. Co-investment funding, as a public support instrument, is encouraged in cases of a lack of market capacity and a lack of follow on funding (in less-invested sectors or geographic locations), and is appropriate once there is at least a minimal level of existing angel activity⁵² for the fund to engage with.
- d. *Establishing tax incentives:* This is used by many countries to encourage individuals to take on the extra investment risks of being a business angel.⁵³ For example, tax relief for capital gains or the provision of loss relief on a more favorable basis than the baseline tax system could support the de-risking of investments in young, growing, and innovative businesses. Overall, tax incentives can help boost the number of business angels (and likewise encourage more angels to become 'visible' in the market). Nevertheless, tax incentivisation measures can only be fully effective within a functioning ecosystem built upon a free flow of information and a culture of risk-taking and investment. These pre-requisites would take time to be established, matched by appropriate policy interventions (e.g., general promotion of angel investment and facilitating the education of potential new investors to enable them to make informed investment decisions).

Crowdfunding

In the CESEE region, crowdfunding volumes reached €425m in 2017⁵⁴, an increase of 117 percent from 2016. Out of this amount, over 25 percent was in business debt, through P2P lending or invoice trading, up from less than 15 percent in the previous year. Baltic States, Poland, and Czech Republic have the most established crowdfunding markets both in terms of number of platforms operating, transaction volume, and regulatory environment. The market is characterised by a small number of large players accounting for most activity and a large tail of smaller players. The extent of market penetration ranges from 0.002% to 0.35% of GDP across the region, vis-à-vis around 0.2% in the more developed UK and US markets. Similar to other nascent crowdfunding markets, most activity is generated through lending based crowdfunding platforms which make up over 99% of total volume. Raising equity through crowdfunding is only established in Estonia, Poland, Croatia and Czech Republic.

⁵² See OECD (2011).

⁵³ A European Commission (2017) looked at best practices in tax incentive programmes for investors in 36 countries from within Europe and the OECD.

⁵⁴ See Ziegler et al. (2019).

Figure 43: Crowdfunding volumes (flow) in selected CESEE countries, 2017

	€ millions						% of total					
	P2P		Other debt	Total debt based	Equity based	Total	P2P		Other debt	Total debt based	Equity based	Total
Consumer	Business	Consumer					Business					
Poland	97.7	34.6	0.0	132.3	0.8	133.1	73%	26%	0%	99%	1%	100%
Latvia	75.6	12.7	3.8	92.1	0.0	92.1	82%	14%	4%	100%	0%	100%
Estonia	40.7	15.1	18.4	74.2	0.5	74.7	55%	20%	25%	99%	1%	100%
Lithuania	43.4	8.6	8.3	60.3	0.0	60.3	72%	14%	14%	100%	0%	100%
Czechia	2.7	23.5	0.1	26.3	0.0	26.3	10%	89%	0%	100%	0%	100%
Slovenia	0.2	13.6	0.0	13.8	0.0	13.8	2%	98%	0%	100%	0%	100%
Bulgaria	10.5	0.0	0.0	10.5	0.0	10.5	100%	0%	0%	100%	0%	100%
Slovakia	8.7	0.0	1.4	10.1	0.0	10.1	86%	0%	14%	100%	0%	100%
Romania	4.0	0.0	0.6	4.7	0.0	4.7	86%	0%	14%	100%	0%	100%
Hungary	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-
Total	283.6	108.0	32.6	424.2	1.3	425.5	67%	25%	8%	100%	0%	100%

Note: Volumes do not include reward and donation based crowdfunding or real estate. Business includes P2P lending and invoice trading

Source: Ziegler et al. (2019)

Firms that choose equity crowdfunding appear on average to have more intangible assets on their balance sheets. These nuances may suggest a complementary role of equity crowdfunding platforms in financing highly innovative firms. This is more relevant for CESEE where access to VC capital is limited and equity crowdfunding has more potential to open up opportunities for companies. The integration of cross-border activity has the potential to further accelerate this, enabling companies in CESEE to tap crowdfunding platforms from more developed markets such as the UK or US.

The focus in CESEE countries at this nascent stage has been on developing the enabling environment for crowdfunding platforms, with few countries having a dedicated regulatory regime in place. Recognised best practices for crowdfunding regulation include adequate provisions around the type of authorisations required for the operation of crowdfunding platforms, investor disclosures, risk warnings, due diligence/pre-funding checks, and platforms' governance and AML/CFT requirements.⁵⁵

In CESEE, there is large divergence in national crowdfunding regulation across the region. Most countries do not yet have a dedicated regulatory framework which governs the activities of equity or lending based platforms, although many are developing legislation in the context of growing activity.⁵⁶ For example, Lithuania adopted a law on crowdfunding in 2016 which eliminated regulatory obstacles for platforms and also set up its own regulatory sandbox in 2017.⁵⁷ Some platforms are obtaining authorisation in other countries allowing them to operate cross-border and take advantage of regulatory regimes in more advanced markets⁵⁸ Enabling the environment for platforms to operate cross-border is particularly important for CESEE companies to attract money into the region from a larger base of new institutional and retail investors.

National authorities can continue to take steps to support the sustained development of crowdfunding in CESEE. As markets mature, there is a need for financial regulators to develop effective regulatory frameworks which define the parameters of crowdfunding activity and remove unintended obstacles. Potential full harmonisation by the EU, via an EU Regulation, is a regulatory avenue which could provide level playing field for crowdfunding platforms across many jurisdiction in the region⁵⁹. By setting adequate rules around disclosure and valuation, regulators can also support

⁵⁵ EBRD has produced a report with Clifford Chance on Best Practices for regulating lending-based and investment-based crowdfunding. See EBRD & Clifford Chance (2018).

⁵⁶ European Crowdfunding network: country updates

⁵⁷ Gajda (2017).

⁵⁸ For example, Funderbeam is a successful Estonian equity-based platform authorised in the UK, enabling it to passport out to the EU. It also has licences with several other national regulators which has allowed it attract investors from over 115 countries to raise more than €9m in volume.

⁵⁹ In March 2018, the European Commission presented a proposal for a regulation on crowdfunding, which will enable crowdfunding platforms to provide easily their services across the EU. Platforms will have to comply with only one set of rules, both when operating in their home market and in other EU countries. For investors, the proposal will provide legal certainty as regards the applicable protection

the development of secondary exit markets. The continued regulatory harmonisation across Europe may facilitate cross-border investments and support crowdfunding in countries with smaller domestic markets. Governments can also provide incentives such as tax relief to attract innovation financing from retail and institutional investors via alternative platforms.

Debt funds

Debt funds have increased their coverage and investment activity across Europe, but have limited presence in the CESEE region. These non-bank players, also referred to as “alternative lenders” that provide private debt, exhibit a wide range of investment strategies and areas of industry focus. The global financial crisis and ensuing debt crisis in Europe led to a downturn in bank lending and a proliferation of institutional private debt providers who saw an opportunity to generate attractive returns on deals structured with superior protections versus market-based lending (e.g. traditional fixed income securities) at the time.

There appear to be few funds that focus mainly on CESEE. Three key examples of firms offering private debt are:

- Mezzanine Management (with offices in Bucharest, Budapest, Prague, Vienna, and Warsaw) invested more than EUR 640m across four funds in more than 50 enterprises.⁶⁰
- Syntaxis (with offices in Guernsey, Istanbul, London, Vienna, and Warsaw). Having a geographic focus on the new EU members and on accession countries, Syntaxis has arranged, underwritten, and led growth credit investments in transactions with an aggregate value in excess of EUR 1.2bn.⁶¹
- CVI Dom Maklerski is based in Poland and provides senior and junior debt as well as mezzanine, convertible debt and financing for distressed debt situations. Since 2012, the company has made 450 private debt investments and currently manages assets over EUR 1.3 billion in seven closed-end investment funds.⁶² In May 2018, the company announced a guarantee agreement with the European Investment Fund (EIF) for a portfolio of bonds to innovative Polish companies.

Capital markets

Capital market exchanges are an alternative venue for innovative SMEs to raise finance, although in CESEE they lag behind EU peers in terms of liquidity and depth and the cost of regulation and listing remains burdensome.⁶³ Exchanges which provide access to equity and debt capital markets could provide a solution to the financing constraints faced by innovative SMEs. In Europe, SMEs already make up the majority of most exchanges’ clients by market capitalisation. However, limited supply and demand for capital has inhibited the development of capital markets in CESEE, where most companies are small and financial intermediation has remained largely bank-orientated. SMEs still face large challenges accessing exchanges, including high brokerage fees and stringent listing and regulatory requirements which are typically the same as for large companies⁶⁴. As a result, SMEs in CESEE rely heavily on bank finance and are reluctant to use equity or bond finance.⁶⁵

rules. The Commission proposal only applies to those crowdfunding services entailing a financial return for investors, such as investment and lending based crowdfunding. On 18 December 2019, the European Parliament and the Council reached a provisional political agreement, subject to the final endorsement of these two institutions, on the Commission’s proposal on crowdfunding.

⁶⁰ Source: <http://www.mezzmanagement.com>.

⁶¹ Source: <https://www.syntaxis-capital.com/aboutus/centraleurope.aspx>.

⁶² Source: <http://www.cvi.pl>

⁶³ Vienna Initiative (2018)

⁶⁴ For the EU Member States, incentives for accessing equity markets are provided by the provisions on the setting up of “SMEs growth markets” introduced by MIFID II. SME growth markets are a new category of multilateral trading venues, with lower administrative burdens and compliance costs, introduced to facilitate access to capital for smaller and medium-sized companies.

⁶⁵ In addition to cost and administrative challenges, issues related to loss of control may add to SMEs’ reluctance of accessing equity finance.

There are a few examples of designated SME market segments on CESEE stock exchanges including the New Connect Market in the Warsaw Stock Exchange, although these remain relatively small. Specialist SME exchanges and designated SME segments can also facilitate SME access through the provision of simplified listing procedures and subsidies. Exchanges with a multi-level equity market structure which cover issues of various sizes and development stages can also provide SMEs access to capital markets and encourage companies to move to a higher market segment. They also provide a way for SMEs raising equity crowdfunding to access secondary markets and gain further institutional investment.

Apart from regulatory issues, the financial literacy of companies and consumer protection are also important factors for capital markets development. Engaging in discussions with equity and venture capital providers is clearly more difficult for SMEs than applying for bank loans. This is an issue in the entire EU, but the lack of confidence and sufficient financial literacy of small companies' managers appears more pronounced in CESEE. The relationship between financial intermediaries and their clients is also one of the cornerstones for sound and efficient capital markets. Consumer protection on capital markets requires a robust legal framework. The legal framework should contain detailed provisions against false advertising, miss-selling and out-of-court dispute resolution schemes. Transparency of contracts, high business ethics and protection of privacy are also crucial.

Capital markets development and the access of SMEs to capital markets can be fostered through complementary measures taken at national, regional and EU level. Measures at the national level can include national strategic plans for the development of capital markets, modernisation of business environment, facilitating conditions for institutional investors, enhancing capital market supervision and increasing financial literacy.⁶⁶ At the regional level, measures could be taken to strengthen cross-border cooperation. This includes facilitating foreign listing and market access, promoting cooperation between stock exchanges, creating cross-border links between local market infrastructures (e.g. central securities depositories, central counterparty clearing houses) and harmonising legislation at regional level.⁶⁷ Cross-border cooperation has already started among the stock exchanges of Central, Eastern and South-Eastern Europe. There are three regional alliances of stock exchanges with more or less advanced integration of services: *(i)* the Nasdaq Baltic Market; *(ii)* the 'CEESEG' holding (including Vienna and Prague); and *(iii)* the SEE Link platform, which is also a good example of cross-border cooperation between EU Member States and non-EU Member States in the CESEE region. Regarding the EU level, further work is warranted on the observance of the proportionality principle in EU law (i.e. by review of selected capital market directives), on the better implementation of EU law (e.g. by technical support) and further harmonization of legislation at EU level (e.g. for FinTech, crowdfunding).⁶⁸

⁶⁶ The Commission's Structural Reform Support Service has provided technical support for national initiatives by EU Member States, in particular from the CEE region, aimed at supporting the development of local capital markets.

⁶⁷ An example of cross-border cooperation in the harmonization of legislation is the harmonization of legislation regarding covered bonds in the Baltic countries. A reform of the legal framework for the issuance of covered bonds and securitisation was first launched in Lithuania. Latvia and Estonia joined the initiative later, carrying out the compatible reforms with the support of the European Commission Structural Reform Support Service. In November 2017, the Ministers of Finance of Latvia, Estonia and Lithuania signed a joint Memorandum of Understanding on cooperation for regional capital market development in the Baltics.

⁶⁸ Further details are included in the European Commission (2019), Communication on Capital Markets Union: progress on building a single market for capital for a strong Economic and Monetary Union, 15 March.

Chapter 6: The role of banks in financing innovation

This chapter introduces the role of banks that provide debt finance to more established innovative firms. It maps the application of credit guarantee scheme in CESEE. It also explores the role of more hybrid funders (e.g. venture debt or corporate VC funds).

Conventional bank finance

While banks' role in financing frontier innovation at earlier stages is limited, bank financing is suitable for imitative innovation. Bank (debt) finance is conventionally provided to companies which can demonstrate a consistent financial track record and put up sufficient collateral, and hence not suitable for younger, high growth firms, which lack both track-record and physical assets. However, with public support schemes⁶⁹, banks are encouraged to provide complementary funding to risk capital for such companies (at earlier stages) and become an important funder as these companies mature. Also, banks are increasingly active in looking at new approaches (e.g., equity mechanisms) to support innovation, particularly in strategic sectors (e.g., fintech). For example, some banks are piloting accelerators and setting up corporate venture funds to invest into fintech companies. Guarantee schemes such as InnovFin SME Guarantee Facility also allow banks to scale-up debt funding to innovative firms.⁷⁰

There is a positive link between access to debt finance and firm level innovation, as better access to bank loans can facilitate technology adoption by firms and free up the firm's internal funds to invest in innovation⁷¹. Firms with loans are around 40% more likely to innovate than those without access to credit. Unconstrained firms innovate more than constrained firms⁷². Even if not funding firm-level innovation explicitly, availability of external finance allows firms to free-up internal resources for innovation. When banks provide firms with straightforward working capital or short-term loans, this can free up internal resources, which firms can then use to finance innovation. Evidence from a broad range of developed countries suggests that firms generally prefer internal funds to any form of external finance when funding innovation.

Firms use bank loans not only to purchase external licences and know-how to adopt new technologies, but also to cooperate with their suppliers and clients to develop business solutions. Therefore, local banking markets that increase access to finance can encourage firms to learn from each other and lead to the intra-national diffusion of technology. The presence of foreign-owned banks has been associated with positive links to credit conditions.⁷³

Conventional bank financing comprises the main source of external investment finance for innovative companies. The results of the EIB Investment Survey (EIBIS) show that CESEE innovators are significantly funded either through direct bank loans or other types of bank financing (e.g., overdrafts, other credit lines).

⁶⁹ See section on Innovfin guarantee. Other support programmes include European Commission's COSME for SMEs, as well as programmes for banks via national promotion institutions (NPIs).

⁷⁰ EIB (2018).

⁷¹ Part of this chapter draws on EBRD (2014) and Bircan & De Haas (2015).

⁷² Credit constrained firms can be defined as those that need credit but have either decided not to apply for a loan or were rejected when they applied. Per EBRD BEEPS survey (2012-2013)

⁷³ Another factor that can play a positive role for reducing credit constraints to firm and increase firm's ability to access external funding is the presence of foreign banks. As per EBRD's Transition Report 2014, a higher percentage of foreign-owned banks is associated with less binding credit constraints. As a possible explanation of such results, foreign banks may be better placed than domestic banks to overcome agency problems and lending to firms. Foreign banks may then facilitate the transfer of know-how from foreign to domestic borrowers, thus boosting the local adoption of foreign products and processes

According to both EIBIS and the SAFE survey (EU/ECB’s survey on the access to finance of enterprises), credit constraints are not a primary concern for SMEs in the CESEE region. Similar trends are observed for the subset of innovative firms, although according to EIBIS, leading innovators face somewhat tighter credit constraints than other firms. The latest results of SAFE show that innovative firms viewed the availability of skilled staff as most concerning, followed by labour costs, finding customers, regulation, competition, with access to finance a lower concern. According to EIBIS, the main obstacles to investment for innovative firms in CESEE are the availability of staff with the right skills, followed by uncertainty about the future, business regulations (e.g. licenses and permits) and taxation, and labour market regulations. 73% of these innovative firms surveyed by SAFE in CESEE expressed confidence in obtaining their desired financing (in line with the EU average at 75%), with confidence in obtaining bank finance (68%) higher than equity (25%), which may reflect the underdeveloped equity and venture capital markets in the CESEE region. Confidence amongst younger firms (2-5 years) is not substantially different from that of more mature firms (10+ years).

Compared to equity, bank loans are the preferred choice for external financing of innovative firms. According to SAFE, pricing and insufficient collateral were the largest constraints to financing and improving public measures was seen as the most important enabler. Similarly, when receiving external finance, innovative firms surveyed by EIBIS in CESEE were dissatisfied with the cost of external finance and the collateral requirements (and more satisfied with the amount they obtained, the maturity of the loan, or the type of external finance). The results of SAFE also show that 50% of innovative SMEs in CESEE in need of funding to finance growth showed a preference for bank loans compared to 12% for equity and 7% for credit from other sources (in line with the EU average). Constraints to financing were not perceived as high, with 29% of innovative SMEs in CESEE (vis-à-vis 37% EU average) reporting no obstacles. The main reported constraints by those in CESEE were a high interest rate or price (21%) followed by insufficient collateral (16%) and too much paperwork (14%). Only 6% declared that they had no financing available. In terms of factors to enable financing, innovative SMEs in CESEE reported easier access to existing public measures and tax incentives as priorities. Business support services and guarantees for loans were also considered important.

Credit guarantee schemes

Credit guarantee programmes continue to be “the most widely used instrument at governments’ disposal to ease SME access to finance” (OECD, 2015; see also OECD, 2017). Moreover, guarantees are “increasingly targeting young and innovative firms in an effort to boost employment and value added” (OECD, 2016; see also OECD, 2017).

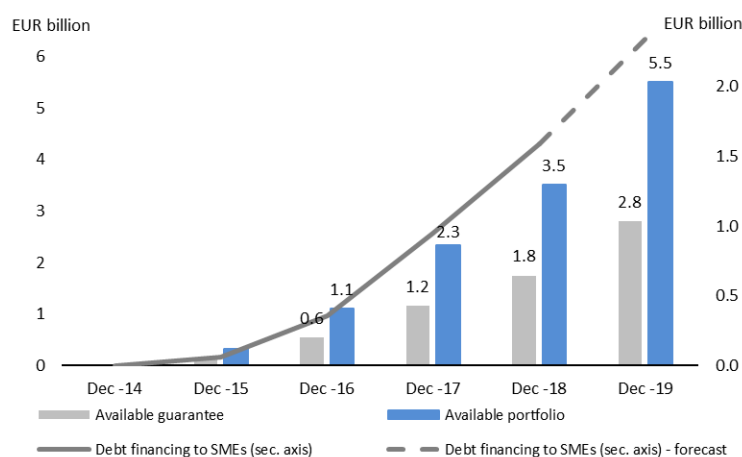
Credit guarantee schemes have enabled financial institutions to offer debt financing to innovative firms on more favourable terms. Credit guarantee schemes (CGSs) essentially provide a type of credit loss insurance to borrowers and cover a share of the default risk of a loan/SME. They are structured in the form of risk mitigation tools, which allow for partial credit risk transfer from a loan or a portfolio of loans. The 2014 Vienna Initiative Working Group on Credit Guarantee Schemes⁷⁴ confirmed that CGSs are an effective way to enhance access to finance to SMEs, as they enable a reduction in the cost of financing and/or collateral requirements.

About one in four national credit guarantee schemes operating in CESEE have programmes dedicated to start-ups and innovative firms. National guarantee schemes often provide specialised products to a particular set of clients. According of a recent survey by Poland’s national promotional bank, BGK, almost half of the beneficiaries of their *de minimis* guarantee product are young companies (up to 3 years) and start-ups.

⁷⁴ Chatzouz et al. (2017)

The InnovFin SMEG⁷⁵, an EU programme under the MFF 2014- 2020, was launched in October 2014 and is wide-spread in the CESEE region.⁷⁶ The highest level of utilisation of the instrument stems from the Czech Republic, Serbia and Bulgaria. As of March 2019, lending in the CESEE region under InnovFin SMEG reached EUR 1.7bn. An additional capacity of EUR 3.1bn has been made available to financial institutions. Since 2014, the instrument has been successfully deployed via more than 50 financial intermediaries in the region (which represent c. 30% of all intermediaries under the entire InnovFin SMEG programme), with the majority comprising of commercial banks. To date, Unicredit and ProCredit umbrella transactions⁷⁷ have accounted for half of the deployment in the entire CESEE region.

Figure 44: Evolution of InnovFin SME guarantee in CESEE region



Source: EIF

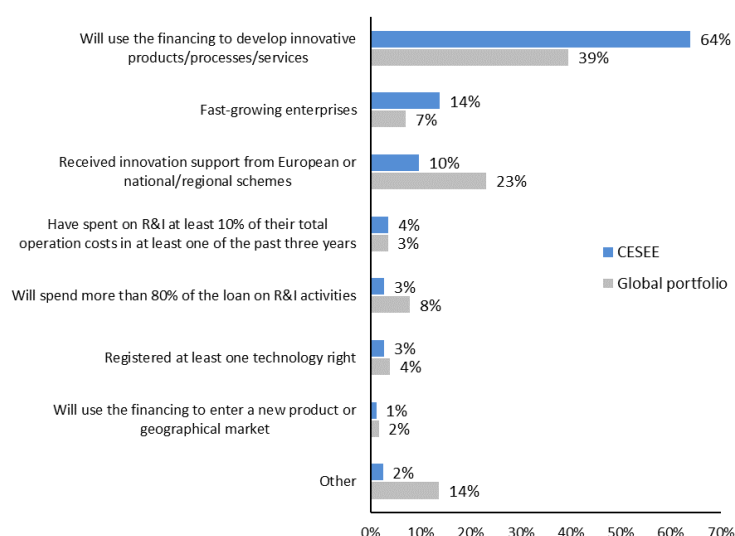
The bulk of innovative companies in CESEE region under the InnovFin portfolio are investing in new or substantially improved products, processes or services. These include the modernization of their equipment and production processes. These projects are usually characterised by an increased business, industrial or technological risk. The popularity of the aforementioned criterion can be further explained by an investment cycle that has followed the de-leveraging phase during and after the financial crisis. What can also be observed is that the share of fast growing firms (c. 15%) is also significantly higher than in the overall portfolio (Figure 45).

⁷⁵ InnovFin SMEG is one of the support mechanisms for intermediated debt financing under the broader InnovFin programme. It offers a 50% uncapped guarantee or counter-guarantee to financial intermediaries to allow them to provide debt financing on more favourable terms to innovative SMEs and small mid-caps (up to 499 employees). The instrument is supported under both Horizon 2020, the EU research programme for 2014-2020, as well as the Investment Plan for Europe (the Juncker Plan).

⁷⁶ CESEE region: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, FYROM, Hungary, Latvia, Lithuania, Montenegro, Poland, Romania, Serbia, Slovenia, and Slovakia and the Republic of North Macedonia

⁷⁷ Transactions in which subsidiaries of cross-border banking groups apply together for a global budget allocation under the programme. This budget can then be easily reallocated between markets/countries and subsidiaries in order to i) ensure the optimal use of available funds and ii) reach smaller markets where demand is more difficult to assess.

Figure 45: InnovFin portfolio with respect to innovation criteria (2014 - Sep 2018)



Source: EIF

InnovFin SMEG has proven to be an efficient tool to banks in supporting innovative companies.

InnovFin SMEG is an important component under a broader spectrum of products that are needed to support firms at different stages of innovation. In particular, a broader spectrum of guarantee coverage is needed, from which some stages of innovation would potentially benefit. For example, a higher coverage of earlier innovation stages, which are typically considered as being more risky investments, may benefit from higher coverage. The InnovFin SMEG facility has been particularly suitable for allowing banks to scale-up their lending to more established/already bankable and to a limited extent, to younger/riskier innovative firms. Continuity will be a critical factor in the context of the next Multi-annual Financial Framework of the EU. Thus, it is crucial that sufficient resources are allocated to such types of risk sharing programmes/financial instruments to ensure continuing support to SMEs and small mid-caps in the region.

The InnovFin SMEG programme has also showed that the definition of innovation has to be flexible enough (yet easily identifiable and documentable) to cater for differences between markets. This, together with the wide range of debt instruments (senior & subordinated debt, leasing, bonds, guarantees) that financial intermediaries can offer under the programme, are critical to meet the different needs of innovative companies in CESEE and beyond.

Venture debt

Venture Debt (VD) is a product offered by banks and specialised funds as a complementary source of later stage risk financing, usually following VC funding. Venture debt is a risk capital in the legal form of a loan which is able to absorb risks typically undertaken by straight equity investments. As a form of risk capital, the venture debt is less costly than equity for companies as it does not lead to unnecessary dilution of existing investors. In most cases, venture debt augments existing VC funding or is blended with equity solutions. Over 65% of companies from US, UK, EU which raise venture debt have done so between a Series A and Series D equity round.⁷⁸

⁷⁸ See Cambridge Judge Business School & Saïd Business School (2016). The report refers to Preqin data and analysis of total of 1,445 venture debt rounds in 881 companies in the US, 81 rounds in 65 companies in the UK, and 105 rounds in 77 companies in the EU (outside of the UK).

The Venture Debt market is relatively underdeveloped in Europe and in nascent stage in CESEE region. In Europe, Venture Debt is an underused product with only 5.4% of venture capital backed businesses obtaining it compared to 20% in the US.⁷⁹ Only 10% of global venture debt deals between Jan 2010 and March 2019 were in Europe, compared to 24% of global venture capital deals. Furthermore, venture debt activity in Europe is concentrated almost entirely in the UK, France and Germany. Only around 3% of venture debt deals completed in Europe are in central or eastern Europe.⁸⁰

Venture Debt as a lending instrument varies significantly in its form and is offered by different providers – specialised funds, banks, and IFIs. Short term bridge-financing instruments are generally smaller in size, with higher interest rates, and are repaid from the next equity funding round. Long-term lending in the form of venture debt is larger in size and with lower interest rates, and is repaid from operating cash flows. Some types of venture debt include financial and other covenants, which might limit management’s freedom to pursue their business strategy. Most types of venture debt products allow companies to avoid dilution, and do not require a valuation to be set for the business. While venture or growth debt funds typically provide shorter investments, banks hold a long term view, providing an opportunity to begin a relationship with the client early for future traditional banking services.

Figure 46: Venture debt providers comparison

Category	Funds	Banks	International financial Institutions (IFIs)
Relationship duration	Usually 2-5 years of investment	Long term view, future corporate client pipeline	Long term view
Pricing	Typically more expensive, dictated by hurdle rates agreed with LPs of the fund	Typically cheaper, balance sheet funding	Typically cheaper, balance sheet funding
Ancillary business required	No	Yes (e.g. deposits, credit cards, FX)	No
Warrants	- Typical for early stage venture debt - Higher probability to be exercised	- Typical for early-stage venture debt - Higher probability to be sold back	Usually not applicable
Business characteristics	High growth businesses	High growth businesses	Innovative, socially beneficial and responsible businesses
Geographic focus	Demand and profit driven	Demand and profit driven	Social objectives of equal access to capital to boost the economy
Examples	- Boost & Co - Bootstrap Europe - Harbert European Growth Capital - Kreos Capital	- Barclays - Goldman Sachs - Silicon Valley Bank	- European Investment Bank - KFW Bank

Source: Deloitte (2019)

Venture debt is costly for banks from a regulatory perspective which reduces their appetite to offer the product. As per Basel III, banks are required to apply a high risk-weight to venture debt exposures and face high costs of capital. IFIs can play a role in helping to alleviate bank’s burdensome capital requirements through the provision of risk-sharing products.

⁷⁹ Note: <10% in the UK. Source: Cambridge Judge Business School & Saïd Business School (2016).

⁸⁰ Deloitte (2019). Data on deals completed in Europe is based on a sample of 285 deals published on the providers’ websites.

A regulated bank can be in this business, although entering the niche is a longer term game with the need for close relationships with VCs and highly specialised risk officers who have the capacity and knowledge to assess growth drivers of businesses in specific sub-industries. Debt should strive to complement equity, especially at an earlier pre-profit stage. Important to ensure that incentive/guarantee schemes eventually phase-out to allow room for private capital (debt and equity).

There is further potential to develop commercial banks' offering of Venture Debt, with the support of IFIs. The EIB has been the largest provider and market maker of this product in Europe. There is potential to grow the both the supply and demand for this product and increase the volumes offered by commercial banks. For commercial banks, this implies (i) making operational changes to accommodate and roll out venture debt as a new product, and (ii) building closer relationships with domestic and international risk capital providers to identify potential venture-stage businesses that may benefit from taking on venture debt.

Corporate VC funds

Beyond debt, banks are exploring new ways to engage with the innovation ecosystem⁸¹. Banks are showing deeper engagement with the broader ecosystem, such as through M&A, sponsorship of incubators/accelerators, partnerships with risk capital providers and FinTech platforms, and set-up of corporate venture capital funds (CVC). CVCs are in-house units which can invest directly in innovative companies.⁸² These tend to focus on FinTech and/or other technology companies of strategic value to the banks' operations⁸³.

Figure 47: Selection of large European Banks' CVC Funds

BANK	NAME	FOCUS REGION	SIZE	FOUNDED	FOCUS SECTOR
RBI	Elevator Ventures	CESEE	EUR 25m	2018	FinTech
OTP	1 - Day one seed investment	CESEE	1 – EUR 3.3m	1 – 2013	1 – innovate startups
	2 - Venture Capital Fund I		2 – EUR 22m	2 – 2010	2 – innovative companies
	3 - Digital Venture Capital		3 – EUR 6.5m	3 – 2017	3 – Digital/FinTech
SANTANDER	Santander InoVentures	UK and International	USD 200m	2014	FinTech
HSBC	HSBC Strategic Innovation Investments (SII)	UK and International	USD 200m	2014	Innovate / Technological Startups
BARCLAYS	Barclays UK Ventures	UK	-	2018	FinTech / Technology
ING	ING Ventures	Netherlands and International	EUR 300m	2017	FinTech
ABN-AMRO	ABN AMRO Digital Impact Fund	Netherlands and International	EUR 50m	2015	Digital / Technology
KBC	KBC Start it Fund	Belgium and Netherlands	EUR 10m	2016	Innovative Startups
BNP PARIBAS	BNP Paribas Capital Partners Innovation Fund	France	-	2018	FinTech / Insuretech
CREDIT SUISSE	SVC Ltd	Switzerland	CHF 100m + CHF 30m (FinTech)	2010	Risk Capital for SMEs, FinTech
UNICREDIT	Unicredit Evo (joint venture with Anthemis)	International	USD 200m	2016	FinTech
INTENSA SANPAOLO	Neva FinVentures - Corporate Venture Capital Vehicle	Europe	EUR 30m	2016	FinTech and innovative non-FinTech

Source: Company websites

Banks are adopting new models to engage with the innovation ecosystem. These include setting up accelerators, with various degrees of support to participants and considering direct equity investments in

⁸¹ Banks engagement with the innovation ecosystem is driven by the desire to stimulate innovation within their own core operations, gain early insights into new technologies and develop VC and venture management networks. A recent EBA survey shows in addition to developing products internally, European banks are engaging with FinTechs through setting up incubators/accelerators and investing directly/indirectly with FinTech startups.

⁸² For purpose of this report, only bank corporate venture activity is highlighted, although corporate venture activity is present more widely in corporates across multiple sectors.

⁸³ Examples of the latter include companies with products and services that improve or complement banks' existing operating systems, processes and capabilities, e.g. cybersecurity, big data analysis, cloud computing and biometrics

companies of strategic complementarity to their banking businesses. In CESEE region, there are several examples of this.

- In 2017, Raiffeisen Bank International (RBI) launched a CESEE dedicated FinTech accelerator Elevator Lab, and has since supported several companies. In 2018, RBI launched its corporate venture arm Elevator Ventures targeting to invest up to EUR 25 million, alongside partners and VC co-investors, in regional Fintechs.
- KBC has brought its accelerator model, StartIT, focused on early stage tech companies to Budapest in 2017 and to Prague in 2018, building on the presence and networks of its local subsidiaries, using local mentors, workshop providers and selection teams. Unlike other models which have kept to the FinTech niche, StartIT engages with companies across sectors. The initiative aims to connect innovative companies, for example targeting the SME productivity space, to KBC's client base and explore complementarities for KBC's banking infrastructure. The program supported so far 24 companies in Hungary and 10 in the Czech Republic.
- Unicredit Bulbank piloted a small fund in Bulgaria to explore investment opportunities in the FinTech space. The bank is also an active facilitator of the ecosystem, building relationships with both emerging tech companies and venture capital firms, as well as supporting initiatives to educate bank professionals on new technologies.

VC related activity by banks, either through investment in VC funds or CVC, is likely to remain a non-core activity in light of costly capital requirements on such exposures. Per Basel III, exposures to VC funds, whether through the look-through or fallback approach carry between 250% to 1250% implications on capital.⁸⁴ VC investments also require specialized skills and operational agility which are difficult and costly for banks to attract and build upon. Capital treatment of CVC is similar to treatment of VC exposure.

Box 8: The use of IP and intangibles to facilitate business finance in CESEE

Intangible assets are an increasing focus for company investment; expenditure in this area now outstrips that on tangible assets in the US and northern Europe. However, these assets remain difficult to harness in lending, despite growing evidence that they contribute to more favourable lending outcomes. A greater banking and financial sector focus on the value-producing intangible assets CESEE businesses own could help direct the flow of capital to the companies with greatest growth potential and impact, and produce spin-off benefits to the wider economy.

Nature of intangible investment and its outcomes

Intangibles investment, as captured in government surveys, is generally captured under six headings (to which a seventh, creative and artistic originals, is sometimes added). These can be summarised as scientific and technical research and development activity; software development; design activity; organisational development and process improvement; training; and branding. Most of this expenditure is not eligible for balance sheet recognition, since it does not meet the required tests set by accounting regulations; this exacerbates a known issue faced by knowledge-based companies, who frequently do not own the few tangible assets they need to do business, leading to perceptions that they have a weak financial standing.

These areas of expenditure lead to the production of several categories of intangible assets, some of which can be registered as intellectual property rights (patents, trade marks, designs), or have a degree of automatic protection under copyright law. The other categories can be summarised as contracts (with customers, agents, distributors, suppliers), internal resources (such as trade secrets and proprietary processes), external relationships (contact networks and reputational assets) and awards and endorsements (such as regulatory approvals and permissions to trade). These all support cash flow in varying degrees, and a range of independent studies in the US and Europe have confirmed that intangibles-rich companies grow faster, employ more people and fail less often.

Intangibles and lending

While use of intangible assets is not a commercial proposition for conventional banks yet, the development of this approach is an area in need of policy intervention to tackle two sets of challenges: (i) valuation/realisation of intangible assets (and

⁸⁴ Bank for International Settlements (2017).

standards around this); (ii) high transaction costs due to low scale of such transactions as well as heterogeneity of intangible assets.

A recent paper published by OECD's SME and Entrepreneurship group⁸⁵ concludes that there is a market failure to value intangibles properly, especially in debt markets, and several challenges need to be addressed to enable SMEs to leverage these assets to obtain finance. It highlights three potential ways in which consideration of intangibles can be incorporated into lending practices: use of the assets in unsecured lending to obtain comfort in the company's substance and its financials and ensure that the lender captures appropriate value producing assets within its security envelope; use of the assets as replacement collateral (which is complicated by the fact that intangibles are not recognised under the Basel III capital adequacy framework); acquisition of the assets for an agreed amount and a licence-back arrangement providing the business with assured exclusive use in return for a stream of payments over an agreed term.

The OECD paper examines the experiences of a number of countries (China, Japan, Korea, Malaysia, Singapore, three European countries and the US) in promoting or facilitating intangible asset consideration by various means. These interventions have been necessary because there are a couple of key hurdles that policy measures may be needed to overcome: primarily, the need to reduce transaction costs (which are otherwise high at the low volume of loans currently being provided) and the need for the valuation process to be more standardised and consider the extent to which any value attributed to these assets will in fact be realisable.

Recent work has been conducted by the British Business Bank and UK Intellectual Property Office⁸⁶, using a sample of UK firms benefiting from the Enterprise Finance Guarantee (EFG) scheme, to clarify the link between intangibles ownership and company borrowing performance. The exercise, while focused on UK market, showed that overall default rates reduced where the business owned any registered IP rights. Viewed by value, the average loss was halved when any IP rights were present. These lower rates of default and loss were found to be broadly consistent regardless of loan age, lender, sector, company size (by turnover), age of business, loan value and tenor (duration). There were some variations depending on the type of rights present, with patents having the strongest effect on risk profile, while trade marks were the most numerous. Whilst this research does not prove that the presence of IP rights was the primary determinant of the lower rates of default and loss, it suggests, at least when looking at a sample of UK firms, that there may be greater merit in examining and understanding the IP owned by business loan applicants than previously assumed.

Development of intangibles-backed financing

Measured at a macro-economic level, the proportion of investment made in intangibles in CESEE is lower than other parts of Europe. However, this masks the presence of a large and increasing number of high-growth, knowledge-based businesses in the region, who are intangible asset-rich and face difficulties raising funding for growth in immature equity markets. Whilst lenders will not wish to support companies who do not meet basic debt serviceability criteria, they can be assisted to obtain meaningful levels of comfort from scrutiny of these assets, which could have a collateral value placed against them if this is appropriately guaranteed and/or insured by a recognised and rated source.

Specific steps that would form a basis for positive change for intangibles-backed financing include:

- Encouraging standardised methods of intangible asset valuation for lending purposes (to improve comparability and factor in recovery potential);
- Addressing market capacity to analyse companies' intangible assets;
- Offsetting the risk and cost for banks to test credit decision approaches that incorporate companies' intangible assets (either directly or indirectly);
- Facilitating data collection to observe links over time between use of intangible assets in underwriting and company repayment capacity/outcome.

⁸⁵ Brassell & Boschmanns (2019).

⁸⁶ British Business Bank (2018).

Chapter 7: Framework conditions

This chapter looks at the framework conditions of the innovation ecosystem from the firms' perspective, including support for enhancing investment readiness, incentives for increasing supply of innovative finance, and business environment conditions at every firm life cycle stage (i.e., entry, growth and exit) in the CESEE region.

Conducive framework conditions are critical for a successful innovation ecosystem. They involve a favourable business climate starting from opening a business to exiting one, a well-defined legal framework (regulating implementation of financial instruments such as contract enforcement), investment and business friendly tax regime, and an enforceable intellectual property (IP) regime. This local environment is also supported by local intermediaries such as incubators, accelerators, advisory programmes, tech hubs, science and technology parks, and technology transfer office which support and connect the demand and supply sides of investment. In this chapter we look at these components from a CESEE viewpoint.

Targeted advisory support delivered by intermediaries for innovators can be a catalyst for improving local framework conditions. Advisory's role in the region not only includes direct project promoter support with financial aspects, but also plays much wider educational and ecosystem creation roles. One example is the European Investment Bank's Advisory Services, which include a dedicated innovation finance support mechanism (see case study below).

Box 9: Case Study – EIB's Innovation Finance Advisory as an example support mechanism for promoting access to finance for innovation

The European Investment Bank⁸⁷ provides a number of supporting services beyond lending. EIB's advisory offering in CESEE includes several advisory programmes for local institutional counterparts and project promoters alike. The financial advisory offering for innovation focuses on bankability aspects of projects, whereby experienced advisors work directly with project promoters on refining their business and financial plans with a view of successfully obtaining project funding. On average c. 25% of the project portfolio is attributed to CESEE and since establishment in 2015 nineteen project promoters (private and public) in the region received this type of upstream support.

One example of such advisory work is with a Latvian University, which is developing a new campus as part of its wider strategic plan. The advisory support includes best practice and case study analysis, investor interviews, financial and business plan support – all with the goal of increasing “bankability” and defining an optimal financing solution for the complex multi-stage project.

Going beyond direct work with project promoters, EIB Advisory also delivers thematic and sector analysis of systemic investment gaps and barriers to access innovation finance. Recent access-to-finance gap analysis includes sectors such as space, life sciences, deep tech, and innovative transport.⁸⁸

Local intermediaries, particularly incubators and accelerators, provide varying degrees of business development, mentoring, and funding support for innovative firms. As an example, Start-up Yard, a renowned accelerator in the CESEE region offers some funding for startups participating in its program (after being selected following a competitiveness process). It also has an informal angel investment network made up of some of the members of their pool of business mentors (each of whom has a minimum of 15 years of work experience and comprised of local executives of multinationals and successful founders). The 2016 European Accelerator Report 2016⁸⁹ found that there were a total of 47.6 million euros of investments in 3,701 startups made by 193 accelerator programmes in the region. No CESEE country ranked in the top 10 by investment (topped by the UK at 15.6 million euros) and in

⁸⁷ See www.eib.org for more details about the European Investment Bank.

⁸⁸ Studies are publicly available on EIB Innovation Finance Advisory's website: <https://www.eib.org/en/products/advising/innovfin-advisory>

⁸⁹ The report defines accelerators as having the following traits: (i) competitive application process, (ii) provides pre-seed investment (equity or grant), (iii) focuses on small teams, (iv) provides time-limited support, and (v) have start-up cohorts/batches (as opposed to individual companies). Source: Gust (2016).

the top 10 by number of startups accelerated (topped also by the UK at 992, Figure 48). For example, compared to the UK (the frontier in Europe), 15.6 million euros were invested in 992 startups from 44 accelerators. Conversely, only 0.1 million euros were invested in 7 startups from 1 accelerator in Romania, for example. Nevertheless, the situation in Romania has changed recently, with the support of EU funds managed by EIF. Thus, the two venture capital funds launched with EU funds in 2018/2019, GapMinder and Early Game Ventures, with total resources (including private monies) of EUR 66 million, include entrepreneurship accelerators with cumulated budgets of 8 million euro and a 5-year plan to invest in 80 to 100 early-stage startups.

Figure 48: Accelerator investment by CESEE country compared to the UK, 2016

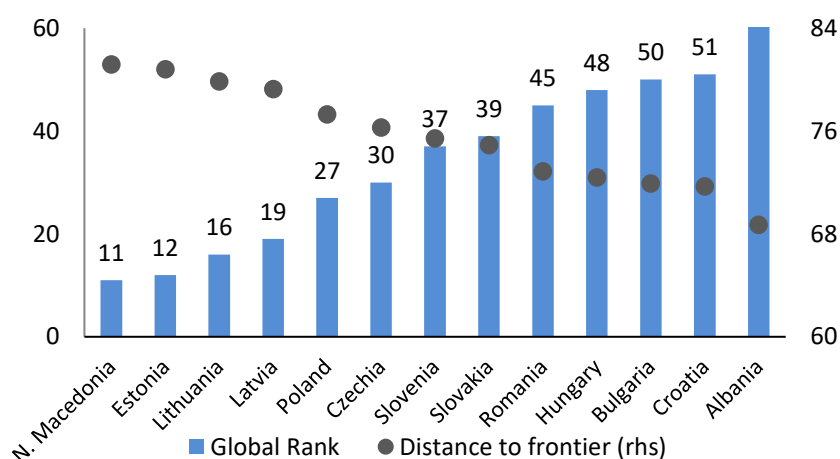
	Investments (in EUR millions)	Startups invested (number)	Accelerators (number)
United Kingdom	15.6	992	44
Estonia	0.4	20	2
Lithuania	0.2	7	2
Poland	0.1	49	5
Czech Republic	0.5	23	2
Hungary	0.4	10	2
Romania	0.1	7	1
Bulgaria	0.1	15	3
Slovenia	0.5	31	2

Source: Gust (2016)

There are even fewer accelerators active in the Western Balkans due to the small and fragmented nature of the ecosystem. Most of these accelerators are mentor based and offer no equity. An exception is the ICT Hub in Belgrade, which offers equity, operates a business angel venture fund and has a regional outlook, with operations Montenegro and Bosnia.

According to EIBIS, business and labour market regulations rank highly as an investment obstacle in the CESEE region. Close to 70% of respondents acknowledge that this particular framework conditions is a constraint. This is supported by a lacklustre Ease of Doing Business Ranking for some CESEE countries, including Croatia, Bulgaria and Hungary. These countries are about 30 percentage points away from the frontier (calculated based on best performance observed on each Doing Business indicator across all economies and time, i.e., since 2005). Better performing CESEE economies such as North Macedonia and Estonia are about 20 percentage points away from the frontier, with a competitive ranking of 11th and 12th out of 190 countries. These countries also ranked competitively based on average distance to frontier (DTF) score for OECD high-income countries, which is about 18.5 percentage points away from the frontier (See Figure 49 below).

Figure 49: Ease of Doing Business, 2018



Source: World Bank Doing Business database

Dissecting regulatory conditions further using Doing Business database shows that there is heterogeneity in Starting a Business. Some CESEE countries rank weaker in the Starting a Business category. For example, Czech Republic and Poland each ranked 30th and 27th in the general Doing Business ranking, however they ranked worse in the Starting a Business category at 81st and 120th respectively. This is related to the time and cost needed to start a business. For example, where it takes 37 days to start a business in Poland, it only takes 3.5 days in the best CESEE scorer (Estonia) and only ½ day in New Zealand (the best performer among 190 economies in this category) (see Figure 50).

Figure 50: Starting a business, 2018

Economy	Starting a business ranking	DTF - Starting a business	Procedures (number)	Time (days)	Cost (% of income per capita)	Minimum capital (% of income per capita)
Estonia	12	95.15	3	3.5	1.2	16
Latvia	21	94.11	4	5.5	1.8	0
North Macedonia	22	93.94	4	7	0.1	0
Lithuania	27	93.05	4	5.5	0.6	19.3
Albania	45	91.49	5	5	12	0
Slovenia	46	91.48	4	7	0	39.6
Romania	64	89.67	6	12	0.4	0.5
Hungary	79	87.6	6	7	5.4	43.8
Czech Republic	81	87.44	8	9	1	0
Slovak Republic	83	86.95	7	12.5	1.1	17.2
Croatia	87	86.39	8	7	7.2	12.5
Bulgaria	95	85.37	7	23	1.2	0
Poland	120	82.78	5	37	12	10.7

Source: World Bank Doing Business database

Exiting a business, as measured by the ability to resolve insolvency, also shows heterogeneity. Most exits are expected to be negative, such as in the form of bankruptcy given the high risk nature of investing in innovative companies. Yet resolving insolvency can be made easier in order to encourage 'second chances' among entrepreneurs. However in the CESEE region, frameworks related to resolving bankruptcies remain a concern and conditions are heterogeneous between countries. For example, while costs related to insolvency has decreased for CESEE countries (e.g., cost reduced by 1/3 for

Poland from 22% in 2007 to 15% of debtor's estate in 2018), bankruptcy remains expensive for many CESEE countries compared to the EU-28 average of 10% (e.g., 18% of the debtor's estate in Slovakia). The high costs to resolving insolvency help fuel fears of failure and negatively affect the culture of entrepreneurship (see Figure 51).

Figure 51: Resolving Insolvency, 2018

Economy	Resolving insolvency ranking	DTF - Resolving insolvency	Time (years)	Cost (% of estate)	Recovery rate (cents on the dollar)	Strength of insolvency framework index (0-16)
Slovenia	10	83.69	0.8	4	88.7	11.5
Poland	22	77.71	3	15	63.1	14
Czech Republic	25	76.69	2.1	17	67	13
North Macedonia	30	72.54	1.5	10	47.7	15
Albania	41	66.13	2	10	41.6	14
Slovak Republic	42	66.08	4	18	47.3	13
Estonia	44	65.62	3	9	40.6	14
Bulgaria	50	60.02	3.3	9	36	13
Romania	51	59.78	3.3	10.5	35.6	13
Latvia	53	59.1	1.5	10	40.1	12
Croatia	60	55.11	3.1	14.5	32.7	12
Hungary	62	54.75	2	14.5	43.7	10
Lithuania	70	49.37	2.3	10	45.3	8

Source: World Bank Doing Business database

Financial investments by VCs and angel investors are based on positive exits, such as through mergers and acquisitions (M&As) or initial public offerings (IPOs). This provides opportunities for investors to gain returns on their investments and fuel further investments on other innovative firms. Therefore, weak exit conditions can hinder more private investors to invest in these firms, especially those which are investor-ready.⁹⁰

Exit markets in the CESEE region are dominated by M&As. In the CESEE region, Invest Europe data shows that in 2018, venture capital divestments reached about EUR 48 million measured at historical investment cost, equivalent to more than 1% of total VC exit values in Europe. Poland and Czechia are the largest markets for VC exits in 2017, with divestment values at 52% and 16% of the CESEE total. As to exit routes in the VC segment of PE, management/owner buy back is the most popular form of exit in the region (32% of total value of divestment at cost), followed by trade sale with 30%. Public offerings are very rare, compared to 22% of VC exit routes in Europe as a whole. In terms of sector, the consumer goods and services sector divested the most, valued at EUR 437 million at cost (equivalent to about 39% of total). This is followed by ICT at EUR 286 million at cost (26%), as well as Biotech and healthcare (14%).⁹¹ In contrast, VC divestments across Europe are led by ICT representing 46% of total, followed by biotech and healthcare (30%) and consumer goods and services (8%).

⁹⁰ Wilson (2015).

⁹¹ Invest Europe, "Central and Eastern Europe Private Equity Statistics 2016," (August 2017).

Figure 52: PE Exit routes in CESEE and Europe, 2018

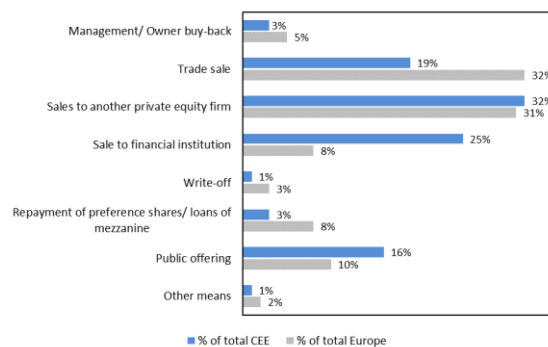
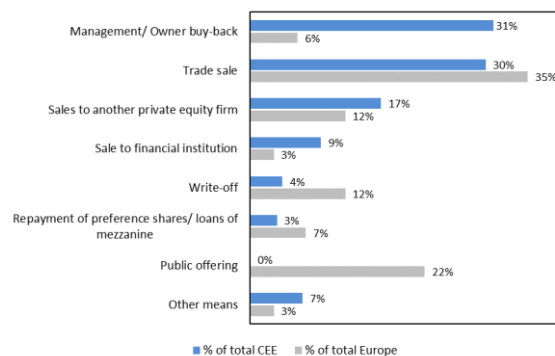


Figure 53: VC Exit routes in CESEE and Europe, 2018



Source: Invest Europe

Figure 54: VC Divestments in CESEE and Europe, by sector, 2018

	CESEE		Europe	
	Amount in EUR thousands exit value at historical investment cost	% of total exit value at divestment cost	Amount in EUR thousands exit value	% of total exit value at divestment cost
Agriculture	1,023	0.1	200,000	0.6
Business products and services	51,704	4.7	7,900,000	25.4
Chemicals and materials	32,402	2.9	1,700,000	5.5
ICT (Communications, computer and electronics)	286,395	25.9	6,300,000	20.3
Construction	41,301	3.7	600,000	1.9
Consumer goods and services	436,999	39.5	7,900,000	25.4
Energy and environment	15,045	1.4	800,000	2.6
Financial and insurance activities	27,273	2.5	1,800,000	5.8
Real estate	1,565	0.1	100,000	0.3
Biotech and healthcare	156,516	14.0	2,700,000	8.7
Transportation	50,863	4.6	800,000	2.6
Other	6,517	0.6	300,000	1.0
Total divestment	1,107,603	100.0	31,100,000	100.0

Source: Invest Europe.

A strong legal framework that is able to implement regulations through contract enforcement is imperative to sustain a healthy innovation finance ecosystem. Some countries rank competitively such as Lithuania, Estonia, and Hungary, whereas enforcing contracts are more problematic for Slovakia, Czech Republic and Slovenia (see Figure 55).

Figure 55: Contract enforcement, 2018

ECONOMY	ENFORCING CONTRACT RANKING	DTF - ENFORCING CONTRACT	TIME (DAYS)	FILING AND SERVICE (DAYS)	TRIAL AND JUDGMENT (DAYS)	ENFORCEMENT OF JUDGMENT (DAYS)	COST (% OF CLAIM)	ATTORNEY FEES (% OF CLAIM)	COURT FEES (% OF CLAIM)	ENFORCEMENT FEES (% OF CLAIM)
LITHUANIA	4	78.8	370	40	240	90	23.6	8.6	6	9
ESTONIA	11	74.34	455	60	320	75	21.9	9	11.9	1
HUNGARY	13	73.75	605	60	365	180	15	5	8	2
ROMANIA	17	72.25	512	52	365	95	25.8	7.7	8.1	10
LATVIA	20	71.66	469	49	300	120	23.1	14.3	6.4	2.4
CROATIA	23	70.6	650	50	365	235	15.2	8.6	4	2.6
NORTH MACEDONIA	35	67.79	634	70	437	127	28.8	16.3	6.9	5.6
BULGARIA	40	67.04	564	105	334	125	18.6	10	5.6	3
POLAND	55	63.44	685	60	480	145	19.4	12	5.4	2
SLOVAK REPUBLIC	84	58.63	775	70	525	180	30.6	14	6.6	10
CZECH REPUBLIC	91	58.21	611	88	410	113	33.8	13.1	5.7	15
ALBANIA	120	53.66	525	34.9	300	180	34.9	25	5.7	4.2
SLOVENIA	122	52.97	1160	30	800	330	12.7	7.6	3.5	1.6

Source: World Bank Doing Business database

Dynamic linkages between business and academia remain a challenge in CESEE countries. For example, Estonia and Czech Republic each ranked 40th and 41st respectively (out of 137 countries) in terms of industry-university collaboration in R&D, and they are behind other EU countries such as Belgium (9th) and Ireland (13th)⁹². This may help explain the relatively weak startup formation in more knowledge-intensive fields such as biotechnology despite active research strengths. Further impediments to industry-academia linkages include the underutilization of IP regime instruments (in spite of availability of legislation) as well as low levels of public research contracted by the private sector in the Czech Republic, for example.⁹³

Investment tax incentives are not widely adopted in the CESEE region. Investment tax investments targeting profit and losses can be deployed to encourage more investments in start-ups. Examples include tax credits, reduced capital gains tax, and provisions to rollover or carry-forward capital gains or losses.⁹⁴ Yet, its popularity is not high in the CESEE region. A recent survey of tax incentives for VCs and angel investors shows that among CESEE countries, only Poland and Slovenia have implemented a tax incentive, particularly on tax exemptions on the disposal of stocks and shares and corporate income tax exemptions, respectively. Hungary has a planned tax incentive for the future, but other CESEE economies have nothing planned.⁹⁵

Tax incentives for entrepreneurs, particularly on R&D activities, are more popular in the CESEE. R&D tax incentives come in the form of tax credits, enhanced allowances, and accelerated depreciation on R&D expenditures as well as reduced corporate tax rate on IP income (“patent box”). Figure 56 provides a snapshot of different tax incentives used by CESEE countries, with many (e.g., Bulgaria,

⁹² Schwab (2018).

⁹³ Srholec and Sanchez-Martinez (2018).

⁹⁴ Wilson (2015).

⁹⁵ PwC (2017).

Czech Republic) using a mix of tax incentive types. Estonia however does not provide any incentives on R&D.⁹⁶ The effectiveness of such tax incentives schemes is yet to be assessed.

Figure 56: Available R&D tax incentives in CESEE

	Tax credits	Enhanced allowance	Accelerated depreciation	Patent box
Bulgaria	✓		✓	
Croatia		✓		
Czech Republic	✓ (reduced corporate income tax)	✓		
Estonia				
Hungary		✓		✓
Latvia		✓		
Lithuania		✓	✓	
North Macedonia				
Poland	✓ (reduced corporate income tax)	✓		
Romania		✓	✓	
Slovak Republic	✓			
Slovenia		✓	✓	

Source: European Commission (2014)

Co-investment funds are another tool to stimulate angel investment activities by encouraging more individuals to become angel investors, and for existing investors to invest more because they lower the risk of investments through portfolio diversification and investment pooling. One example is the Estonian Business Angels Co-Investment Fund “United Angels”, where the Fund manager is required to find private investors that would invest 50/50 with the Fund on pari passu investment basis at the deal level (with average deal size of EUR 500k). Another example is EIF’s European Angels Fund which provides co-investment equity funding to business angels and other non-institutional investors. While a compartment dedicated to particular CESEE countries does not yet exist, the EIF, through its new pan-European EAF compartment (EAF Europe) will reach out to business angels not eligible for the existing country-dedicated compartments, i.e. based elsewhere in Europe such as in CEE, a particularly untapped region for EAF.⁹⁷ Other similar fund types are available, for example, in Lithuania (Business Angels Fund) and Poland (i.e. PFR Biznest FIZ)⁹⁸. In 2018, EBAN has published a compendium of Co-Investment Funds with Business Angels as a tool to help its members illustrating a list of 163 co-investment initiatives and 92 case studies⁹⁹.

⁹⁶ European Commission (2014).

⁹⁷ See www.eif.org/eaf or https://www.eif.org/what_we_do/equity/eaf/index.htm for more information about the European Angels Fund (EAF).

⁹⁸ EBAN (2017).

⁹⁹ 2018 Report can be accessed here: <http://www.eban.org/compendium-european-co-investment-funds>

Chapter 8: Conclusions and policy directions

This chapter provides a summary of the reports' key findings and a menu of policy options to address the identified challenges for strengthening financing for the innovation ecosystem in the CESEE region.

Key findings

Stronger role for home-grown innovation to increase productivity is a key element of the new growth model for CESEE. While technology importation will still maintain a role in helping to close the productivity gap, a gradual increase in local innovation, together with a switch from manufacturing/industrial production towards tradable services, is necessary to maintain economic convergence. Education and training play a key role, and there is an untapped potential for improvement in the CESEE economies in this respect. In addition, the mobilization of domestic savings should be enhanced (and complement foreign financing), as it can play an increasing role, by providing another, more stable source, of local currency funding that supports investment. The efficient use of EU structural funds will also help close the significant gaps that exist in infrastructure, notably in transport, energy, and digital infrastructure.

The supply of venture risk capital and other funding sources has significantly increased in CESEE region, translating to higher investment volumes for innovative companies across the lifecycle. However, funding for venture and growth capital is still coming largely from outside CESEE and driven mainly by public programmes supported by EU funds. Moreover, the region's innovation ecosystem remains underfinanced as compared to the EU, particularly in later stages. Availability of risk capital has increased 3-fold over the last 5 years, enabling doubling of VC investments in the CESEE region. While CESEE's venture capital asset class increased over this period, when compared to Europe, it remains smaller (as share PE asset class, and as share of GDP) and concentrated in the seed and start-up stages.

The region is particularly underfinanced in the later stage venture, with only 15% of venture capital investments compared to 30% in Europe. Venture debt remains underdeveloped, with EIB as main provider. Firms in later stages rely mainly on internal financing, and otherwise tap into bank debt, the main source of external finance. Banks have become more engaged in servicing more established innovative companies through debt products supported by credit guarantee schemes (e.g. InnovFin). Several banks have opened incubator/accelerator programmes or corporate venture capital funds to selectively partner with and/or invest in innovative companies of strategic fit (e.g. Fintechs).

The pipeline and quality of investable opportunities in CESEE as well as the number of successful CESEE-founded companies has visibly grown, attracting attention of international investors. The success of software-based tech businesses has been in part driven by a high concentration of software developers in the region. CESEE region has produced 13 unicorns with many other companies gaining international visibility and funding traction. These companies have been mainly software-based technology businesses providing solutions to specific problems and addressing a global market. With a concentration of c.1 million software developers in the region and a legacy of technical universities, the region has gained attention as a hub for technical talent. As a result, international investors are increasingly investing in the region – both directly, by funding CESEE-founded companies, and indirectly, as LPs in CESEE-focused funds.

The local and regional innovation ecosystems have become more sophisticated, with a more diverse set of actors at play. Not only has the number of incubators/accelerators grown in the region, the scope and quality of their services has improved. Today, CESEE has a growing number of entrepreneurs who have gone through the full cycle of building and funding innovative companies and exited successfully. Such serial entrepreneurs have been a positive drive of the entrepreneurial

culture, investing as angel investors, mentoring start-ups, and connecting the local ecosystem to global networks.

Enabling Policy directions

The key findings have pointed out several challenges in the CESEE innovation ecosystem. On the financing side, beyond existing early-stage VC financing, the challenge is to attract or enable access to later stage risk capital. On the demand-side, the challenge is to encourage entrepreneurship and further the applied R&D and research commercialisation agendas, while continuing to improve the enabling environment for company creation, growth, and linkages to the regional ecosystem and global markets.

Supply-side

To further develop the VC market in CESEE with a focus on addressing the later stage financing gap, the following measures should be considered:

1. Increasing availability of and access to growth risk capital:

- **Developing the local institutional investor base** Governments should create incentives for domestic institutional (e.g. pension funds, insurance companies) and private investors to invest into VC funds, while at the same time taking into account the risk characteristics of such investments. This may involve changes in legislation to broaden the asset classes that certain institutional investors are able to invest in. Moreover, it is also key to educate the local VC ecosystem and investors and to inform them about the potential and particularities of risk capital investments. Public support for the next stage of developing local hubs in CESEE should allow experienced local VC and PE funds to combine public resources with private LP capital and to use public resources beyond regional or national boundaries, in order to enable the raising of bigger mid-stage VC funds that can operate beyond national borders.
- **Attracting international investors to the region:** This includes attracting international LPs to CESEE-focused funds and global funds to invest in CESEE-founded companies. In addition to financial investors, this may include attracting interest of strategic investors, through their CVC activities or broader engagement with the local ecosystems. This is a pull and push process, linked to the overall enabling environment for international investors (including the challenge of small/fragmented markets), the maturity of the CESEE ecosystem (including barriers, such as other investors' restrictions), traction of CESEE-founded companies, and sufficient data about CESEE opportunities and prior fund performance. Regional funds have a key responsibility in showcasing investment opportunities and potentials to international LPs.
- **Continued EU support, including through Funds of Funds programmes¹⁰⁰:** Lessons to take into account for the next round of public programmes for the risk capital market (incl. through Fund of Funds programmes) include a more flexible Pan-European approach to funds' geography restrictions (i.e. reducing the legacy focus on the country dimension) and addressing administrative burden through more simplified rules and lower reporting requirements. Public support should adapt market-oriented conditions in order to crowd in private sector investments and to put the local VC community in the same level playing field as other more developed markets.
- **Generate more data on the supply and demand for risk investments.** Data collection and dissemination on VC performance, on business angels and networks' activity (visibility of angel activities), credible deal flow, and on tech transfer (licensing, spinning off, collaborations)

¹⁰⁰ At the EU level, VentureEU's priority actions under the CMU include expansion of the European Venture Capital Funds regional (EuVECA) and proposals to address the bias in the tax systems to favour equity financing over debt financing. See <https://ec.europa.eu/programmes/horizon2020/en/ventureeu>

would be highly beneficial for analyzing and benchmarking the risk capital activity in CESEE. The availability of data will allow for developing baseline measure of market size and existing investment activities, better allocation of efforts, and evidence-based policy making.

2. Develop capital markets and other alternative sources of capital for innovative companies:

- **At the national level, develop national strategies for capital market, improve the business environment, facilitate conditions for institutional investors, enhance capital market supervision and increase financial literacy.** Business exits currently happen almost exclusively through M&As. The development of local capital markets is needed to open other channels, such as IPOs.
- **At the regional level, strengthen cross-border cooperation.** This includes facilitating foreign listing and market access, promoting cooperation between stock exchanges, creating cross-border links between local market infrastructures and harmonising legislation at regional level.
- **At the EU level,** further work is warranted on the observance of the proportionality principle in EU law, on the better implementation of EU law by Member States and further harmonisation of legislation at EU level.
- **Support the sustained development of crowdfunding in CESEE.** The focus in CESEE countries at this nascent stage has been on developing the enabling environment for crowdfunding platforms, with few countries having a dedicated regulatory regime in place.

3. Introduce new debt products targeting later-stage innovative companies:

- **Venture debt:** There is potential to grow the both the supply and demand for this product, which is underdeveloped in Europe and even more nascent in CESEE. Beyond selected existing players (mainly EIB), this product may be served by specialized commercial banks which operate outside of the region (e.g. Silicon Valley Bank). IFIs can play a role by facilitating appropriate regulatory treatment, investing in venture debt funds, and providing risk-sharing products or other financing where needed.
- **Commercial bank debt, blended with IFI funds:** CESEE commercial banks can continue providing debt to bankable companies for financing their innovation investments, backed by an IFI credit guarantee (e.g. InnovFin). Support for such guarantee products is expected to be a part of the next Multi-annual Financial Framework of the EU. For efficient existing tools, continuity should be ensured and it is crucial that sufficient resources are allocated to such types of risk sharing programmes/financial instruments to ensure continuing support to SMEs and small mid-caps in the region. Improvements to the current structures could include differentiated levels of capital relief (e.g. higher/full capital relief to enable servicing of riskier portfolios products) and streamlined reporting requirements and eligibility criteria, which should also be flexible enough (yet easily identifiable and documentable) to cater for differences between markets. In particular, a broader spectrum of guarantee coverage is needed, from which some stages of innovation would potentially benefit. For example, a higher coverage of earlier innovation stages, which are typically considered as being more risky investments, may benefit from higher coverage.
- **Intangible-backed debt financing:** Intangibles-backed financing by commercial banks is non-existent in the region. The following enablers would be needed to encourage introduction of this product: set-up standardised methods of intangible asset valuation for lending purposes (to improve comparability and factor in recovery potential); address market capacity to analyse companies' intangible assets; offset the risk and cost for banks to test credit decision approaches that incorporate companies' intangible assets (either directly or indirectly); facilitate data collection to observe links over time between use of intangible assets in underwriting and company repayment capacity/outcome.

Demand-side and Framework conditions

To address demand conditions and create a conducive business environment for strengthening the CESEE innovation ecosystem, the following measures should be considered:

1. **Address research commercialisation and develop linkages between business and academia:** Increasing business R&D investments in the CESEE region is key for the general competitiveness of the region's firms and industries and in turn for creating the necessary demand for knowledge-intensive services from local knowledge creating institutions and startups. This emphasises the role of public policies incentivising private R&D funding as well as technology adoption and upgrading. Technology transfer and research collaboration between business and academic remain to be a challenge in CESEE countries. Addressing the commercialization of research from universities and public research institutions through licensing and academic entrepreneurship is key for developing deal flow, especially in the research-based startups. Support could more strongly address the entrepreneurial agenda within universities and further development of professional technology transfer structures (University Third Mission of economic development contribution).
2. **Upgrade the capacity of entrepreneurship support organizations:** Local incubation/acceleration programmes often do not have sufficient know-how and capital at their disposal to meet demand and to generate a transformational effect on the start-up ecosystem. In order to leverage national/regional funding, there is room for facilities that co-invest with regional VC funds and drive international expertise and additional funding to the local market.
3. **Develop targeted advisory support for innovators:** Advisory and technical support to innovative entrepreneurs and startups can be a catalyst for improving the investment readiness of startups. National and regional innovation agencies have a key role in devising and implementing such programmes directly or through local intermediaries. Advisors' role in the region not only includes direct project promoter support with financial aspects, but also plays much wider educational and ecosystem creation roles.
4. **Address barriers to entry and information asymmetry which restrict the development of a pool of business angel investors.** Policy measures to boost business angel investments could include the following: data collection and mapping to understand the early stage market for angel investments; promoting angel investing to address lack of knowledge that one can be an angel investor (awareness raising, networking, training and mentoring of new Angel investors); establishing co-investment fund structures to allow for better portfolio diversification and investment pooling; establishing tax incentives; support the development of angel networks and syndication
5. **Alleviate barriers to investment:** Business and labour market regulations rank highly as an investment obstacle in the CESEE region. For instance, the time and cost to start a new business needs to be significantly reduced in many countries of the region to help innovative ideas to materialise. Faster and less costly regimes to resolve insolvency are also needed to ensure a dynamic business environment.
6. **Diversification of investable pipeline and risk investment activities:** There is an overconcentration of risk investment activities in the ICT sector while few related and growth-prone sectors (hardware, engineering, and industry 4.0 solutions) and regions are underserved. Co-investment funds and tax incentives could encourage private investors to diversify their investment portfolios into a broader range of sectors.

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Annex 1: Terms of reference

EBCI Vienna Initiative



Terms of reference – Vienna Initiative Working Group on Financing for Innovation

Background

Investment in innovation in CESEE has been much lower than elsewhere in the EU. Economies in the CESEE region are dominated by small firms, which often lack dynamism, innovation and growth potential. As a consequence, there is an evident slow-down in capital formation and productivity growth in the region, compared to the productivity convergence observed prior to 2008-09. But it is not only the quantity of the capital stock that is lagging, its quality is also an issue - the composition of investment is tilted towards machinery and non-residential construction; while the share of intangibles is low. The growth of productivity appears to be associated with the investments in intangible assets, as opposed to total investment. Thus, a new, more balanced growth and financing model is needed with a stronger focus on innovation and increased productivity.

A larger percentage of businesses need to engage in R&D and other innovation activity in order to increase the region's long-term growth potential. In the past, the region's growth was driven largely by the reallocation of resources from inefficient firms to more efficient competitors. In the future, a larger contribution will need to come from productivity improvements at existing businesses, driven by innovation. The innovation does not necessarily need to happen at the frontier – importing and/or adopting existing technologies can help support productivity improvements. Cross-border growth and integration into global value chains can also be a powerful catalyst for productivity growth.

External sources for financing innovation activity / intangible assets, in particular in early-stage companies, have traditionally included business angels, venture capital, and publicly-supported schemes. As bank finance relies on collateral and demonstration of sufficient track record, role of banks in funding firms' innovation activity has been mostly limited to cases involving some form of credit guarantee. However, the banking sector can play an important role in this, for example, by not only better identifying innovative firms¹⁰¹ and helping address their financing gap, but also by working more closely with and supporting other potential providers of financing for innovative firms, such as venture capital and private equity firms.

Key objective

The key objective of the Working Group will be to:

- a) Identify the ecosystem gaps and policy priority areas to facilitate (private and public) investment for innovation activity, with a focus on (i) innovation and productivity drivers and

¹⁰¹ Innovation to include frontier and imitative innovation by corporates / SMEs – with a definition to be agreed by Working Group participants.

- constraints, (ii) mapping, review, and evaluation of the existing policy mix that targets innovation and entrepreneurship;
- b) Investigate the role of banks and alternative providers of financing (such as venture capital) in funding different (i) forms of innovation (from adoption/adaptation of technology to frontier innovation) and (ii) stages of innovation (from start-ups to mature firms);
 - c) Support the development of appropriate tools for banks to identify, screen, and assess innovative firms and combine instruments to meet investment needs for the CESEE region;
 - d) Assess how to strengthen the cooperation amongst IFIs, banks and alternative providers of financing for innovative firms, such as venture capital and private equity firms.

Topics to be covered

The Group will look into the following topics:

- Collect and summarise data on structure, scale, and key features of financial instruments offered by banks, IFIs, and alternative providers of financing (such as venture capital / private equity) to innovative firms.
- Consider how banks can more effectively engage in supporting innovative firms (beyond lending under credit guarantee facilities), for e.g. by engaging with venture capital / private equity ecosystem and co-financing new separate PPP vehicles that are focused on innovative firms.
- Identify business sectors / areas of innovation with significant demand and high potential for additionality for such products and the capacity in which local investors can also contribute to the funding needs.
- Examine regulatory barriers and other applicable challenges faced by banks and firms (for e.g. non-funding related constraints such as lack of managerial capabilities) that impede innovation activity.
- Evaluate how well existing instruments are suited to financing cross-border expansion of innovative firms.

Output

The Working Group will produce a report presenting the most important points of discussion, highlighting relevant experiences, and proposing solutions for banks and IFIs for supporting innovative firms.

Composition

Each Vienna Initiative member will nominate one or two representatives having a relevant background and experience. The EBRD and EIB will co-chair the working group and provide its temporary secretariat. The group's membership should not exceed 40 participants.

Communication

The report will be presented for endorsement at the 2019 Full Forum meeting and will be published on the VI website.

