

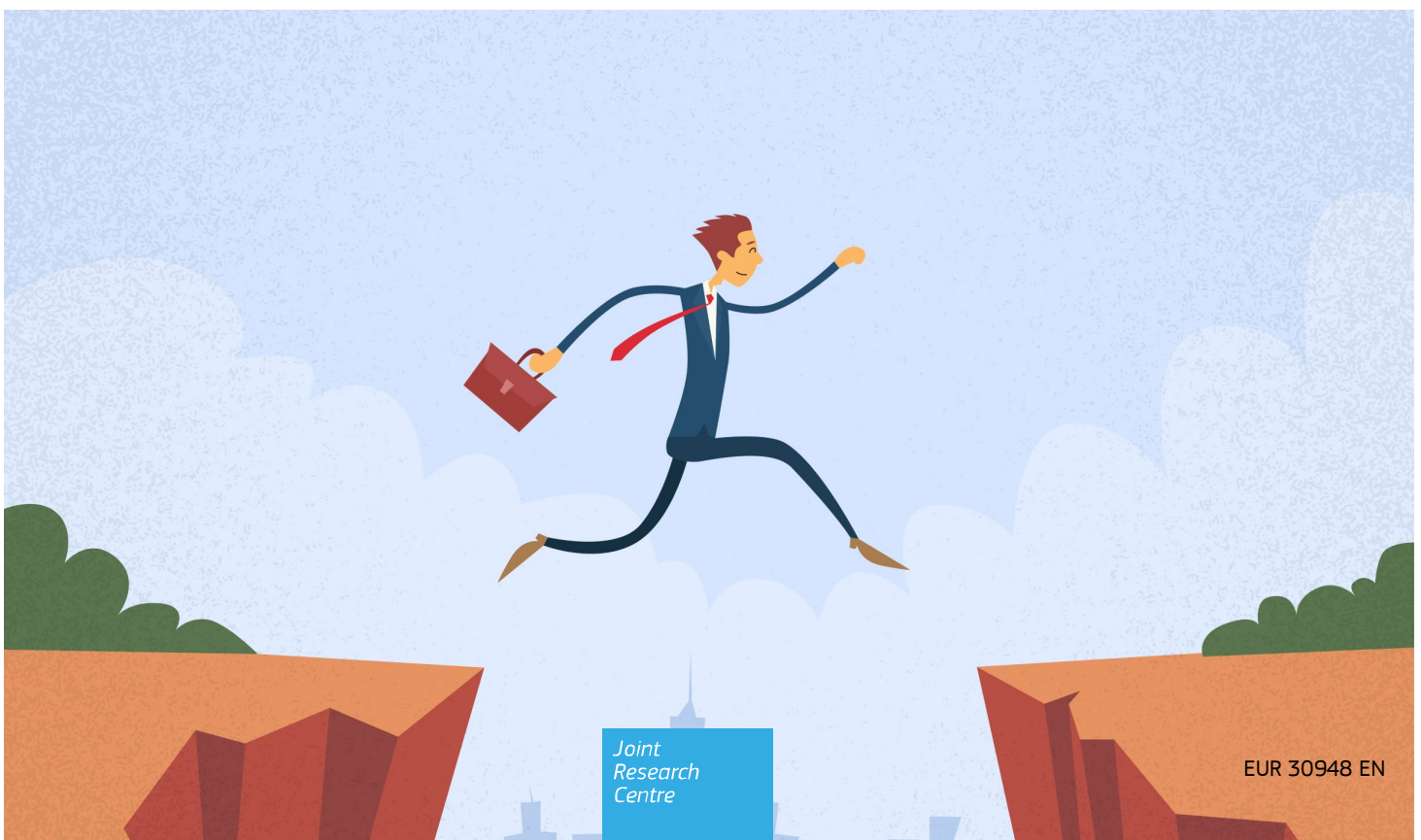
# JRC SCIENCE FOR POLICY REPORT

## Tackling the Scale-up Gap

*Evidence and impact of the scale-up financing gap for innovative firms in Europe and reflections on potential solutions – based on an Expert Webinar held on 5<sup>th</sup> October 2021*

*Anita Quas, Colin Mason, Ramón Compañó,  
James Gavigan, Giuseppina Testa*

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**Contact information**

Name: Ramón Compañó  
Email: [ramon.compano@ec.europa.eu](mailto:ramon.compano@ec.europa.eu)

**EU Science Hub**

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## **Abstract**

The number of scale-up businesses in the EU, particularly unicorns, lags behind the US and China. This is partially attributed to a deficit in scale-up finance. Based on an a webinar between experts which took place on 5<sup>th</sup> October 2021, this paper reports and comments on the available evidence of the scale-up financing gap in the EU and discusses its causes and consequences. The paper also reviews what types of instruments might address this gap and discusses issues that need to be addressed in the formulation of effective policy interventions. Finally, it points to missing data, existing knowledge gaps, and areas on which further analysis is required to define better policies.

## Foreword

Deep tech startups are an important driver of business transformation and renewal which make our economies stronger and more resilient. However, to realise their full economic potential, and, in some cases, even become unicorns, startups need to grow rapidly once their market viability has been established. Facilitating this scaling-up is an important aim of innovation policy.

In this regard and despite the remarkable increase to 82 privately held EU unicorns in 2021, I find it worrying that the number of unicorns emerging in the EU still lags far behind China and the US. Besides, the venture capital sector which caters for the financing needs of high-risk, high potential innovative startups is growing at a slower pace in the EU than in the US and China and the resultant growing financing gap in the EU is most acute in the scale-up growth stages. Besides, US investors participated in five out of six of the largest deals in Europe. As a consequence, many potential EU unicorns move abroad to avail of better conditions in which to develop, notably due to better access to large amounts of scale-up financing. At the same time, the investment level in early stage startups in the EU is similar to that in the US. This shows the risk of Europe just being an incubator supporting the early stages of startups which then move outside the EU when they scale-up to become unicorns. While all this compromises our competitiveness and our technological sovereignty, I am convinced that we have the capacity and the will to make Europe the global powerhouse for startups, in particular in the new wave of deep tech innovations.

Against this background, in April 2021, the so-called 'EU Unicorns Group' proposed, *inter alia*, that an EU sovereign fund of the order of a €100 billion be set up to help fill the scale-up financing gap in Europe. This proposal prompted an interesting debate at EU level involving policy makers and experts from academia, research bodies and stakeholder organisations. As part of this debate, on the 5th of October 2021, I opened a one-day on-line seminar entitled "Tackling the Scale-up Gap" involving over a hundred such experts with the aims, among other things, of better quantifying the scale-up financing gap, establishing its causes and discussing how best to address it. The seminar was jointly organised by European Commission services under my responsibility - the Joint Research Centre, the Directorate General for Research and Innovation and the European Innovation Council and SME Executive Agency.

This report shows the importance of taking innovative policy measures to avoid that Europe becomes the incubator for non-EU based unicorns. It summarises the main insights from the seminar, and frames them in the current policy debate. I trust that it will help advance the relevant research and analysis needed to inform the policy response to this issue as well as enabling the identification and design of concrete policy measures.

*Mariya Gabriel*

*EU Commissioner for Innovation, Research, Culture, Education and Youth*

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## **Authors**

Anita Quas (University of Milan)

Colin Mason (University of Glasgow)

Ramón Compañó (EC Joint Research Centre)

James Gavigan (EC Joint Research Centre)

Giuseppina Testa (EC Joint Research Centre)

## Executive summary

The EU is lagging behind the US and China in its ability to transform its innovative entrepreneurial start-ups into high growth companies. The European Investment Bank (2020) has recently pointed to Europe's "poor track record when it comes to forming start-ups and scaling up young firms with high growth ambitions, particularly when compared to the United States and China". The EIB's analysis indicates that the EU lags behind the US in its number of young, high growth firms by a factor of three (EIB, 2020). A key indicator is its lower number of unicorns – defined as start-up companies that have reached a valuation of more than \$1 billion. Based on the JRC's analysis,<sup>1</sup> the EU has just 6.8% of the world's unicorns, 13% of the number in the US and 35% of China's total. This is partially attributed to the lack of large EU-based VC funds capable of making 'big ticket' investments and so giving rise to the 'scale-up gap', 'second valley of death' or 'second equity gap'. Concern has been expressed that this gap might widen as the global economy recovers from Covid.

Nevertheless, the number of unicorns has increased in Europe in recent years, reaching 92 in June 2021 after being virtually non-existent at the start of the previous decade.<sup>2</sup> A record 61 VC-backed unicorns completed investment rounds in the first semester of 2021, beating the previous best set in 2020. While most European unicorns to date are in the UK, France, and Germany some are also appearing in smaller countries including some with less-developed innovative, entrepreneurial ecosystems. Meanwhile, the aggregate value of unicorns rises steeply, reaching €253.3 billion through Q2 2021, more than double the 2020 value – €106.9 billion, noting "value" in this context is virtual, based on the price that the latest investor is willing to pay.

In the last three years alone, since 2018, the cumulative number of unicorns in Europe has tripled, and their aggregate value has increased six-fold. This is attributed to the significant increase in capital flowing into each stage of the European VC ecosystem, resulting in the growth of valuations. As the flow of VC has increased, larger rounds have been completed and companies have been able to grow their valuations, especially at the late stage where unicorns typically close deals. But while the growth in Europe is impressive, it still lags the US significantly: the aggregate value of unicorns in the US was €1.2 trillion, compared to €253.3 billion for the same quarter in Europe.

## Main points

While there is no single established way to measure financing gaps, the weight of evidence and insights emerging from various studies and analyses by academic and financial experts, is that the **EU has a significant scale-up financing gap** which is hampering the growth and expansion of innovative start-up companies when they reach a certain threshold. Amidst the incomplete and fragmented evidence landscape, one particularly compelling insight comes from VC investment figures and trends and comparisons with other regions of the world. In particular, VC investments in EU firms is about one sixth of what it is in the US and while the volume is increasing fast in EU, the gap with the US is widening. More specifically, with regard to scale-up financing, the corresponding proportion of late stage VC is 6.5 times bigger in the US than in the EU, underlining the focus of the scale-up gap concern. And according to the EIF, Europe's gap with the US persists and is even widening.<sup>3</sup>

**Not tackling the financing needs of innovative companies may turn out to be detrimental for Europe.** Europe faces the risk a) of losing share in the global tech market and ultimately of losing technological sovereignty, b) of becoming an incubator for other world regions, without being able to harvest the results of publicly-funded research programmes and missing out excellent ventures, c) that technologies, knowledge and jobs are relocated elsewhere, c) of further

<sup>1</sup> Based upon CB Insights data on unicorns as of 29<sup>th</sup> June 2021

<sup>2</sup> Pitchbook (2021) Unicorns Defining the New Norm.

[https://files.pitchbook.com/website/files/pdf/PitchBook\\_Analyst\\_Note\\_Unicorns\\_Defining\\_New\\_Norm.pdf](https://files.pitchbook.com/website/files/pdf/PitchBook_Analyst_Note_Unicorns_Defining_New_Norm.pdf)

<sup>3</sup> [https://www.eif.org/news\\_centre/publications/EIF\\_Working\\_Paper\\_2021\\_69.htm](https://www.eif.org/news_centre/publications/EIF_Working_Paper_2021_69.htm)

[https://www.eif.org/news\\_centre/publications/EIF\\_Working\\_Paper\\_2021\\_76.htm](https://www.eif.org/news_centre/publications/EIF_Working_Paper_2021_76.htm)

fragmentation of the European innovation ecosystem, and f) of failing to achieve policy objectives, particularly the strategic twin, green – digital transition.

In particular, as technology markets are global, less well-funded European scale-ups will be less competitive in global markets. In view of the lack of big European-based venture capital (VC) industry, funding for later-stages deals has partially been supplied by foreign (mainly US) investors. While attracting non-EU investors facilitates the international growth of their investee businesses, it often leads to the gradual relocation of activities and ultimately of decision centres outside the EU. The ultimate concern is that Europe will continue to lose unnecessarily some of its scale-up companies through relocation to the US or elsewhere to raise finance if they are unable to do so in Europe. In the mid to long term the acquisition and relocation of companies may result in the loss of technologies, knowledge and jobs for Europe. It is also essential that all growth phases of a company have adequate supply of capital, and that policy intervention does not occur at just one point, but in any step in the chain where needed. Companies that get acquired before achieving their full growth potential will generate lower returns to their early investors, including the management team. This reduces the potential of reinvestment by internal and external shareholders.

Furthermore, the lack of scale-up funding can compromise the implementation of European Green Deal. Many of the innovative solutions that will also drive the green recovery will come from new market entrants such as innovative start-ups. Companies in the deep green sectors are developing cutting edge technologies and ensuring proper access to funding for such companies as they grow is critical to meet the targets set and address the environmental challenges..

**Current initiatives are insufficient.** The EU has a number of policies and instruments in place to facilitate the funding of SMEs, start-ups and high growth enterprises, within programmes such as InvestEU and Horizon Europe. Two initiatives are worth mentioning. First, the European Innovation Council Fund (EIC), was established as specific legal entity to provide equity and quasi-equity investments in start-ups selected by the EIC Accelerator programme. It provides early stage (seed, start-up, scale-up) patient capital in the form of equity or quasi-equity up to €15 million, with a preference for deep tech though it can also contribute to larger financing deals. Second, ESCALAR (European Scale-up Action for Risk Capital), a ‘non pari passu’ scheme aiming at attracting risk-averse investors, such as pension funds, by reducing their risk at the expense of capping potential returns. This scheme has successfully embarked upon its pilot phase and is expected to be soon further rolled out under InvestEU. Its objective is to reinforce the firepower of existing funds already in their investment periods, thus increasing their capacity to support promising ventures. These two instruments are useful but insufficient to tackle an appreciable number of large financing rounds: in the case of the EIC because it is de-facto (not legally) limited to €15 million and in case of ESCALAR because of its pilot character. Other measures like the SME IPO fund directed to support the initial public offering of small and medium-sized enterprises, are helpful complementary instruments but neither suitable to solve the scale up gap. At the Member States level, the situation is similar, though there are some notable initiatives, such as the Zukunftsfond in Germany or the Plan Tibi in France.

**Accelerating the process for the venture capital industry and the relevant financial markets to become more mature.** Several levers need to be pulled to strengthen the financial ecosystem to support innovative companies. Governmental initiatives should be designed to leverage private funds at each stage of the funding cycle. Key to this is the creation of a favourable ecosystem of stakeholders and instruments. Such an ecosystem is required to enable, for instance, an efficient listing of technology companies in Europe and should be complemented by establishing secondary markets in which venture capital firms and other investors may exchange their assets.

**Public funding should contribute to leverage private capital, rather than being the unique vehicle.** There is empirical evidence that an increase in funding can have substantial effect on the amount and size of scale ups. Public capital may serve to attract private capital by proposing an attractive risk vs return profile on a temporary basis, especially in less advanced geographical and sectorial areas, but this is not a substitute of the mobilisation of private investment.

**Policies beyond leveraging funds are required.** Although adequate funding is indispensable for start-ups to grow, providing funds is not the only lever available to governments. Policy makers can contribute to the development of scale-ups and future unicorns by building supportive entrepreneurial ecosystems and ensuring the presence of supporting framework conditions such as enhancing the competences of workers, promoting relationships with academia and other grass-roots measures that nurture the 'pipeline' of start-ups with flagship innovative projects and technologies. Of supreme importance to the workshop participants was revising current regulations to increase the ease of making business, including making more use of public procurement as a lever for innovation.

### ***Future research***

Despite academic attention to the financing of start-ups, studies that specifically focus on the scale-up gap are scant. Particular knowledge gaps exist regarding: a) quantification and assessment of the scale-up financing demand side, b) a robust and transparent methodology to measure financing gaps, c) quantifying the consequences of the scale-up gap, d) a methodology to assess the impact of governmental venture capital and f) evaluating the impact of non-financial factors (e.g. regulatory, human capital, market, etc.) that hamper the growth of start-ups. Further research can help to fill these knowledge gaps.

# 1 Introduction and Background

The VC market has increased and become more mature in Europe in recent times (see Figure 1). In the first half of 2021, investments totalled €48.6 billion, which was 2.8 times higher than the same period in the atypical ‘Covid year’ 2020, or 2.3 times higher than in 2019. This phenomenal increase is a common trend worldwide.<sup>4</sup> Interestingly, the largest share of the increase lies in late-stage investment rounds (i.e. Series C and beyond)<sup>5</sup>, the increases in earlier stages being more modest. €17.8 billion was invested in megarounds (> €250 million), €9.1 billion in rounds of between €100-250 million and € 8.9 billion in rounds of €40-100 million (Series C).

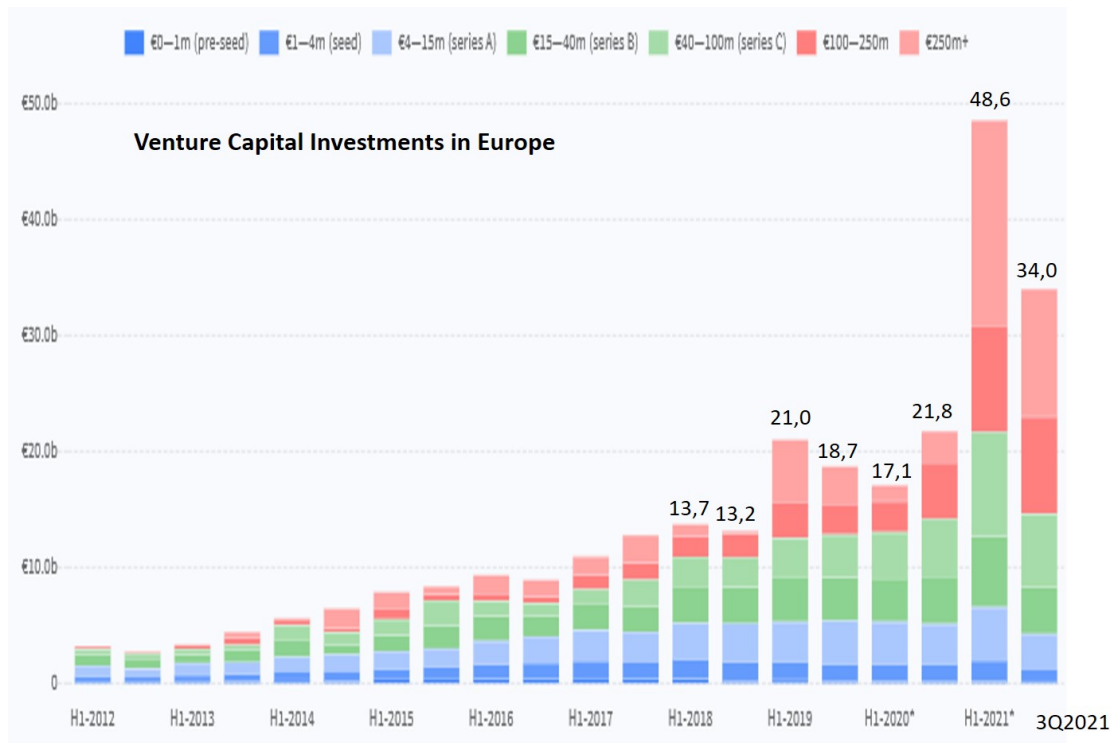


Figure 1: Venture Capital Investments in Europe by funding round for the period 2012 to 3Q2021 (Source: Dealroom)  
 Categories: Pre-seed (0 - 1m€), seed (1 - 4 m€), Series A (4 - 15 m€), Series B (15 - 40 m€), Series C (40 - 100 m€), Series D, E (100 - 250 m€), megarounds (>250 m€)

We witness a more mature VC industry in Europe manifested by a notable increase of the volume in venture capital investments, particular in later-stage rounds. This big increase in later-stage rounds, however, still leaves the EU trailing far behind the US in terms of the deal size and the overall amount. It does not offer any information about the nature of the scale-up, nor its evolution. Furthermore, information on the increase, by itself, does not permit serious comment on how much it is really impacting on the scale-up financing gap without first having a rigorous analysis to determine the extent of the gap between the demand and supply sides.

The debate on the existence, magnitude and policy response to financing gaps faced by innovative start-ups is an old one. The so-called “credit funding gap” problem where the credit market fails to clear the demand for financing due to information asymmetries and agency problems (Meza &

<sup>4</sup> For a comparison see Sifted / Dealroom <https://tinyurl.com/3v787yrm>

<sup>5</sup> For the funding range of the investment rounds see the list of abbreviations and definitions

Webb, 1987; Stiglitz & Weiss, 1981) has been long recognized as a constraint on the growth of innovative start-ups. Professional equity investors, such as venture capitalists, have the screening skills to overcome information asymmetries (priced by asking a high desired rate of return), and use well-designed contracts to manage agency conflicts with the firms they invest in (Kaplan & Strömberg, 2001). VC-backed companies enjoy higher growth rates and are more likely than their peers to eventually be listed on the stock market (Bertoni et al., 2010; Cooper et al., 1994) or be the object of a merger or acquisition. In other terms, VCs in principle enable the portfolio companies in which they invest to scale-up. However, VC funding gaps occur (Cosh et al., 2009; Cressy, 2002). European VCs have limited resources and sectorial preferences and expect high return within a short investment horizon (generally a 4-5 year investment period and an equal time for de-investment). As a result, they invest in only a handful of rigorously selected companies, often in narrow sectoral niches (Lerner, 2002), geographical areas (Colombo et al., 2019) and selected within professional and personal networks (Gompers et al., 2016). Innovative entrepreneurial ventures typically need a series of funding rounds, increasing exponentially in terms of amounts, to reach their full potential and become large corporations (C. Mason, 2016). Market imperfections can give rise to shortages of equity capital needed by innovative start-ups to survive through the seed and early-growth phases (the so-called “first” or “small” equity gap)<sup>6</sup> and also to grow and scale-up to become established businesses (the “second” or “scale-up” equity gap).

However, Venture Capital investment in companies headquartered in the EU is only about one sixth of the amount it is in the US (Table 1). Particularly worrying is the funding situation for scale-ups in their growth or later stage phases. Based on 2020 figures, the proportion of total VC in the form of later stage financing is 84% in the US and only 71% in the EU (see Table 1).

	US	EU27	UK	China
Seed stage	2.6 (2.2%)	1.5 (7.1%)	0.7 (4.8%)	0.1 (0.3%)
Early stage -Series A	16.4 (14.1%)	4.6 (21.9%)	2.8 (19.0%)	3.3 (9.8%)
Later Stage -Series B, C, D + beyond	97.2 (83.6%)	14.9 (71.0%)	11.2 (76.2%)	30.4 (89.9%)
Total VC	116.2	21.0	14.7	33.8

*Table 1: Venture capital Investments for EU27, US, UK and China in 2020 in billions of Euro (Source: JRC based on Dealroom) 7*

Other authors using different data sources come to the same conclusion. Duruflé et al. (2018) who analysed the period 2007-2014 using OECD data confirm that the amount and percentage of funding going into later stages is highest in the US, namely 67% (in 2014), while it was only 44% (2014) in Europe. They state that only 10% of the 162 world-wide unicorns were based in Europe as of March 2016 (Duruflé et al., 2018). More recently, Ambrosio et al (2021) examined the scale-up gap between the EU and the US and came to the conclusion that if the GDP-adjusted VC investment in the EU was the same as the one of the US, this would have resulted in a 20%

<sup>6</sup> There is plenty of literature about the valley of death at early stages. This subject is outside the scope of this report

<sup>7</sup> According to Dealroom experts, this data is very representative of European startup and Venture Capital activity. Dealroom captures more European deals than any other provider (L. Rodriguez Bernate, P. Petitcollin, O. Browne, personal communication 19/02/2021)

increase in the share of scale-up firms in the EU. Despite the relative gap with regard to the US, the cumulative number of unicorns in Europe has increased steadily.

While the evolution in the EU is remarkable in absolute terms, the gap with the US persists and is even widening. To many observers this lack of growth finance is one of the major reasons –not the only one– why the number of unicorns in Europe is lagging behind other parts of the world, notably the US and China. As of June 2021, out of the current cohort of 702 unicorns,<sup>8</sup> only 48 or 6.8% are based in the EU. With regard to company valuation<sup>9</sup> (data June 2021) the situation is similarly bad, the 48 EU27 unicorns represent only 5% of the total value of all unicorns world-wide. So, the EU is underrepresented in unicorns with regard to its GDP and its technology level and EU-based unicorns have a lower average valuation than their peers, particularly those in the US.<sup>10</sup> The same picture applies to decacorns (companies valued over \$10 billion): there are 32 decacorns in the World: 15 in US, 8 in China 2 in the UK and 1 in EU-27 (Klarna, a Swedish online bank).<sup>11</sup>

	US	EU27	UK	China	Rest of the World	World
Unicorns	370	48	29	138	117	702
Value unicorns (in b\$)	1,165	118	95	549	328	2,255
New unicorns 2021 (1 <sup>st</sup> Semester)	127	14	6	3	32	182
Decacorns	15	1	2	8	6	32

*Table 2: Geographical distribution of unicorns and their value by region. Cut-off date June 2021 (Source: JRC based on CB Insights)*

Additionally, concerns emerge from the uneven distribution of unicorns across European regions: they are mostly in Germany, Austria, France, Benelux, UK, Ireland and the Nordics, while Southern, Central and Eastern regions are lagging behind.

**Research Rationale, Aims and Questions**

Against this backdrop, the so-called ‘EU Unicorns Group’<sup>12</sup> proposed to Commissioner Gabriel in April to set up a €100 billion EU sovereign tech fund and a €10 billion EU sovereign green tech fund. The idea behind these ‘mega-funds’ is to maximise the extent to which European (deep) technology and innovation-based start-ups with high growth potential can avail of the necessary large amounts of investment capital which they need in order to grow (typically in the form of equity-based venture capital deals in the several tens of millions to hundreds of millions euros range). Given that VC deals of such a large size are presently not as readily available in Europe as they are in the US, this increases the likelihood of many high potential firms relocating to the US with attendant losses in jobs, knowledge, revenue streams, etc. (Braun et al., 2019)

<sup>8</sup> In this The number of ‘unicorns’ comprise private unicorns,  
<sup>9</sup> Valuations provided by VC investment rounds. To be compared to the market capitalization if they were publically listed companies  
<sup>10</sup> the faster growth of valuation sin the US and China compared with the EU may be one of the reasons of the gap.  
<sup>11</sup> As of June 2021. Note that the landscape is very dynamics, as of finishing this report in December 2021 the EU could count upon two additional decacorns (Celonis, Northvolt) and several unicorns  
<sup>12</sup> <https://unicornsgroup.eu/wp-content/uploads/2021/05/Next-Innovation-EU-FINAL-REPORT.pdf>

Due to the potential contribution of VC-backed companies to employment, innovation and growth, and in an effort to “replicate” the success of Silicon Valley, over the last 20 years European policy makers have attempted to support the European VC market in a variety of ways. In addition to changes in regulation, governments have tried to seed the VC market by setting up government-owned and often government-managed VC funds (GVCs) which either directly invest in innovative start-ups typically co-investing alongside private investors (business angels and VC funds) or by acting as limited partners in private VC funds (GLP). Recent studies indicate that governments account for a very large share of all VC investments worldwide, notably in Europe. Alperovych et al. (2018) find that in Europe, GVCs are present in 12.5% of deals, while government funds are pooled with private resources in 29.7% of deals.<sup>13</sup> Their importance is greatest at the seed and early stages.

Evidence shows that the first equity gap, which is appearing at the very early stages of a firm’s life cycle, is shrinking (Aernoudt, 2017). Aside from government intervention, thanks to the intense investment activity of business angels, the rise of accelerators and new financing opportunities stemming from the fintech revolution (crowdfunding and initial coin offerings platforms), it is now easier for innovative ventures in the seed stage to survive long enough to bring the outcome of their R&D efforts to the market. However, such companies still lack the larger amounts of financing necessary to realise high market growth potential. Arguably, the European scale-up gap might partially explain the low number of unicorns and IPOs filings in Europe with respect to the US.

However, the causes of the scale-up gap in Europe need to be investigated in greater detail, with attention given to both the supply and the demand-sides of the market. Innovative companies receive lower amounts of scale-up financing (i.e., later stage VC financing and venture debt) in Europe with respect to the US. Equity gaps are particularly evident in specific sectors (such as digital technologies and deep tech), geographical regions and, arguably, minority-lead start-ups. The argument that this is because of the lack a high-quality demand for scale-up funding in Europe is inconsistent with the evidence that US-based VCs often invest in Europe and that US-based corporations often acquire European companies. Nevertheless, cultural and educational factors might hold back some potential scale-ups from looking for external funds. The effect of the high fragmentation and geographical dispersion of entrepreneurial finance in the EU in explaining the scale-up gap also needs to be clarified.

### **Specific Research Questions**

- What is the scale-up gap and in what circumstances is it problematic?
- What are the differences in the financial landscape between the EU and US and China?
- What are the causes and the potential economic consequences that arises from the scale-up gap in the EU?
- What measures and instruments are available at the EU level to bring about desired changes in scale-up finance?

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<sup>13</sup> The presence of governments in VCs is important all over the world: Brander et al. (2015) document that 17% of investments in the US are funded with public money either through the government-owned or government-sponsored funds. More recently, Bai et al. (2021) indicated that the size of government in VC programs worldwide accounts for half of VC investments.

## 2 Defining and Measuring the scale-up gap

To fully realise their potential impact in terms of innovation and employment, high-potential firms in their later stages should have the possibility of accessing scale-up financing if they wish to do so. One option is to access secondary markets (and go through an IPO). Another option is to fundraise through many VC and private equity transactions. This is the case of Unicorns, i.e., private companies with valuations higher than €1 billion. To become unicorns, innovative companies will need large injections of ‘patient’ capital: a McKinsey analysis of Europe’s top 1,000 start-ups shows that reaching unicorn status requires between €100-200 million in funding and around 10 years.<sup>14, 15</sup>

### Box: Scale-up Companies

*Duruflé et al (2018) define scale-up companies as entrepreneurial ventures that are “past their initial exploratory phase, have found their initial product/service offering and market segment, and are entering a growth phase where they seek significant market penetration. The term scale-up is reserved for companies that aim at achieving fast growth, possibly seeking to become so-called ‘gazelles’. In the context of venture-backed companies, scale-ups can also pragmatically be defined as companies that have passed the Seed and Series A stage and are entering Series B or higher”. (p. 1, 2018).*

In addition, companies can also scale-up by accessing secondary markets. This is however another area where Europe is lagging behind the US. Duruflé et al. (2018) show that not only the absolute number of high-tech IPOs is higher in the US<sup>16</sup> (392 vs 66 in life sciences, 273 vs 92 in software and 115 vs 38 in hardware industries in the 2002-2015 period), but the fraction of large IPOs (i.e. those raising over US\$100 million) is also higher (74.6% in US and 42.9% in Europe). The fraction of companies that achieved the US\$1 billion valuation after the IPO is once again lower in Europe (3.7% vs 9.7%). More recent statistics based on EIF internal data<sup>17</sup> showed that while Europe has produced more tech IPOs than the US over the past 5 years, the largest IPOs took place in the US: since 2016, the US had 71 IPOs worth more than 1 billion USD, while Europe had only 21.<sup>18</sup>

Adapting the definition of equity gaps by Wilson et al. (2018), the scale-up funding gap is the difference between the amount of capital that would be invested in innovative scale-ups under perfect conditions (i.e. well-informed and competitive markets) and the amount of capital actually invested. Such a gap could be correctly estimated only if we knew, for each potential scale-up company, their demand for finance in perfect capital conditions, and the available supply of finance from all the different available sources.

Currently, there is no single generally accepted methodology to quantify financing gaps. Here, we report some of the attempts made by academics and practitioners. McCahery et al. (2015) show evidence of the debt and equity gaps in five EU countries and, for comparison purposes, the US. Demand for capital was estimated mainly based on the ECB’s “Survey on the Access to Finance of Enterprises” (SAFE)<sup>19</sup>, which includes questions on whether entrepreneurs looked for different sources of finance. Even though the SAFE survey captures firm-level data, research is limited by the fact that only aggregate figures and percentages are being reported. Public data on outstanding

<sup>14</sup> <https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/winning-formula-how-europes-top-tech-start-ups-get-it-right>

<sup>15</sup> G. Testa, R. Compañó, A. Correia, E. Rückert, In search of EU’s Unicorns: What do we know about our unicorns? JRC Working Paper (2022) forthcoming

<sup>16</sup> Note the (increasing) distortion by non US companies listing in the US

<sup>17</sup> presented during the JRC webinar by Dr. Laurent Braun

<sup>18</sup> The paucity of unicorns and of high value IPOs in Europe is also influenced by the higher average valuations in the US with respect to Europe, especially for second and later rounds of financing (Duruflé et al., 2018). A tendency of overvaluation in the US might therefore also explain part of the apparent scale-up gap.

<sup>19</sup> [https://www.ecb.europa.eu/stats/ecb\\_surveys/safe/html/index.en.html](https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/index.en.html)

loans and issued equity was instead used to estimate the supply of capital. Results show that the financing gap in Europe in 2013 as a percentage of GDP was larger than in the US especially regarding the equity sources of finance (e.g., in the 3-5% range in France, 2-3% in Germany and only 1%-1.5% in the US). However, more recent SAFE surveys indicate that firm's access to external sources of finance, both equity and debt, improved in time.

Another approach to estimate the gap was undertaken by Wilson et al. (2018), who focussed on the "latent" demand for VC in the UK population of companies in the 2006-2013 period. They identified the potential demand for VC from those companies that have similar observable characteristics to the actual VC-backed companies in the UK, but that did not obtain such financing. The estimate of the amount of the potential latent demand for VC was based on a model of how much the VC-backed companies with similar characteristics were able to raise from VCs. The results suggest that high-technology or knowledge intensive companies face a scale-up gap which increased in time, reaching £1.2 billion (0.6% of GDP) in 2013.

As both the demand and the supply of later stage VC strongly depend on the industrial sector of activity of the start-up companies (both in terms of investment amount and investment horizon), the **scale-up gap should arguably be estimated industry by industry**. This is the approach used by the EIB, which developed a methodology to assess the equity gap "with respect" to the US, in specific digital sectors.<sup>20</sup> In particular, the EIC quantifies the investment gaps by comparing the amount of private investments in each sector in EU27 and in the US in a given year, and rescaling it based on the total number of companies operating in each sector and in each geographical region. The results indicate an yearly equity gap of the order of €5-10 billion in AI and blockchain technologies, €4.6-6.6 billion in 5G-related business models, around €6 billion in CleanTech and €1,5 billion for blockchain.

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<sup>20</sup> For more details on the procedure, see [https://www.eib.org/attachments/thematic/accelerating\\_the\\_5g\\_transition\\_in\\_europe\\_en.pdf](https://www.eib.org/attachments/thematic/accelerating_the_5g_transition_in_europe_en.pdf) and [https://www.eib.org/attachments/thematic/artificial\\_intelligence\\_blockchain\\_and\\_the\\_future\\_of\\_europe\\_report\\_en.pdf](https://www.eib.org/attachments/thematic/artificial_intelligence_blockchain_and_the_future_of_europe_report_en.pdf)

### 3 What causes the scale-up gap

Understanding what causes the scale-up gap in the EU is fundamental. The possible causes should be investigated in the supply side of the market (availability of qualified sources of scale-up finance) and in the demand side (availability of start-ups having a promising business model who need to secure funding in their late-stage funding rounds to successfully scale-up). Adopting an ecosystem perspective, one also needs to consider contextual factors, including the availability of complementary resources and the regulatory framework. In what follows, we will look at each of these factors more in detail.

#### 3.1 Supply-side factors

The VC market in Europe is less developed than in the US. Out of the €264 billion VC total invested worldwide in the first half of 2021, US was responsible for 52%, Asia for 24%, and Europe for 18%, which for Europe is the highest percentage to date (source: Dealroom)<sup>21</sup>. Interestingly, the gap is much larger when it comes to later stage financing. Duruflé et al. (Duruflé et al., 2018) use data from OECD, NVCA and InvestEurope to show that the percentage of VC financing for scale-ups, particularly in later stage finance, is much higher than in Europe (68% vs 52% in the 2007-2014 period). This is due to larger US VC syndicates and also larger later-stage investments provided by each investor in the US. More recent data shows a steady shift of VC industries in both the US and Europe towards later stage financing. Funding for European Series C+ reached an all-time high in the first semester of 2021, with total amounts equal to €35.8 billion (including some megarounds larger than €250 million), compared to €8 billion in the first semester of 2020. The difference in the incidence of later stage financing between US and Europe is shrinking but persists: later stage financing presently accounts 81% of all VC in the US and 74% in the EU (source: Dealroom).

However, foreign investors dominate scale-up rounds in Europe, with the US covering the highest share of investments for European rounds larger than 50 m\$ (Figure 2) The role of Asia is also becoming very relevant in rounds larger than \$250 million with about 30% of the funds.

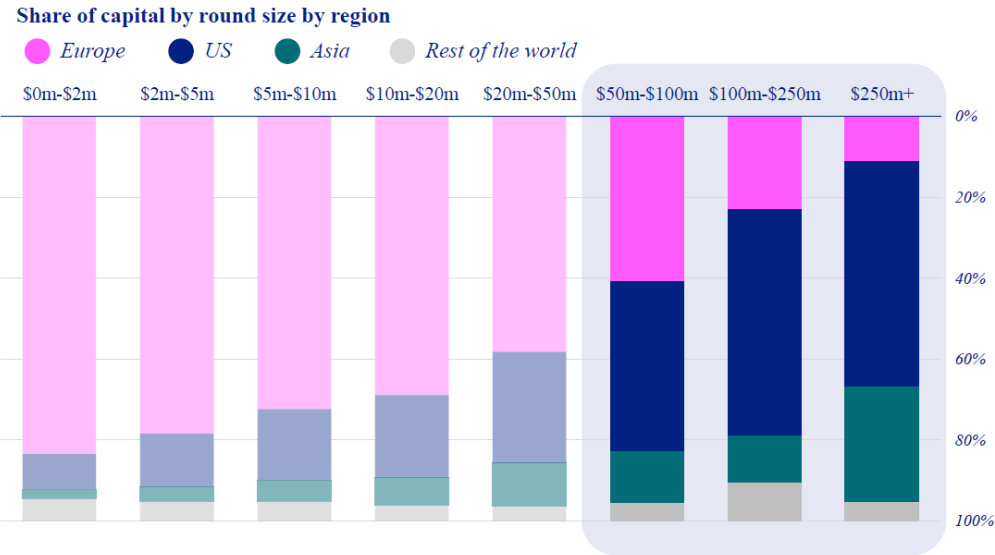


Figure 2: Foreign investors dominate scale-up round in the EU. More than 50% of European late-stage financing come from outside Europe. (Source: L Braun, European Investment Fund, Atomico (2020) based on data from Dealroom)

<sup>21</sup> <https://dealroom.co/uploaded/2021/07/Dealroom-Sifted-startup-cities-2021.pdf?x64504>

The strong influence of foreign VCs is shown in Table 3 which lists the VCs participating in EU-headquartered unicorns. Only eight of the top 24 VCs are located in the European Union. Further, we observe that a number of US VCs have now branches in London from which they screening the European market for opportunities with often a multiple on EBITDA lower that for US-based firms.

VC name	Location	EU unicorns	VC name	Location	EU unicorns
<b>Accel</b>	Palo Alto	17	Technology Crossover Ventures	Menlo Park	7
<b>Insight Partners</b>	New York	11	Lakestar	Zürich	7
<b>Index Ventures</b>	San Francisco	11	Eurazeo	Paris	7
<b>Idinvest Partners</b>	Paris	9	Creandum	Stockholm	7
<b>DST Global</b>	Hong Kong	9	Atomico	London	7
<b>Tencent</b>	Shenzhen	8	Sequoia Capital	Menlo Park	7
<b>SoftBank</b>	New York / Tokyo	8	Permira	London	6
<b>HV Capital</b>	München	8	Korelya	Paris	6
<b>Northzone</b>	London	8	Kinnevik	Stockholm	6
<b>Goldman Sachs</b>	New York	8	Global Founders Capital	Berlin	6
<b>European Investment Bank</b>	Luxembourg	8	General Atlantic	New York	6
<b>Tiger Global Management</b>	New York	7	Baillie Gifford	Edinburgh	6

*Table 3: Venture Capital firms participating in EU-headquartered unicorns. The table takes into account the private unicorns and 'existed' unicorns in the period 2000-2021. One unicorn may be participated by several VCs.*

The dominance of US VC funds suggests, that Europe might not be facing a demand-side problem (see below) and that the scale-up finance gap might arise from the **poor performance of the European venture capital industry**. Historically, there has been a longstanding difference in performance between European and US VC funds.<sup>22</sup> This has led to reduced allocations of funds raised for European VC from institutional investors and other non-governmental source and a

<sup>22</sup> For a summary, see <http://www.keitharundale.com/wp-content/uploads/2019/11/CISI-Review-article-Keith-Arundale.pdf>

reliance on government agencies, particularly the European Investment Fund, for the funding needed for investment into high-growth entrepreneurial companies.

**The main reason for performance difference is attributed to the VC fund size.** In average, US VC funds are much larger. Based on PREQIN data, Duruflé et al. (Duruflé et al., 2018) show that in 2005-2015 the percentage of funds larger than \$250 million was 28% in US VC and only 10% in Europe. The incidence of funds larger than €300 million as of May 2021 is six to eight times higher in the US than in Europe.<sup>23</sup> As only funds that are large enough can invest in scale-ups, the paucity of later stage financing by European VCs is a handicap. On the contrary, big US VCs allow them to follow through with their initial investments which, in turn, enables their investee companies more easily to scale. In particular Europe is missing the big funds: in the US 48 VC funds are over \$ 500 million against only seven in the EU.<sup>24</sup>

Furthermore, there additional factors that also contribute to a better US performance (Arundale, 2019), some of which are secondary effects of the fund size, such as an excellent brand strength attracting quality deal flow or the operational structure of VC. With regard to the latter, US VC firms have, in average, more partners with operational and entrepreneurial backgrounds than European firms, which may well assist in the screening and value-adding capabilities of US VCs. European VC firms have a greater proportion of partners with a financial, investment or consultancy background. Over the past 10 to 15 years, however, there seems to be a convergence on the operational structures on both sides of the Atlantic, which started with large VCs and percolating also to smaller ones.

Similarly, large funds offer more flexibility for distinctive investment practices. On one side, US VCs have more options to make relatively small investments in very early, seed stage investments in order to 'test the water' and thereby reduce the risk of missing out on potential outlier investments which have the potential to contribute disproportionately to the overall returns of a fund. On the other side US VCs are more likely to pursue a home run, 'one in ten' investment strategy than European VCs in which one or two investments that achieve outlier returns and generate a superior return the fund.

Although both US and European VCs reach investment decisions unanimously or by consensus, in some US firms a senior partner could force or 'railroad' the decision. Consensus may 'kill' the outlier deals which may produce outlier returns. More US VCs, particularly West Coast based VCs, have 'entrepreneur-friendly' terms in their term sheets as opposed to the 'investor-friendly' terms found with European VCs.

Again according to Arundale (2019), US VCs focus on the upside of investment growth as opposed to the European concern to protect the downside risk. European VCs have a lower propensity for risk taking and do not 'think big enough' with their investments. There is also a greater willingness amongst US VCs to share contacts, talents and information compared with a more of a 'proprietary' approach in Europe.

- **Contextual differences.** There is a relative lack of experienced CEOs and serial entrepreneurs in Europe compared to the US. Due to the fragmented market it is also harder for businesses to scale in Europe and there are more difficulties in exiting with less receptive stock markets and poorer connections with large corporates. However, with evidence that the gap in returns between US and European VCs has narrowed in recent years (Invest Europe, 2020), it may be that the operating practices of the European VC industry is no longer such an influential factor on the performance of European venture capital.
- **Market Liquidity & Stock Markets.** The fragmentation of the European capital markets is a negative aspect of the European later stage VC ecosystem. Small secondary markets

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<sup>23</sup> EIF based on Pitchbook data

<sup>24</sup> Pitchbook, Dealroom

reduce the markets liquidity, and in turn reduce the possibility of exit for VCs, as suggested by the smaller number of VC-backed IPOs (2.6% in Europe vs 16.4% in US in 2015, according to Duruflé et al., 2018). Nevertheless, the first half of 2021 was an extraordinary year for high value VC-backed IPOs, as shown by Pitchbook data: IPOs produced €37.2 billion in exit value—equivalent to 79.4% of the overall exit value (although the percentage is even higher in the US, around 90%).

- **Venture Debt** is becoming an important complement to VC financing, but again such possibility is much more used in the US than in Europe (19.8% vs 6.7% of companies in the 2010-2015 period, according to Duruflé et al., 2018 elaboration of PREQIN data).

From a policy maker point of view, the **geographical concentration of the VC funds** needs further investigation. There is an inherent trend that the VC industry is concentrating in a few places, with the obvious risk that –in the long term- innovative firms may ‘reallocate where the money is’. In fact, the VC industry in the US is concentrated in California, New York and Massachusetts. These three states alone accounted for 92% of the VC investment activity in 2020 the US (data: Statista). Similarly in China, Beijing, Shanghai, Shenzhen and Hong Kong provided 80% of the VC inflow by 2008 (J. Zhang, 2011).

The European VC industry presents multiple smaller hubs, but some risk disappearing as VC funds get bigger. Colombo et al. (2019) find that the 50 largest European hubs (defined at the NUTS2 level) represent 87.2% of the total number of VC investments in Europe. The dispersion and fragmentation of the European VC industry is due to the very nature of Europe: each national government, in an effort to replicate the success of the Silicon Valley in their own jurisdiction, has been investing resources to seed the local VC industry. The dispersion of policy effort across countries resulted in a large number of small funds (Duruflé et al., 2018).

Summarising, it is arguably more difficult to raise funds in Europe. The European market is less developed than the US market and younger VCs tend to raise smaller funds, while additional fundraising cycles increase the average fund size (Duruflé et al., 2018). Despite the historical lower returns of this asset class in Europe, however, there are also good news. The performance has improved markedly over the past 10 years and there has been a fast increase in the resources poured by institutional investors into European VC funds.<sup>25</sup> According to EIF internal data, pension funds increased their investment into VC by 3.5 times since 2015. In comparison, however, their investment remains small, more than 30 times lower than what they invest in Private Equity. Similar patterns emerge for other categories of institutional investors, such as insurance companies.

### 3.2 Demand-side factors

Using the expression of Ambrosio et al. (2021), are there “too few good companies or too few good investors”? Venture capitalists say that they cannot find sufficient investable deals, a legitimate concern driven by rational investment analysis, whereas entrepreneurs say that there is not enough finance with many start-ups with growth potential simply falling outside the narrow investment criteria of venture capitalists. This highlights the difficulties in both defining and measuring demand and ‘missed opportunities’. Here, we present a number of possible causes of the EU scale-up gaps in the need demand side, which –unfortunately- has attracted much less academic and policy attention than the supply side.

**Demand for loan finance.** Most research has focused on the demand for loan finance, presenting evidence on the proportions and characteristics of firms that obtained the finance that they sought, those that were offered finance but declined it, those that were rejected by lenders, and those firms that were discouraged from applying, typically because they expected to be rejected, the so-called ‘discouraged borrowers’ (e.g. (Cavalluzzo et al., 2002; Cole & Sokolyk, 2016; Cowling et al., 2016,

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<sup>25</sup> EIF internal data

2018; Fraser, 2019; M. Freel et al., 2012; M. S. Freel, 2007; Han et al., 2009; Mac an Bhaire et al., 2016; Rostamkalaei et al., 2020).

**Demand for equity finance.** Less attention has been given to the demand for venture capital, hence it is much harder to assess the extent to which the causes of the scale-up funding gap arise from the demand-side. The demand for equity capital in general (and therefore for scale-up finance too) could be restrained in the EU by the following factors.<sup>26</sup>

- **Few start-ups are willing to share or lose ownership.** There are potentially investable businesses whose entrepreneurs are unwilling to take external equity because of their concerns about loss of control / dilution of ownership and so choose not to raise venture capital, being willing to trade-off the potential adverse impact on their ability to scale and retaining 100% ownership.
- **Number of high quality start-ups.** The paucity of scale-up investments in Europe might also be due to a relative low number of high quality start-ups requiring scale-up funding, which limits investment opportunities for late stage VCs. This is consistent with the results of the EIF 2021 survey, in which European VC investors highlighted an increasing competition among investors for investee companies.<sup>27</sup> Note that here the quality does not refer to the quality of research, but the degree to which these ideas may be turned into businesses.
- **The entrepreneurial culture** of European companies likely differs with respect to the one of their US counterparts. There is a lower risk attitude and fewer people with entrepreneurial orientation, lead to a lower number of start-ups. This cultural difference is related to the aforementioned higher reluctance to share control of the business, which in its turn limits the capital at disposal to ramp up the businesses.
- **Financial knowledge and capabilities of companies.** Human capital of start-ups, attracting and retaining talent, especially in the high-tech ones, is fundamental for their survival and the company's long-run growth (Massimo Gaetano Colombo & Grilli, 2010; Siepel et al., 2017). These are critical pieces of the scale-up puzzle and the need to hire the right talent and develop social skills, technical skills and business & management skills is increasing its importance progressively. Financial knowledge is particularly relevant when it comes to attracting external finance for the business growth. Similar to other actors, innovative start-ups might specifically lack knowledge of the different financing opportunities that they have, especially those that are newer, such as peer-to-peer lending. Even if they know some of these opportunities, they might restrain from applying to those sources of finance if they feel they do not fully comprehend the implications of adopting them.

**VCs and companies living back-to-back?** Existing academic evidence is scant but consistent with a preference for internal funds and holding off on external investments. Focusing on six EU countries (plus UK), Colombo et al. (2019) find that high-tech entrepreneurial ventures rarely look for VC, unless they happen to be located near a VC hub. They also find that relocation towards those hubs is a rare event. Quas and D'Adda (2018) investigate the reasons why some entrepreneurial ventures do not look for external finance. 60% of entrepreneurs simply think that external equity was not needed, 10% felt that their demand for funds would be rejected, 13% were concerned of receiving unfavourable financing conditions and 15% had fear of losing control of their ventures. The human capital of the entrepreneurs also played an important role: holding a PhD in sciences increases the chances to look for external finance, in general and abroad, and to look

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<sup>26</sup> The investment readiness as described in the following four arguments apply mostly to start-up. However, it may influence also some scale-ups

<sup>27</sup> See <https://www.investeurope.eu/media/4326/venture-capital-survey-2021-market-sentiment.pdf>

“earlier” in the lifecycle of the company. This is likely to be associated with the technological nature of firms started by entrepreneurs with PhDs.

**Lack of qualified professionals?** Whether concerns regarding the human capital of the EU-based start-ups are relevant for the scale-up gap (rather than equity gaps in general) is an open research question. In theory, companies that were able to raise seed and early stage funds should not have further constraints in applying for scale-up funds. However, one of the issues that might explain a low demand for scale-up funds could be related to the supply-side of the early-stage VC industry in Europe, because of its relative lack of “maturity”. Less experienced VCs might lead to European VC-backed companies being of lower quality with respect to the US counterparts, reflecting poorer investment selection and less effective value-added contributions, and therefore less able to secure follow-on financing (Duruflé et al., 2018). These are conjectures that call for future academic studies particularly tackling the demand for scale-up funds in the EU.

### 3.3 Ecosystem Considerations

Successful scale-up companies not only require funding, but a sophisticated entrepreneurial ecosystem, which encompasses several categories of actors, besides VCs and entrepreneurial ventures, and which operates within a regulatory framework which is coherent and homogeneous. In what follows, we will focus on geographical proximity and international investments and expertise as sources of interaction for European scale-up companies.

**Geographical proximity.** Seed and early stage capital investing is undertaken by investors with ‘boots on the ground’. Such investments require frequent and intensive interaction between investor and investee, which favoured by geographical proximity. In later stages, the value-added of investors is to assist investee companies with their market expansion; thus proximity becomes less important in later stage deals. However, access to funding embeds an element of trust, which is generally a result of network relationships. Therefore, to thrive, scale-ups need to be in close contact with other scale-ups, established companies, communication companies and financial institutions, universities and incubators, with all of which they can build alliances. Physical proximity enhances the ecosystem, even for companies operating in digital sectors. Gazel and Schwiendbacher (2020) focus on the entrepreneurial clusters in the emerging fintech industry in France. They find that most fintechs are geographically clustered and that the location of new fintech startups is affected, among other things, by the size of clusters and the presence of incubators.

**Internationalization of markets and people.** For EU scale-ups to become global players they need to access and expand in large international, global markets which requires adequate financial resources. If these resources are not available in a member state, the firms in question should be able to access them regionally via cross-border investment. Scale ups need also access to a large and efficient market of skilled talents, which they can recruit internationally. In short, it is fundamental that EU start-ups are agile, adaptable and not constrained by national markets.

Despite the positive evidence towards a Capital Markets Union, the EU ecosystem is, unfortunately, currently highly fragmented. Regulatory and institutional differences hamper the chances of start-ups to collect the financial resources and the human capital they need to successfully scale-up, as well as limit the options to expand beyond their national borders.

## 4 Consequences of not tackling the scale-up gap and the rationale for policy intervention

Not tackling the financial scale-up gap has quite important potential consequences, including:

- the risk of losing technological sovereignty in the EU, by gradually decreasing the European share in the global tech market;
- the risk of Europe becoming an incubator for other regions, which increases the risk that technologies, knowledge and jobs are transferred elsewhere and excellent ventures may be missed out
- the risk for further fragmentation of the European innovation ecosystem;
- the risk of failing to achieve policy objectives, particularly the strategic twin, green – digital transition and tackle policy priorities to the recovery.

These points are discussed below.

**Losing technological sovereignty.** Some technology shape the future and likely to set the industry standard for the foreseeable future. These tech markets are global and less well-funded European scale-ups will therefore be less competitive in global markets. A dark scenario imply that foreign investors would end up controlling large segments of the start-up, which increases the likelihood of the start-up to be listed in US stock exchanges. In a subsequent step the firm might eventually relocating, losing European-based founders and the technologies would eventually end up in the hands of foreign owners. In the long run, Europe would lose its technological sovereignty. Some pieces of evidence are visible that such a dark scenario is possible.

A significant amount of the capital invested in Europe's VC-backed companies has come from US investors. Pitchbook data indicates that total value of European deals with US investor participation grew 19.4% year-on-year to a new annual peak of €23.0 billion in 2020. US investors participated in five out of the six largest deals in Europe.

This reflects on the one hand the priority of US investors to focus on large, later stage deals and on the other hand European start-ups that have sought out deep-pocketed US investors with the ability to ignite rapid international growth. US investors are also attracted to some Europe-based start-ups because they are cheaper investment alternatives to their more highly valued US based counterparts. One positive aspect of EU companies to attract US investments is that this may serve to tap US networks that might be relevant for a future expansion.

**Strategic autonomy and technologies setting industry standards.** Some technology shapes the future. Leading companies in the emerging high-tech sectors are likely to set the industry standard for the foreseeable future. Being unable to nurture such leaders in Europe (or forcing them to relocate elsewhere) implies that industry standards will be likely decided outside Europe, and, for instance, data protection issues might be more difficult to solve. There is therefore a concern for the strategic autonomy of Europe. As a matter of example in the critical area of semiconductors Europe's share worldwide is 10% against 49% for US based companies, using global market capitalization as a proxy.

**'Europe should not become the incubator for US and Asia unicorns, paid by EU taxpayers'**

The long-term consequence of failing to address the scale-up gap is the loss of jobs, innovation and economic growth that these companies have the potential to generate. If left unfinanced, European start-up companies are likely to remain small and "local" and unable to compete with their international peers. Oversea actors are taking advantage of the opportunities offered by European start-ups. Foreign VC investors disproportionally cover the investment requirements of scale-up financing, and foreign companies often acquire European-nurtured start-ups. There is a risk that companies will gradually **relocate their activities and ultimately their decision centres outside Europe, with a consequent loss of technologies, knowledge and jobs for Europe.**

Relocation is a material concern for European policymakers supporting scale-ups. Crucially, European taxpayers would not reap the harvest from public money spent to fund R&I activities that gave rise to those start-ups that were relocated outside the EU.

The acquisition of potential and emerging EU scale-ups by non-EU 'big tech' companies, can be seen as a means of overcoming financial constraints. It has been suggested that companies need to raise multiple rounds of finance (including rounds in excess of €100 million) in order to grown independent before being acquired or going public. The concern is that the acquisition of companies at an early stage will result in a swift transfer of the decision making and potential relocation of technologies, knowledge and jobs from Europe, while a fully consolidated firm is more likely to keep their essential assets in Europe.

There is little research on the consequences of the acquisition of entrepreneurial companies by foreign actors. On one side, acquisition can boost the growth of acquired companies as they benefit from the financial and managerial resources and other assets of the acquiring company (e.g. marketing channels). On the other side, undesirable outcomes are also possible: the acquired company may be absorbed into the acquiring company, thereby losing its separate identity, some of its activities may be relocated to the acquiring foreign company's home base, its technology may be moved (intellectual asset stripping) or it is closed down, impacting jobs and taxation. (see (Wennberg & Mason, 2017) for a review of the available evidence).

A loss of European-owned and managed technological successes may lead to an undesirable examples for decision makers to support potential companies following a similar path, as many firms that are acquired will have been supported by EU initiatives at their seed, start-up and early growth stages, where public interventions contributed to into attractive acquisition prospects for foreign investors, and the investments do not necessary remain in the region. There are also macro-scale implications arising if Europe's leading technology firms lose their independence. For example, because leading companies often shape their industry over a long time hence industry standards will be decided elsewhere. Data protection issues will also be more difficult to solve.

The lack of later stage investment has also a number of significant adverse consequences on the ability of Europe's successful entrepreneurial businesses to achieve their full potential. Companies that get acquired before achieving their full growth potential have implications on the overall funding chain as early selling will generate lower returns to their early investors, including the management team. This reduces the scale of re-investment by internal and external shareholders through various forms of entrepreneurial recycling that can occur following an exit (serial entrepreneurship, business new business angels, re-investment by existing business angels and institutional investors). Missing re-investment, reduces the **opportunity costs of missing out excellent ventures**.

**Further fragmentation of the European innovation ecosystem.**<sup>28</sup> Scale-up companies exert a positive effect on the EU innovation ecosystem in as much they necessarily operate together with start-ups, scale-ups and established companies, intersecting their respective supply chains. They therefore contribute to the development and stability of the entrepreneurial ecosystem. Moreover, scale-ups typically operate at the international level (either European or global), and therefore they might play a role in overcoming the European ecosystem fragmentation. Failing to address the scale-up gap implies that the European ecosystems are likely to stay fragmented, and small, continuing the vicious cycle that hampers international growth.

**Missing policy objectives.** The lack of scale-up funding will compromise the implementation of European Green Deal. Companies in deep green sectors that are developing cutting edge technologies require finding to exploit the opportunities created by the need to address

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<sup>28</sup> An overview of the funding opportunities for European Innovation Ecosystems under the current Horizon Europe Work Programme is available at [https://eic.ec.europa.eu/eic-funding-opportunities/european-innovation-ecosystems\\_en](https://eic.ec.europa.eu/eic-funding-opportunities/european-innovation-ecosystems_en)

environmental challenges. More generally, the scale-up funding gap ultimately impacts the whole economy. It will constrain the development of technologies that shape the future, including mobile data, energy storage, AI, quantum computing, genomics, digital health, medical technologies, etc. Talent will be attracted elsewhere. Productivity and growth are adversely impacted. And strategic autonomy is at stake.

In addition to the above general remarks, the next chapter will examine other consequences that are of interest for policy makers

## 5 Further Considerations for Policy Design

In the previous section we presented the potential risks of not mobilizing the finance needed to scale up promising European start-ups. While the evidence and the motivations have been presented, policy must also take into account other factors that influence its design, such as whether the proposed option increases or decreases the regional disparities or whether it is inclusive, providing better opportunities for women participation in VC market. We will discuss such issues in turn.

### 5.1 The case of Deep Tech funding

**Emerging technologies.** Companies exploiting emerging technologies face additional challenges with respect to those operating in sectors that are traditionally targeted by VC investors, such as ICT or biotech. VC investors are typically affected by “herding behaviour” and prefer to invest in industries with which they are familiar. Venturing in emerging industries requires the development of new highly specialized technical skills, necessary to evaluate business proposals in those industries and to nurture the company during the holding period. Additionally, emerging industries imply substantial R&D activity, which might require long investment periods or large investment amounts which might be incompatible with the current practice of VC fundraising (the average VC holding period is around 5 years).<sup>29</sup>

**Diverging investment horizons.** The lack of later stage venture capital investment is a serious issue for the deep tech sector. As McKinsey notes, “companies pursuing a deep-tech play require more extensive funding long before they become winners. As such, they need investors that have a similar long-term vision and willingness to fund a long R&D phase.” To many observers, the venture capital investment model is not appropriate for this type of investment because of their need to deliver returns to their private partners in 10 years, generally 5 years investment and other 5 years disinvestment. Because of this, venture capital funds have a strong imperative invest in technologies that generate a rapid return.

**Specific tech knowledge required.** A further constraint on venture capital investment in deep tech is that they lack sufficient knowledge of the sector. The technologies of the sector offer a substantial advance over established technologies and are often based on scientific discoveries or strategic engineering innovations, e.g. artificial intelligence, advanced materials, biotechnology, blockchain, robotics, photonics, quantum computing etc. They tend to require time and capital for development and the products’ time-to-market are long, generally beyond 5 years. For these and variety of other reasons, such ventures normally carry numerous risks – risks that can compound their financing prospects in parallel with the lack of technology expertise on the side of venture capital investors.

**Deep tech setting industry standards.** As mentioned before, there is therefore a concern of losing the technological autonomy of Europe. As a matter of example in the critical area of semiconductors Europe’s share worldwide is 10% against 49% for US based companies, using global market capitalization as a proxy. More general, a wide range of deep tech are particularly at danger, risking that the leading companies will to impose de-facto industry standards. Setting industry standards outside Europe bear several risk. In addition to the aforementioned economic ones, as the relocation of technologies and loss of jobs, it may have also societal implications. For instance privacy and data protection issues might be more difficult to solve.

**Loss of skilled profiles.** Talents in emerging high-tech sectors, such as blockchain and big data, is highly specialized, with knowledge which is very specific and difficult to use outside of the sector. The human capital that is developed in these sectors risks to be lost (by moving with the

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<sup>29</sup> Companies in biotech have very long times to market, but that they are still able to secure VC financing. In the case of biotech companies, the seed financing is typically provided by Business Angels and Government funds, while Venture Capital investors typically invest much later, when the company is closer to an exit.

headquarters of the acquisition company) or attracted elsewhere for better conditions. Better finance to EU would contribute to a better functioning European ecosystem able to “recycle” these skills by offering attractive job opportunities.

**Green deep Tech.**<sup>30</sup> According to a recent publication of the World Economic Forum,<sup>31</sup> governments ought to be particularly focussing on green deep tech start-ups, as they are more likely to contribute to the ‘green transition’ and also are likely to be neglected by VC investors. Without support, deep tech companies are unlikely to develop technology solutions in time for solving the biggest challenges, including climate change, inequality or sustainable food production.

In summary, Europe has a potential competitive advantage in the development of the deep tech sector, thanks to the excellent universities and great talent, industrial corporate leaders as well as a vast domestic market. Companies pursuing a deep-tech play require extensive funding long before they become commercially successful. Despite great technologies and excellent teams of founders, the constraint lies in finding enough resources to cover their financial needs in later rounds, especially without foreign participation. Therefore, the need is to find investors that have a similar long-term vision and willingness to fund a long R&D phase.

## 5.2 Increasing regional disparities

**Concentration in few locations.** As mentioned in Chapter 3, the scale-up funding gap has a significant geographical dimension, both from the supply and the demand side. From the supply side, we have shown that the largest VC firms are located in only a few countries and therein in particular metropolises, notably Silicon Valley, New York, Shanghai, Beijing and London (see Table 3).

The location of VC firms has an important influence on the geography of their investments. For example, German research has shown that the probability of a VC making an investment is related to the travel time to the investee business (Lutz et al., 2013). Air connectivity, particularly international connections have been shown to have a significant impact on venture capital flows (Zheng et al., 2020).

On the demand side, a concentration effect is also observable both at the regional and country level. Figure 3 shows investments by VCs companies by location of the start-up investee in the period 2008-2020Q2. Similarly, we observe a highly uneven geographical distribution of the investment flows from the VC side.

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<sup>30</sup> Green tech are deep tech companies which aim to address the climate change challenge: they have positive environmental impact at their core, for instance in terms of reducing CO2 emissions or pollution, minimising waste or protecting the world's ecosystems.

<sup>31</sup> World Economic Forum, "Bridging the gap in European scale-up funding: the green imperative in an unprecedented time" See <https://www.weforum.org/reports/bridging-the-gap-in-european-scale-up-funding>

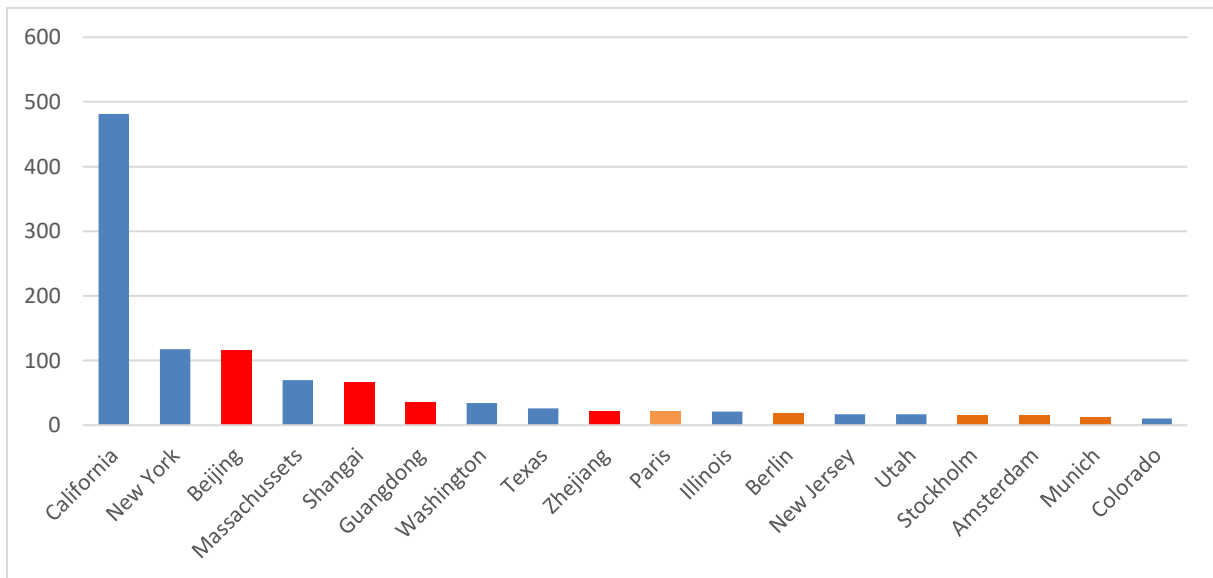


Figure 3: Investments by location in the EU, US and China (Source JRC calculation based on Dealroom)

In the EU, Germany, France, the Benelux and the Nordic regions are attracting the most investment.<sup>32</sup> And here again we observe significant geographical variations in venture capital investment within individual countries, with over proportionally high amounts flowing to the capital cities. In fact most European unicorns are located in one of Europe's hotspots (Figure 4).

The geographical concentration of investors and investees in few locations is a trend that is observable over the past decades. A further concentration will further increase the disparity between regions with a mature VC industry and a density of innovative firms, on one hand, and less favoured or small regions in terms innovation ecosystems, on the other side. We see no reason to stop this phenomenon unless countermeasures are put in place to invert the trend.

Slovenia is one example of a small member state which has a low level of venture capital investment. There are multiple reasons for this situation, but one factor is that venture capital firms are located in the large cities in adjacent countries and so are not connected to the local Slovenian entrepreneurial ecosystem. Peripheral emerging economies of the EU are in even weaker positions. The geographical concentration of venture capital investing, especially later stage deals, results in a highly uneven geographical pattern of unicorns both between countries and within countries.

<sup>32</sup> JRC calculations based on Dealroom data

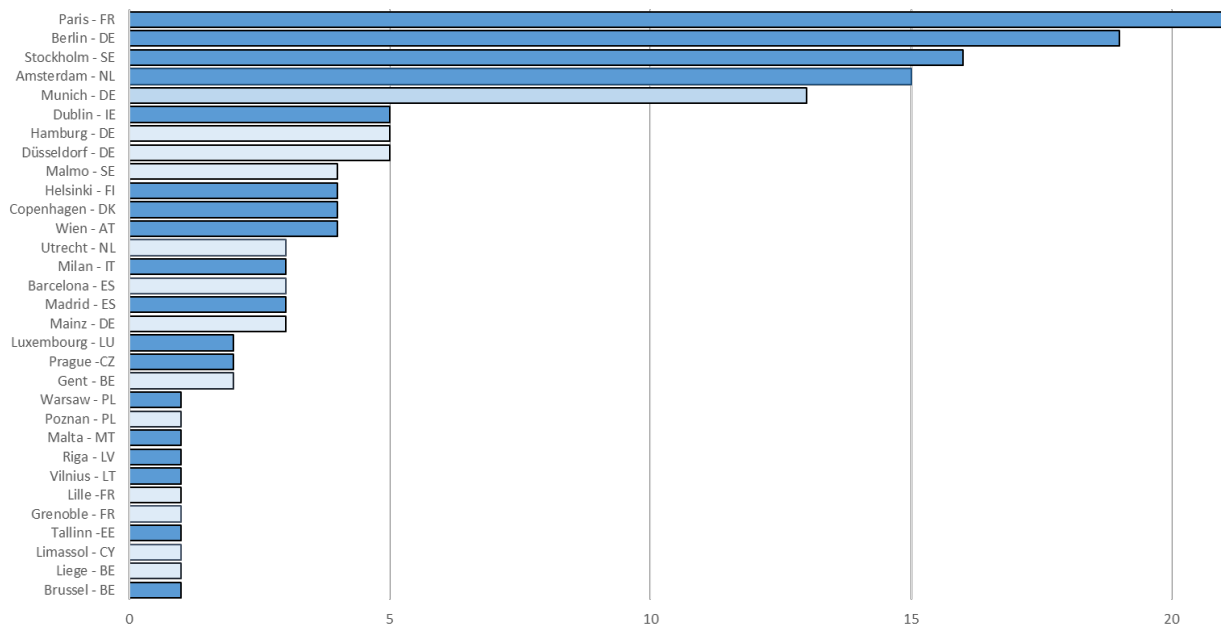


Figure 4: Number of Unicorns (private and exited) by location in the EU (Source JRC calculation based on Dealroom)

### 5.3 Underrepresentation of women in the VC industry

**Lost opportunities.** Women-founded start-ups disproportionately contribute to economic development, generating more revenue per euro invested, outperforming in capital productivity by 45-96% across the EU. A study by Pitchbook indicates that female-founded start-ups are taking substantially less time to exit than the overall market. The report also shows that progress in garnering investment for female-founded start-ups has been made in recent years, at least in the US.<sup>33</sup> But according to the Harvard Business Review (February 2021) only 2.3% of venture capital funding in Europe goes to female founded start-ups. Thus, the lack of capital going toward women-founded companies is not only a political objective but also an economic need and is among the top policies priorities, including the World Economic Forum.<sup>34</sup>

Scholars debate whether the source of this bias relates to the supply side. Women are less likely to start businesses, especially tech companies, account for a small minority of scale-up businesses and have a lower propensity to look for VC. Women are also under-represented as both as venture capitalist fund managers and business angels (Brush et al., 2018), According to the interest group 'Global Women in VC', only 4.9% of VC partners in the U.S. and much less in Europe are women, but female-lead VCs over perform in their sector, as they observe a correlation between hiring female decision-makers at the investment level and outperformance at the fund level. These issues are connected, with female venture capital partners investing three times more in female founders.

The interest group 'Global Women in VC', calls for inclusion strategies to be part of future policy interventions, requesting a €3bn female-focused fund-of-funds to enable women to set up their own funds.<sup>35</sup> The objective being to create at least 80 female-led venture capital funds and enabling equal access to financing for innovative female entrepreneurs. Government should also use its leverage to address the gender bias in venture capital through its existing co-investment programmes.

<sup>33</sup> <https://pitchbook.com/news/reports/2019-pitchbook-all-raise-all-in-women-in-the-vc-ecosystem>

<sup>34</sup> [https://www3.weforum.org/docs/WEF\\_Unleashing\\_the\\_power\\_of\\_Europes\\_women\\_entrepreneurs.pdf](https://www3.weforum.org/docs/WEF_Unleashing_the_power_of_Europes_women_entrepreneurs.pdf)

<sup>35</sup> <https://www.women-vc.com/>

## 6 Policies for addressing the scale-up gap

Building on the considerations raised so far, in this section we present and discuss some options on how the scale-up gap might be addressed, based both on the evidence of the existing literature and on international best-practices.

**Direct Governmental VC approaches.** The most direct forms of government support to innovative start-ups relate to the direct provision of equity financing to start-ups (government venture capital, GVC) or to the VC funds who invest in them (government acting as limited partners, GLP, in funds-of-funds or co-investment schemes). A mix of these approaches has been adopted by several regional (e.g., the SWIR initiative in Belgium) and national (e.g. BPIfrance in France) governments. The most often risen concern is that public sector funding programmes and schemes could be crowding out, or substituting, private investments, rather than complementing them. Research on this issue has been quite inconclusive (Brander et al., 2015; Cumming & Macintosh, 2006; Leleux & Surlémont, 2003).

The direct impact of GVC on the performance of their portfolio companies is at best negligible (Bertoni & Tykvová, 2015; Brander et al., 2015; Cumming et al., 2017; Grilli & Murtinu, 2014; Y. Zhang, 2018), possibly because GVC may have allocated resources without setting adequate incentives or having taken the financing decision being influenced by political considerations (Lerner, 2002). Another possible explanation is that it reflects ‘thin markets’: particularly where such interventions are focused on lagging regions there may simply be insufficient companies with the potential to benefit from venture capital (Nightingale et al., 2009). Traditionally, governments implement interventions in the venture capital markets to address market failures, in particular as equity or funding gaps (Martin et al., 2005). However, a potential advantage of the GVC initiatives is that they could boost VC investments in companies that are facing a scale-up gap. For instance, GVCs could foster VC investments in emerging sectors also by complementing, when possible, the skills of private VCs in the screening of proposals. Lerner (Lerner, 1999) argues that government initiatives often make use of highly skilled specialists for the selected provision of R&D subsidies to ventures in highly technical and specialized sectors. He mentions that “Specialists at the National Institutes of Health or Department of Defense may have considerable insight into which biotechnology or advanced materials companies are the most promising”. Such skills might be present in some European GVCs or at the EU level too, and could be made available to the private sector through co-investment schemes and syndicated deals. Concerns regarding the screening skills of public investors remain nevertheless tangible, despite some academic evidence that GVC-backed companies indeed have higher chances to receive private funds, especially in specific geographic areas or industries (Alperovych et al., 2020; Bertoni et al., 2019; Guerini & Quas, 2016; Kovner & Lerner, 2015).

**Indirect approaches; the Government acting as a Limited Partner.** Recent academic evidence points to an evolution of the government intervention in the venture capital ecosystem, where governments are gradually shifting from the direct government venture capital approach to the indirect funds-of-funds or co-investment approach (Alperovych et al., 2018). GLPs follow a “market driven” approach, where the government provides funds to VCs’ general partners but it is the private investors that are responsible for carrying out the VC activity. Previous empirical studies find positive impacts of GLPs on the performance of target companies (Brander et al., 2015; Buzzacchi et al., 2013; Standaert & Manigart, 2017) suggesting that the indirect GLP approach might have some advantages over direct GVC.

**Patient Money.** Specifically, GLPs should play the critical “**anchor investor**” role for emerging VC investors, helping them attract further resources from private LPs. This is possible only if the government is selective in the provision of funds to VC general partners. By doing so, the government could ease the fundraising activity of VCs, leveraging the investments of private LPs and without necessarily investing more taxpayer’s resources to achieve large scale funds. Moreover, it is important that governments act as **patient investors**, reducing the pressure on achieving returns in the short term, thus increasing holding periods. This is for instance the case of the

“Patient Capital Fund” created by the British Business Bank<sup>36</sup>. Further, the government can further incentivize pension funds and other major European pots of capital to invest in selected VC funds by adopting **asymmetrical limited partnership agreements** which improve the risk-return profile for private limited partners.<sup>37</sup> This approach is for instance used in UK (British Business Bank) and Australia (Innovation Investment Funds), where GLP returns are capped and more junior with respect to those of private LPs.

The US’ GLP initiative is the Small Business Investment Company (SBIC) programme, managed by the Small Business Administration (SBA) office, which provides debt (rather than equity) to selected VC funds. Specifically, they provide up to 2\$ of government-guaranteed debt for each 1\$ of private capital raised by private limited partners, up to a maximum of 175 m\$. SBIC licences are awarded to VC funds after a careful assessment of the fund qualifications, in terms of the experience of the managers, the investment strategy, the track record and the fund structure. The SBA-guaranteed capital is low cost and does not participate in profit. It leverages the investment by private LPs, and at the same time LPs benefit from SBA’s careful monitoring of funds’ performance and regulatory compliance. Fundraising becomes therefore much easier for SBIC funds, which can scale up their strategies and extend their financings to more businesses. Since 1958, the program has channelled through over 2,300 VC SBIC funds nearly \$73 billion of capital to more than 168,000 U.S. small businesses spanning a variety of industries across the country (\$30 billion of capital to more than 5,700 U.S. small businesses in the last 5 years). Some of America’s most iconic brands, including Apple, Tesla, Intel and FedEx, have received funding from SBICs. The program operates at zero budget cost.

**Demand.** Besides boosting the supply of risk capital, the EU governments should play a role in boosting the high-quality demand for scale-up financing, improving the entrepreneurial culture across the EU, improving financial education, launching mentoring initiatives and investment ready programmes and ensuring potential scale-ups the possibility to build human and social capital through international recruitment and cooperation. This is particularly important for some categories of entrepreneurial ventures which are systematically underrepresented in scale-up figures, such as female-led ventures. As mentioned in Chapter 5, this underrepresentation is, at least partially, driven by demand side factors, as female-led ventures have a lower propensity to look for VC, lower human capital and lower aspirations for growth (Aernoudt & De San José, 2020; Marlow & Patton, 2005; Verheul & Thurik, 2001).

**Improving the scale-ups ecosystem.** Governments should increase their effort to improve the ecosystem for scale-ups. The Chinese example of government intervention at the level of the ecosystem may serve a good practice analysis. First, the demand side of the market was boosted thanks to social support for entrepreneurship, including an effort to ‘destigmatize’ risk-taking and failure. Second, the Chinese state invested heavily in physical connectivity and digital infrastructure, which triggered e-commerce, payments and the ICT sectors to grow rapidly. Third, a serious effort was made to cut the “red tape” and lower the cost of start businesses. Some KPI were set for officials in tech parks like Zhongguancun in Beijing aimed to drastically cut paperwork and administrative times for new ventures when applying for financing. Fourth, the state worked on the attraction of talent from elsewhere, by lowering living cost for returnees and foreign talent, namely from the Silicon Valley (e.g. Shenzhen talent housing). Lastly, the government adopted a strategic

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<sup>36</sup> [https://www.britishpatientcapital.co.uk/?\\_ga=2.182877346.563879019.1635582016-847296683.1635582016](https://www.britishpatientcapital.co.uk/?_ga=2.182877346.563879019.1635582016-847296683.1635582016)

<sup>37</sup> This option would be very much aligned with the approach of “**blended finance**” instruments, in which public and private resources are mixed with non-for-profit money and channelled towards projects that have a strong ESG component, such as climate adaptation and emerging markets. In this case, the public finance is used as a guarantee and absorbs most of the losses, to promote private participation in the strategic initiatives. However, blended finance also entails some potential disadvantages. It is usually based on a very complex model, which is difficult to understand and replicate and, at the same time, is potentially easy to manipulate for improving private gains. Moreover, it implies some coordination costs due to conflicts in the investment committees originated by the different nature and objectives of the participants in the initiative (e.g., public and private actors might give different weights to the ESG focus and the financial returns).

approach to intellectual property regulation. Intellectual property protection was weak at first, and favourable IP laws for SMEs were put in place only in 2012.

## 6.2 Current EU-level policy initiatives

**Working towards building a single market for capital - the Capital Market Union.** Generally speaking, the fragmentation of the EU single market is a well identified challenge, especially in the service sector (i.e. access to markets),<sup>38</sup> which influences the VC markets, recruitment and regulation. The harmonization and simplification of framework conditions with respect to regulation, taxes, option schemes, bureaucracy and EU funding programs are necessary to improve the chances of EU based start-ups to raise the financial capital (i.e., scale up financing through cross border investment) and human capital (through international recruitment) as well as to grow internationally. EU-level initiatives should be preferred to national ones to build an efficient and well-connected ecosystem for scale-ups. However, not only the EU scale-up ecosystem is fragmented, but the national ecosystems are highly heterogeneous in terms of their economic, political and cultural factors, and ultimately in terms of development.

Therefore within the Capital Markets Union (CMU) and the Renewed Sustainable Finance Strategy, measures are being deployed to improve the framework conditions for investments in the EU and as such will benefit deep and green tech. More specifically, Action 2 of the CMU action plan announced possible simplifications of listing rules. These simplifications would aim to reduce compliance costs and remove a significant obstacle that holds companies, especially SMEs, back from tapping EU public markets. Since a public listing by a company provides for an exit opportunity for venture capitalists and private equity investors, an ability of a company to list also facilitates the access of that company to earlier-stage financing. In the area of competition policy, a revision is underway of the guidelines on State aid to promote risk finance investments following a public consultation which closed in July 2021

In addition to the above mentioned measures to complete the CMU, the EU has a number of policies and instruments to facilitate the funding of SMEs, start-ups and high growth enterprises covered by a number of EU programmes, notably InvestEU and Horizon Europe.. In addition, the mandated systematic screening of foreign direct investments will permit to flag upfront EU interests in scale-ups. Under the 2020 SME Strategy, a proposed SME IPO Fund aims to boost financing for SMEs that are planning a public listing, are already in a public listing process or have just been listed, to fuel the growth of small and high-growth companies.

**The European Innovation Council.** The European Innovation Council (EIC) created as a key novelty of Horizon Europe represents the most ambitious innovation initiative that Europe has taken, with a budget of €10 billion for the period 2021-2027. The EIC has a mission to identify, develop and scale-up breakthrough technologies and disruptive innovations. The EIC supports start-ups, SMEs and research teams developing high-risk, high-impact breakthrough innovation, with a particular focus on scaling up game-changing solutions that contribute to the objectives of the European Green Deal and the Recovery Plan for Europe. The European Innovation Council Fund (EIC Fund) is a unique legal entity owned by the European Commission and established to make direct equity investments in companies selected by the EIC Accelerator programme. It provides early stage (seed, start-up, scale-up) patient capital in the form of equity or quasi-equity from €0.5 to 15 million, with a preference to deep tech. Investments will normally be made with a long average perspective (7-10 years) with a maximum of 15 years. The intention is that of 'crowding in' other

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<sup>38</sup> <https://www.imf.org/en/Publications/WP/Issues/2019/12/06/Deepening-the-EUs-Single-Market-for-Services-48823>

investors and that these rounds should be triggered sooner. A further objective is to build capabilities in the private venture capital industry to identify and assess breakthrough technologies. Businesses make applications which undergo a remote assessment, with a subset invited to pitch to experts. Businesses are either directly funded, certified or invited to make a resubmission. The EIC pilot in 2019-20 attracted high demand with early impact: 14,000 start-ups applied, and 159 early-stage deep-tech companies were funded (€680 million investment, €4.3 million average), including over 50 “centaurs” (>€100 million); and 2 “unicorns” (>€1 billion). Health was the biggest sector, followed by engineering and technology, as can be seen in Figure 5. Women-led businesses and businesses in the CEE region were both under-represented.

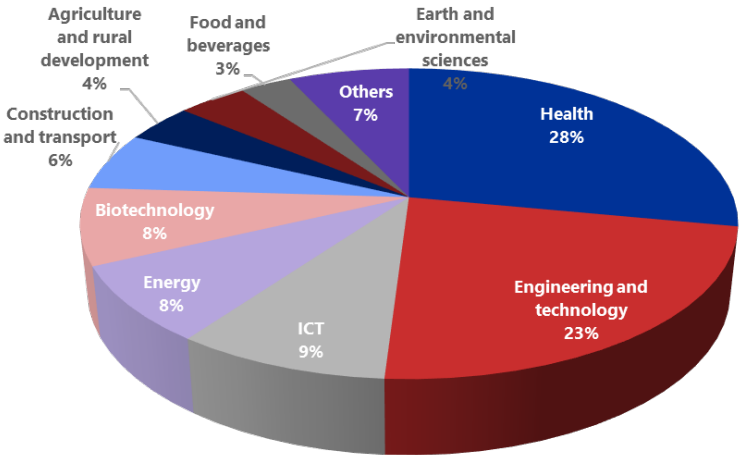


Figure 5: EIC Fund portfolio. Total 159 companies in the pilot phase 2019-2020

The Horizon Europe legal base does not limit the size of investments but is de-facto limited €15 million per company due to the size of the fund. As the EIC often co-invests alongside private investors, larger investment tickets can be reached. However, the overall value is likely to remain well below the €100 million, thus below the typical rounds for large scale-up deals, which can go to the billions. Lastly, the current legal base of the EIC does allow for the provision of debt to selected companies and the EIC may consider including also Venture Debt in the future. An evaluation of the EIC is ongoing and is scheduled to be published in 2022.

**Invest EU.** As of 2021, InvestEU, the Commission’s main investment programme, will deploy a European budgetary guarantee of €26 billion to mobilise more than€372 billion in additional investment. Among its priorities is support to innovative SMEs and start-ups with the objective of enabling them to better compete and scale up. The support under the InvestEU Fund will be used to guarantee investments enabling financial intermediaries, or entities (to be set-up) to offer diverse instruments direct debt and quasi-equity funding, as well as intermediated equity products to address market gaps and suboptimal investment situations in areas of EU policy priorities. This will ensure availability of risk capital for early and growth and late-stage equity and debt investments in European SMEs and mid-caps, including throughout the IPO stages.

**The European Investment Fund (EIF).** The EIF has been channelling EU financial resources to European VC funds since 1996<sup>39</sup>. *InnovFin Equity* programme, which was financed under Horizon 2020, was a co-investment scheme providing funds to pre-seed, business angels and VC funds investing at the seed and early-stage. The *Equity Financing For Growth* (EFG), which was part of the programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME), adopted a fund-of-fund approach and invests in selected funds that provide VC and mezzanine finance to SMEs in the expansion and growth stages, especially those operating across borders.<sup>40</sup> Both *InnovFin Equity* and EFG continue to operate in the 2021-2027 programming period under the *InvestEU Programme*. The EIF invests *pari-passu* with other private investors, while placing a strict due diligence process before injecting EU financial resources in private VCs. Such process is fundamental also to guarantee that the EIF backing can act as a “stamp of approval” for the general partners, and attract funds from private limited partners. Under the new *InvestEU* programme, the equity initiatives will become more focussed on specific strategic sectors, such as science and health, space, industrial technologies, climate and environmental solution.<sup>41</sup>

**Thematic Fund in the Digital Area.** A pilot scheme was specifically created to address the investment gap (for seed, early-stage and growth stages) in the Artificial Intelligence and Blockchain sectors. The scheme was piloted by the EIF under *InnovFin* between early 2020 and early 2021 in a fund-of-fund model. The initial budget was €100 million provided by Horizon 2020 and €150 million provided by the EIB group. So far, it leveraged additional investments in 13 private VC funds for a total commitment of €1.3 billion.

In a subsequent phase, from 2022 to 2027, the former AI-Blockchain pilot programme will be integrated in *InvestEU*, under the so-called Digital Strategic Technologies Investment Platform. It will add quasi-equity and debt financing and will have a budget increased to €250 million from the Digital Europe Programme, with the purpose to leverage €5 billion to €10 billion.<sup>42</sup> Also, the industry focus will be extended to other digital sectors besides AI and blockchain/ DLT,<sup>43</sup> microelectronics, 5G technologies, internet of things, cybersecurity, quantum and supercomputing.

**European Scale-Up Action for Risk Capital (ESCALAR).** The EIC Fund and the usual *InvestEU* instruments invest on equal terms with other investors (“*pari passu*”). To increase the size of European VC funds so that they are compatible with scale-up financing, the EU has envisaged a co-investment GLP instrument based on non-equal terms that should incentivize investments from private LPs. In 2020, DG GROW launched a pilot initiative with a budget of €300 million using this approach: the European Scale-Up Action for Risk Capital (ESCALAR), inspired by the US SBIC.

ESCALAR acts as a special type of limited partner in VC funds, injecting both equity and quasi-equity, up to 100 m€ or 50% of the fund, and with investment horizons up to 15 years (3 years extensions are also possible). The quasi-equity component has characteristics that are meant to improve the risk-return profile of the other (private) limited partners of the VC funds, specifically pension funds. The quasi-equity ESCALAR shares have a capped return, but also covered risk, as they have higher seniority in downward scenarios. In other terms, the ESCALAR boosts the returns of private LPs in the upward scenarios. This should favour the entry of risk-averse private investors, such as pension funds. Figure 6 shows a simulation for the return of equity-based limited partners (LP) and quasi-equity investors in the ESCALAR model as a function of the fund’s return.

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<sup>39</sup> [https://www.eif.org/news\\_centre/publications/eif\\_wp\\_34.pdf](https://www.eif.org/news_centre/publications/eif_wp_34.pdf)

<sup>40</sup> EFG is a successor to the High Growth and Innovative SME Facility (GIF), implemented under the Competitiveness and Innovation Framework Programme (CIP) in the period 2007-2013.

<sup>41</sup> Besides the equity initiatives, the *InvestEU* fund will provide loans (through the European Investment Bank), loan guarantees and microfinance (through public and private financial intermediaries in Member states). The general approach of *InvestEU* is to develop the private markets, and therefore to act through public and private financial intermediaries.

<sup>42</sup> See <https://digital-strategy.ec.europa.eu/en/policies/blockchain-funding>

<sup>43</sup> Distributed Ledger Technologies

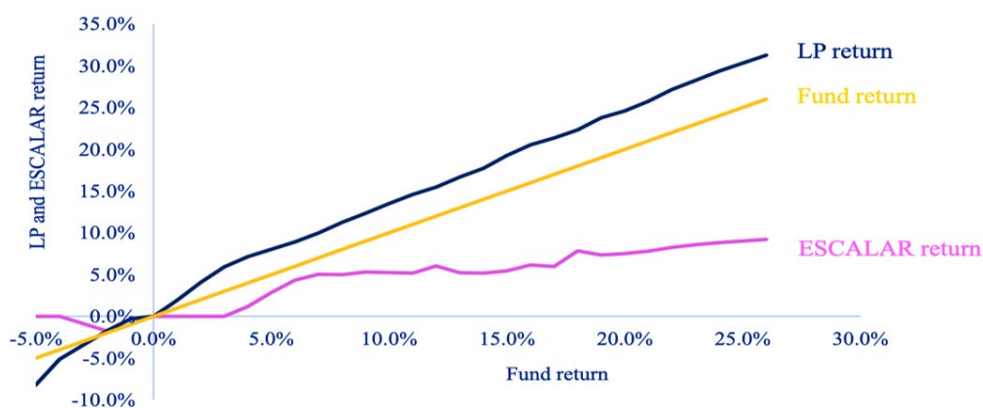


Figure 6: Risk limited, return capped for quasi-equity investors in the ESCALAR model. Simulations by the European Investment fund. Indicative scenario based on the following assumptions TVPI (Total Value to Paid In) of 1.8x at the end of the fund's life, investor preferred return of 4% and ESCALAR deferred return of 4%. (Source: Aermoudt, EIF)

The analysis and selection of the funds is managed by the EIF.<sup>44</sup> A pilot scheme was launched in 2020. Demand was higher than expected, with 88 applications, 10 of which were short listed, which resulted in five contracts. While the evaluation of ESCALAR is ongoing, the next step for the ESCALAR development is to optimize parameters for the launch of the ESCALAR initiative as a financial instrument within the next multiannual framework (2021 – 2027).

**Focus on SME IPOs.** Enhancing liquidity of investments is likely to enhance the willingness of investors to invest in startups, and IPO (initial public offering) is a largely underutilized exit route, due to the costs and difficulties for public listing. Action is required on perceptions of public listings, expertise of advisers, analysts and asset managers, liquidity, the costs in relation to size of company, possible consolidation of public markets, and the creation of secondary markets. This with aim, new instruments will be included in InvestEU, such as intermediated equity investments targeting SME IPOs, which will support the initial public offerings of small and medium-sized enterprises by investing in EU SME shares at different stages of the IPO process,<sup>45</sup> and the Venture Gap initiative, which will provide equity or equity-like (i.e., subordinated loans) finance to SME, small and mid-caps to promote their growth. InvestEU will also provide technical assistance for companies or financial intermediaries especially, with the final aim, again, of developing the market for private investment.

**European structural and investment funds.** In light of the importance of cooperating with the member states in the development of a homogeneous EU-level ecosystem for scale-ups, the European structural and investment funds (ESIF) are also likely to play an important role. The purpose of the ESIF is to invest in job creation and a sustainable and healthy European economy and environment. In contrast to other measures, these funds are managed by the EU Member States themselves, by means of partnership agreements with the EC. These agreements led to a series of investment programmes channelling the funding to the different regions and projects in the concerned policy areas. Out of the five ESIF funds, the ERDF includes the provision of financial instruments (including equity investments) for SMEs, which could be used for scale-up financing. The use of funds is currently targeted to SMEs as defined by the EC (definition which is not compatible with the definition of scale-ups), and even if in the future they could also support non SMEs, the large ticket size would remain a constraint.

<sup>44</sup> [https://www.eif.org/what\\_we\\_do/equity/escalator/index.htm](https://www.eif.org/what_we_do/equity/escalator/index.htm)

<sup>45</sup> [https://ec.europa.eu/info/sites/default/files/economy-finance/a\\_public-private\\_fund\\_to\\_support\\_the\\_eu\\_ipo\\_market\\_for\\_smes\\_final\\_report\\_updated.pdf](https://ec.europa.eu/info/sites/default/files/economy-finance/a_public-private_fund_to_support_the_eu_ipo_market_for_smes_final_report_updated.pdf)

### 6.3 Some policy-relevant Design Features of instruments addressing the scale-up gap

There is consensus on the need for an instrument that focus on ‘big ticket’ investments (>50 m€) to address the later stage funding gap; the way to achieve it is less clear.

On the private side, the European VC industry dynamics has clearly made a huge progress over the past decade. France illustrates the rapid maturation of the European VC industry. The average fund size of French VC and Growth funds has tripled over the past 10 years from an average of €80 million in the period 2009-2013, to € 220 million in 2014-2018, peaking to €250 million. Many French private equity firms active in VC and growth are well-established with significant amount of assets under management (AuM).<sup>46</sup> Similarly, the growth funds have achieved also significant sizes, with at three with a volume over 1 billion<sup>47</sup> and at least another seven with over €500 million.<sup>48</sup> But despite of this favourable evolution, there is still a big gap between the VC funds in the EU and abroad, notably the US and some Asian funds. The question arises whether Europe can afford to wait for the organic growth of the local VC industry with the risk that it will miss out a number of valuable and strategic opportunities.

On the governmental side, good progress has been made as well. A number of programmes are under way and have shown to be effective. And the decision to create the European Innovation Council with its clear mandate is a manifestation of the EU’s willingness to support financially innovative ventures. At the same time, currently there is no instrument at EU-level that would allow support for the mega-deals needed for the growth of very large ventures (unicorns). From a legal perspective, the EIC fund would allow such financial operations, but they are limited to €15 million due to their fund size. ESCALAR is an interesting alternative. The pilot phase has been very successful and the market acceptance was beyond expectation. A further rollout of this promising concept is currently limited by the financial resources. Both instruments, EIC and ESCALAR, are complementary and would further contribute to close the financial scale-up gap if more funds were available.

**EU Sovereign Megafund.** The representatives of 31 EU Unicorns submitted a proposal the EU Commissioners proposing a number of options to support software and hardware startups, deep tech and green tech startups.<sup>49</sup> The proposal includes the establishment of two mega-funds, one ‘Sovereign EU Tech Fund’ with an investment capacity of 100 b€ and one ‘Sovereign EU Green Tech Fund’ with 10 b€ over a five year investment period. It is understood that it should be primarily European Public Funding<sup>50</sup> that leverages this funding to anchor European champions and that such Megafund would become –in the long term- a permanent, evergreen vehicle capable of buttressing early-stage SME finance, while paving the way toward a growth equity market for SMEs, midcaps and unicorns. This megafund would result in a centralized equity financing strategy to address key policy objectives and priorities. Because of its size, such a ‘sovereign’ fund would need to mobilise and coordinate like-minded public national promotional institutions (NPIs) which are active

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<sup>46</sup> AuM for top French actors: Ardian (90 b€), Eurazeo (22 b€), Andera (2.5 b€), Sofinnova (2.5 b€), Siparex (2.2 b€), Blackfin (1.8 b€), Keensight (1.6 b€), Partech (1.5 b€), Cathay (1.3 b€)

<sup>47</sup> Keensight V (Digital/Healthcare), ArchiMed Med Platform III (Healthcare), Eurazeo Growth III (Digital).

<sup>48</sup> Cathay Innovation II (Digital), InfraVia Growth I (Digital), Andera Biodiscovery 6 (Life Sciences), Blacfin Tech II (Fintech). In addition there are there firm currently fundrising and expected to reach also a volume over 500 m€, namely Partech Growth III, Jeito Growth I, Sofinnova Capital X.

<sup>49</sup> “EU Unicorns Call on Europe and its Leaders” available at <https://unicornsgroup.eu/wp-content/uploads/2021/05/Next-Innovation-EU-FINAL-REPORT.pdf>

<sup>50</sup> An idea similar to a European Sovereign Fund was proposed in 2019 after the release of the World Economic Forum report “Innovate Europe. Competing for Global Innovation Leadership (see [http://www3.weforum.org/docs/WEF\\_Innovate\\_Europe\\_Report\\_2019.pdf](http://www3.weforum.org/docs/WEF_Innovate_Europe_Report_2019.pdf)) “. After being made public by Politico (<https://www.politico.eu/article/exclusive-european-commission-leaked-plans/>), the concept was criticised by the press (for instance in a column by Bloomberg <https://www.bloomberg.com/opinion/articles/2019-08-23/the-eu-s-next-bad-idea-a-so-called-sovereign-wealth-fund>)

promoting companies in their respective countries.<sup>51</sup> Blending public risk capital resources are not common<sup>52</sup> and are complex. The time required to align stakeholders should not be underestimated. The ambition of these Sovereign funds would be to expand and involve private investors. However, it remains unclear whether introducing such a large megafund in the current EU VC landscape might create an ‘elephant in the room’ problem and distort the VC market. If not designed carefully, this might result in a crowding out effect rather than the desired private involvement. An additional consideration is that current of mega-fund proposals do not appear to contribute resolving the tension between the need of venture capital funds for liquidity, typically an exit through an acquisition, and the desire of policy makers to retain ownership and head offices in Europe. In sum, the available options need careful analysis. Rather than focusing on particular instruments under discussion we discuss a number of features that such a fund ought to have and some reflections about these features.

**Tapping in private capital.** There is a consensus that this instrument should aim to crowd-in private investment by operating on a co-investment model that is private sector led, and not based on the direct investment of public money, with public sector support designed in a way that helps the growth of private sector European venture capital to make big ticket investments. Public capital should be an addition not a substitute for the private sector. Otherwise, there is the risk that direct government intervention as an investor will crowd out private sector investors.

Creating incentives are required to attract private investors. In case of risk-adverse investors, options should be offered to minimise their risk. A second issue is to increase liquidity. Investors will not be attracted if they are likely to be trapped in an investment for a decade after a growth funding round. Here, creating effective secondary markets seem therefore critical.

**Assuring Pan-European operation.** Whereas geographical dispersion is appropriate for instruments at the seed, start-up and early stage, where geographical proximity is important, this is less important for later stage venture capital investing. Indeed, the instrument should operate on a pan-European level to avoid fragmentation of resources and expertise. But whereas the location is not a key issue the geography of its investments is critical: it is essential that the instrument does not reinforce and deepen regional inequalities in Europe, for example in the geographical concentration of unicorns in particular member states and city-regions.

**Promoting VC expertise.** Generally speaking, there is little expertise in Europe to operate very large fund, and, in particular government inexperience is particularly seen by some observers as a problem. Indeed, it is suggested that venture capital firms are not keen to work with government.

**Assuring Pan-European operation.** Whereas geographical dispersion is appropriate for instruments at the seed, start-up and early stage, where geographical proximity is important, this is less important for later stage venture capital investing. In fact, the instrument should operate on a pan-European level to avoid fragmentation of resources and expertise. But at the same time, it is essential that the instrument does not reinforce and deepen regional inequalities in Europe, for example in the geographical concentration of unicorns in particular member states and city-regions.

**Looking beyond the financial gap.** Creating large-scale venture capital funds on its own will not solve Europe’s deficiency in scale-ups. Creating financial instruments is the easiest lever for government to pull but may not be the most important and may be effective in isolation from other policy levers. Promoting European scale-ups is not just about finance, but also involves cutting red

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<sup>51</sup> In principle, a European Sovereign Fund could also be established following the mechanisms behind the Recovery and Resilience Facility (RRF), i.e. being funded by the issuing of bonds at EU level. Such an option is complex as it would require the ratification in each Member States of the “Own Resources Decision” (as adopted by the Council in December 2020, see [https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/690520/EPRS\\_BRI\(2021\)690520\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/690520/EPRS_BRI(2021)690520_EN.pdf))

<sup>52</sup> Some notable exceptions exist but neither the size nor the objectives are comparable with these EIF-NPI equity platforms

tape, removing regulatory hurdles, providing access to large market, creating innovation ecosystems, etc. Some of these issues are summarized in the following paragraphs.

- **Building supportive entrepreneurial ecosystems.** There is a need to build and grow supportive entrepreneurial ecosystems throughout the EU27 that support innovation and produce entrepreneurial talent and offer the physical and intangible resources that entrepreneurs require to start and scale-up their businesses. Creating the enabling ecosystem infrastructure that supports and enables venture capital to invest effectively and efficiently is critical. One of the key drivers in the development of entrepreneurial ecosystems is ‘entrepreneurial recycling’ – with successful businesses generating skilled workers, some of whom will be recruited by other firms, and founders and senior management of successful entrepreneurial businesses that are acquired going on to set up new businesses, become angel investors, establish entrepreneurial support mechanisms (e.g. accelerators, incubators) and take on coaching and mentoring roles (Mason & Harrison, 2006). Successful entrepreneurial ecosystems are therefore typically based on a virtuous circle in which ‘success breeds success’.<sup>53</sup> This represents a key challenge for policy-makers seeking to develop entrepreneurial ecosystems. Another key driver is the interactions between the various interdependent actors in the ecosystem that generates the intangible and tangible resources required to enable individuals to pursue entrepreneurial opportunities. Digitalization has not eliminated the need for geographical proximity between the various actors in the ecosystem. Nevertheless interactions between ecosystems are critical to enable entrepreneurs to access resources that are not available in their own ecosystem. This is particularly important for smaller ecosystems. Policy-makers therefore need to focus on improving the connectivity of ecosystems within and between member states, for example by addressing fiscal and legal barriers that hamper cross-border investment, see (C. Mason et al., 2021) for a discussion of the constraints on cross border investing by business angels).
- **‘Feeding the pipeline’.** There is a need for sufficient quantity and variety of funding sources in the early stages of funding escalator to ensure that the scale-up funds have a flow of high quality investment opportunities. This is particularly important in some sectors, notably deep tech, where businesses will take longer both to reach the point where they are investable and become profitable where there is a particular need for government instruments that provide non-dilutive finance (e.g. grants) and to ‘crowd-in’ private money.
- **Assuring a flow of talents.** Many surveys identify access to key workforce skills as just as important a constraint on firm growth as finance (e.g. Siepel et al, 2017). This is a particular issue for businesses in smaller ecosystems which may have to relocate from their home location or direct their expansion to other locations, which has been shown to have negative impacts on their local and regional economies (Brown & Mawson, 2016). Hence there is a need for instruments that address the supply of skilled workers, particularly tech workers. This includes interventions at school and university/tertiary levels and life-long learning and also incentives for firms to train employees in-house (which helps to mitigate the risks if such workers then move to other businesses). Businesses also need to be able to hire international skilled talent very easily.
- **Harmonisation of regulations.** The entrepreneurial community highlighted the negative impact of regulations on firm growth. This has four dimensions: (i) regulation can limit or

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<sup>53</sup> For example, Klarna’s IPO has created 75 employee-millionaires with dozens more who have yet to exercise their options into real shares soon to join the ranks. According to Klarna’s last annual report, there were 434,000 employee stock options still outstanding. At the most recent valuation that option pool amounts to \$762m. Moreover, if Klarna’s share price increases further – at the IPO or otherwise – another batch of employees who are already close to hitting the \$1m mark will join the millionaire club. Source: Sifted (2021) Klarna has turned over 75 employees into millionaires, 21st November. <https://sifted.eu/articles/klarna-employee-millionaires-ipo-valuation/>

close-off opportunities for growth, for example by requiring licences or imposing operating restrictions; (ii) the long lead time for regulations to change in response to technological changes slows growth and may delay or prevent the exploitation of opportunities; (iii) the uncertainty about regulation in innovation ecosystems; and (iv) there is a need for the harmonisation of regulation, taxation, funding across the EU. Two specific areas for improvement were highlighted: the need for harmonization and simplification of taxes, option schemes, bureaucracy, EU funding programs, and facilitating easier and faster entry of global talent into Europe

- **Using procurement as a lever.** Government should use their procurement to create demand in the market, especially for companies that are working on climate-related deep tech, similar to NASA and DARPA in the US. Procurement formats should also seek to lower the barriers to entry for businesses with innovative solutions to societal challenges. The speed and size of government contracts are critical features in the design of effective procurement strategies.
- **Enhancing the entrepreneurial culture.** There is a need to enhance the EU's entrepreneurial culture was identified. It was suggested the EU's entrepreneurial successes should be publicised, with successful EU entrepreneurs promoted as role models. It was also suggested that there is still a stigma amongst institutional investors concerning European venture capital which needs to be addressed by improving the information that is available on the performance of European venture capital and highlights that gap between the returns of US and European venture capital industries have been narrowing.

## 7 Open Questions, Knowledge Gaps and Future Research

In this section, we summarize a number of reflections that we consider worth taking into account when preparing options for policy measures. Further we discuss the current knowledge gaps that would require more research and would contribute to better design policies in support of tackling the scale-up finance gap.

### 7.1 Open questions

What appears to be a fairly straightforward narrative – that Europe lags behind the US and Asia in producing scale-up companies, measured in terms of the number of unicorns, and that this is attributed to the lack of venture capital funds that can make ‘big ticket’ investments – needs to be qualified in several respects.

**Are international comparisons meaningful?** It is suggested that international comparisons may not be meaningful because they do not take account of structural differences between countries. For example, China’s ability to generate significant numbers of unicorns is attributed to several structural advantages: it is a technology latecomer, has a growing middle class that has created demand for the internet, e-commerce and payments, and has lacked concentration in some key markets. Government has also been very proactive in the way in which it has supported entrepreneurship. Similarly, the US is also very different from Europe, in terms of its structural industrial base, the regulation or access to finance.

**Are we measuring the right things?** Some policy decisions require a legal framework and legal binding definitions to be applied. For instance, to benefit for measures for micro, small and medium-sized enterprises (SMEs) the firms must comply with the SME definitions.<sup>54</sup> To capture better young dynamic firms, the OECD introduced the concept of high growth enterprises (HGE), based on a threshold definition.<sup>55</sup> Using a threshold to high growth firms are defined as those that reach a specific size in a given time has been criticised by some scholars (C. Mason, 2020)<sup>56</sup> for being the threshold subjective. Such an approach overlooks firms that grow less rapidly but over a longer period of time and ignoring whether the growth is sustained or not. Similarly, it is unclear to which extent counting and analysing unicorns can be regarded as appropriate indicator to measure. First, it is affected by changes in company valuations. This is undoubtedly responsible for at least some of the growth in the number of unicorn companies in recent years. Moreover, if company valuations differ between countries then it undermines international comparisons in the number of unicorns. And it is suggested that the focus on unicorns favours some sectors over others, specifically software companies. Research is required to assess these and other definitional issues. To what extent is the perceived problem –Europe’s lack of scale-ups– related to the definitions that are used?

### **Myths about unicorns. What are the characteristics of scale-ups and potential scale-ups?**

The concentration of research on quantitative, data-based driven studies means that we continue to lack detailed understanding of the characteristics of scale-ups and potential scale-ups. This has allowed the creation of various myths about high growth firms to emerge (Brown et al., 2017). We also have little understanding of the factors that drive successful scale up: the general consensus is that high growth firms have little in common. Moreover, understanding the constraints to growth, and how some firms are able to overcome them, remains fairly superficial. Nor do we know much about the transformation in the way in which firms operate as they scale – for example, their physical location, access to resources (e.g. advice, labour, finance), management team, business

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<sup>54</sup> A SME is a firm, which employs less than 250 persons and which have an annual turnover not exceeding € 50 million, and/or an annual balance sheet total not exceeding € 43 million

<sup>55</sup> High Growth Enterprises are defined as firm with an average annualised growth greater than 20% per annum, over a three-year period

<sup>56</sup> Note that unicorns are not necessarily firms that were once HGEs under the OECD definition, albeit the majority are

model and use of acquisition as a growth strategy. Our understanding of the motivations of entrepreneurs to grow, and their willingness to raise finance – and hence lose control to do so – is also limited. There are many anecdotal examples of companies that have used bootstrapping rather than external finance to scale. How common are such examples? Research on value-driven economy is necessary for more effective policy design.

**Too few good companies or too few good investors? Understanding the demand side.**

There is a need for more detailed insights into the demand side. In particular there is a need for longitudinal studies to focus on the dynamics of funding. Innovative firms should be identified for specific analysis. For example, tracking firms from the point where they are pitching to investors (angels and venture capitalists), those in accelerator programmes and those that win business competitions, examining the subsequent performance of firms that raise funding but also investigating what happens to firms that are unsuccessful in raising funding would enhance understanding of the financing of entrepreneurial businesses and provide the basis for more informed policy-making.

**The policy dilemma: focusing on champions or broader on the number of growing firms?**

Over the past decade we have witnessed that few companies, such as Facebook (Metaverse), Apple, Amazon, Netflix, Tesla or Google, have massively disengaged traditional businesses and have become the anchors for many other businesses. However, it remains unresolved how to strike the correct balance between supporting potential unicorns that may develop technological breakthroughs and create positive spill-over effects, on one side, and how to increase the number of growing firms, on the other.

**How to align with the strategic policy agenda?** It has also been suggested that scale-up finance policy should be aligned with the European Commission's strategic agenda, such as the European Green Deal, using the policy instruments to stimulate funding activity for scale-ups that are most likely to have the greatest impact on these broader objectives. However, scale-up in deep techs differs from traditional sectors, and it is unclear what implications this has for policy-design. Specifically, can scale-up finance instruments be designed in a sector-agnostic way?

**To which extent generation of unicorns that disrupt existing markets is both economically and socially desirable?**

A critical perspective is offered by (Kenney & Zysman, 2019) based on developments in the US. They note that unicorn firms typically operate on digital platforms. One of the characteristics of digital platforms is that they exhibit powerful network effects that often lead to winner-takes-all outcomes allowing them to outpace larger competitors and, if successful, often are able to establish proto-monopolies or near-monopoly positions. Venture capital firms invest in these firms not in the expectation that they will generate early and sustained operating profit, but to enable them to run operating losses during their growth phase with the aim of driving incumbents and other new entrants out of the market, with the prospect that they can get to a position to generate quasi-monopolistic profits and, by extension, resulting in enormous future capital gains. Hence their investment decisions at each investment stage are based not on financial metrics but on growth metrics – growth in users, engagement, and conversion for consumer-focused start-ups or monthly growth in customer acquisition and revenues. As long as the growth metrics are accepted by investors as proxies for value, then valuations can increase. This investment approach enables their investee businesses to run massive losses for long periods to develop quasi-monopolistic positions that enable them to dislodge incumbents and triumph over other lavishly funded start-ups. Existing firms competing with the disruptors must be profitable to survive, while the disruptors can continue operating and undercutting incumbents despite losing money for far longer than previously – effectively creating disruption without generating profit. Hence, over the entire investment cycle rather than making money, the sole task of the VC-backed firm is to capture market share driving competitor start-ups and/or incumbents from the market segment by undercutting them even as they lose money – the venture capital investment subsidize the losses. The risk for the investor is that many of these firms will never be profitable and thus may collapse completely. Kenney and Zysman (2019) question the

economic and social benefits and welfare generating effects of this investment approach that enables their investee businesses to pursue growth at all costs as they endeavour to achieve market domination – becoming unicorns in the process – while acknowledging that it is a natural outcome in many markets. They pose the following question: “would the economy have been better off with 10 different incompatible personal computer or smart phone operating systems? Similarly, would the economy be better served with 10 search engines...?”

## 7.1 Knowledge gaps and future research

Despite the attention of academics to the issue of the financing of start-ups, studies that specifically focus on the scale-up gap are scant (Aernoudt, 2017; Cumming et al., 2018; Duruflé et al., 2018; Murray, 1994; Wilson et al., 2018). While it is important that policy makers take stock of the results of the existing literature, regarding which form of government intervention for entrepreneurial finance work, when and how (Alperovych et al., 2020; Bertoni et al., 2019; Kovner & Lerner, 2015), further research should focus specifically on scale-ups due to their central role for innovation. The considerations highlighted so far point to specific areas that should spur further academic research.

**Focus on the demand for finance.** We need a better understanding of how companies scale-up, their financing (and broader) needs and their growth patterns. The latent demand for scale-up finance might be much higher than the visible demand for several reasons, including high potential scale-ups that do not apply for start-up financing because they did not know what financial possibilities are available or fear of being rejected, or because they applied and were rejected due to information asymmetries, agency concerns and investor biases. Such demand can be identified only by directly contacting ventures to ask whether they sought for external finance and, if not, why (Cosh et al., 2009; Quas & Adda, 2018). The analysis of the demand-side of the scale-up gap needs to consider the specificities of the sectors in which companies operate, which determine the amount of funds needed and the investment horizon. Moreover, further attention needs to be given to the individual-level aspects of the demand size, such as the gender, culture, personality traits, educational and professional background. However, identifying companies that fail because they were unable to raise finance is challenging as they typically do not leave an audit trail.

**Establish a methodology to assess financing gaps.** There are a number of challenges linked with the correct assessment of the scale-up gap, understood as the amount of capital that would be invested in innovative scale-ups under perfect conditions and the amount of capital actually invested. The first is the identification of all potential scale-ups. Companies can achieve the scale-up phase using VC or other, less visible, sources of finance, including business angels, peer to peer lending, crowdfunding, accelerators and incubators. Collecting information on all these sources of finance for a given population of companies is not trivial and would require the merge of several data sources and proprietary database from each provider of finance. Moreover, there might be potential scale-ups also in the population of companies that did not receive external start-up financing, as mentioned above. For completeness, the data collection should include also non-VC backed firms operations, i.e. POs and acquisitions that have been achieved without venture capital financing, which still are the majority (Catalini et al., 2019).

The second challenge would be to estimate the demand for scale-up financing for each company in euro amount. This very much depends on the industry of operations and other company-level characteristics, and therefore calls for access to micro-level data, rather than aggregate figures. Third, measuring the supply-side of financing is also challenging. Besides the fact that there are, as previously mentioned, an increasingly vast array of potential sources of finance (VC, Business angel, accelerators, grants, loans, guarantees etc.), for each of them we are in most cases able to see the realised investments, rather than the potential amounts available for investment. The recommendation for future research is to base the assessment of the scale-up gap on micro-level

data accounting for the heterogeneity in both the demand and the supply side across sectors and geographical area, as well as the evolution of the phenomena in time.

**Quantifying the negative consequences of the scale-up gap** is another empirical challenge that has largely remained unaddressed. Such research should consider the consequences along multiple dimensions. While employment is a frequently used metrics to measure impact, scale-ups are also likely to influence other macroeconomic aspects, such as innovation and efficiency. Arguably, valuations could be considered good proxies for the comprehensive value of a company, although concerns of the recent trends of overvaluation should also be accounted for. Moreover, researchers should consider that the potential impact of scale-ups likely spills over to other businesses and activities in the ecosystem, such as start-ups, other scale-ups and financial institutions. As an example, fintech start-ups help their clients becoming more productive, and have therefore an impact that goes well beyond the fintech industry itself. To study these impacts, researchers would need to construct comprehensive databases that include longitudinal data to study the dynamic development of an ecosystem. They should be complemented by micro-level studies (i.e., company level) with analysis at the meso- or macro-level (i.e., region or industry level), which also account for spill-overs towards the ecosystem.

**Better quantify the impact of the EU fragmentation**, in terms of regulation and geographical dispersion of VC investors, on the efficiency of the ecosystem. For instance, we would need to improve our understanding of the consequences of institutional and cultural differences for international recruitment, start-up internationalization and, above all, cross-border VC activity. Regarding the latter, useful evidence is offered by Moore et al. (2015), who find that increased normative (e.g., transparency of the government, bureaucratic burden, corruption, political risk) and cultural-cognitive distance among European countries reduce cross-border investments, whereas they find no effect for regulative distance (antitrust regulation, intellectual property protection, judicial system efficiency, fiscal policy, and inflation).

**Market Failure Considerations.** Government intervention could be justified by the existence of market failures in the financing of innovative ventures that arise from information imperfections, innovation externalities and coordination failures. The scientific literature had discussed these issues in the case of seed financing for at least 20 years (e.g. Lerner, 1999, 2002). In the case of financing of scale-ups, the discussion of the rationale for policy intervention is still inconclusive. Information asymmetries are arguably stronger at the earliest stages of development when less information is available on the venture. However, even companies that successfully survived the first valley of death might also suffer from information asymmetries, especially in emergent industries in which the human skills necessary to gauge a business proposal are difficult to find.

The novelty of an investment opportunity or lack of familiarity with a new business model prevents investors from selecting the best options and/or creates decision confusion (asymmetries of information). Lastly, scale-up companies are especially likely to suffer from coordination failures between early-stage investors and later stage investors (Murray, 1994). Similarly there is an argument in allocation inefficiencies, whenever solutions with real benefit and a demonstrated social or economics need fail to generate investor attraction. For instance long-term environmental sound projects may fail the VC filter due their time horizon.

## 8 Conclusions

The fact that Europe has been registering fewer unicorns than other large economies is widely regarded cause of concern that justifies government intervention. Although Europe is catching up in recent years: the VC industry is booming all over the world and Europe is registering many large VC-backed IPOs.

Nevertheless, EU governments should still be concerned by the fact that the largest unicorns are based in the US, EU-based large unicorns disproportionately receive foreign investments and many are acquired by non-EU companies. There is also concern that they might relocate outside the EU. EU-based VC investors tend to invest in smaller funds and to neglect investments in some areas that are of strategic importance for the EU, such as deep tech or green tech. This report highlights at least three levers that should be considered by EU governments to address such issues.

First, and of greatest priority, they should make the supply side of the EU VC ecosystem more compatible with the financial needs of scale-ups in emerging industries. One possibility is for them to act as GLP and become a patient, “anchor investor”. The EIF has been carrying out GLP activity in the EU for a very long time. It is fundamental to learn from this experience, and to exploit the knowledge that the EIF has of the EU VC ecosystem. One argument is that governments should further incentivize private limited partners when acting as GLP, building on the SBIC experience (this is what the ESCALAR is currently piloting). Second is to avoid the spread of EU resources across many private funds, and instead focus on the most experienced and reputable funds, so that they are able to increase their fund size and address the scale-up gap. Third, it is important to remove the stigma associated with European VC as an asset class, and improve the visibility of the performance of European VCs. Fourth, the EU can also intervene in the VC ecosystem by acting as a GVC. The political interferences which arguably drive the underperformance of regional and national GVCs are less likely to be an issue at the EU level. Moreover, the GVC approach implies some advantages, for example in terms of potentially complementing the screening skills of private VCs in emerging high-tech industries, exploiting the fact that government initiatives rely on very specialized scientists and engineers when awarding R&D grants. The EIC programme has the potential to achieve such advantage. Careful evaluations of the new programmes (especially the EIC and the ESCALAR) will be fundamental to understand whether these mechanisms are effective in addressing the scale-up gap.

The EU should work on the demand-side of the market too, strengthening the culture for entrepreneurship and growth across the EU, thus improving inclusivity over geographical areas, educational background and gender. Lastly, the EU should continue its effort to reduce barriers for cross-country investment, listings, cooperation and expansion. In doing so, cooperation with member states is fundamental, to overcome the heterogeneous local contexts in the EU.

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## List of abbreviations and definitions

<b>Big equity gap</b>	The difference between demand for and supply of equity for big, late-stage amounts (2nd & 3rd round)
<b>Due diligence</b>	Analysis of a Fund that request a licence.
<b>Decacorn</b>	Contraction of the prefix deca- (from the Greek number “ten” ) and Unicorn describing a privately held start-up company valued at over \$10 billion to be compared with a unicorn whose value is over \$1 billion.
<b>Equity gap</b>	The difference between demand for and supply of equity.
<b>ESBIC</b>	European Small Business Investment Company
<b>Investment Rounds</b>	<p><b>Pre-Seed</b> investment rounds in the range of 0 - €1m€</p> <p><b>Seed</b> investment rounds in the range of 1m€ - 4m€</p> <p><b>Series A</b> investment rounds in the range of 4m€ - 15m€</p> <p><b>Series B</b> investment rounds in the range of 15m€ - 40m€</p> <p><b>Series C</b> Investment rounds in the range of 40m€ - 100m€</p> <p>Series D and beyond Investments over 100m€</p>
<b>General Partner (GP)</b>	In a Venture Capital firm, the general partner takes care of the management of the company, i.e. GPs raise and manage venture funds, make investment decisions, and help their portfolio companies to exit
<b>JRC</b>	Joint Research Centre of the European Commission
<b>Leverage on return.</b>	Increased return of private investors due to public involvement
<b>Limited Partners (LP)</b>	are individual or institutional investors that have contributed capital for a venture capital fund. They are generally not concerned with the operations of the firm.
<b>Patient capital</b>	Synonym for long-term capital, i.e. the investor makes a financial investment in a business in expectation of a substantial return in the long-term, rather than looking for an immediate return in. Examples of patient capital includes sovereign wealth funds and university endowments.
<b>Pari-passu</b>	Latin phrase meaning "equal footing" that describes situations where two or more assets, securities, creditors or obligations are equally managed without any display of preference. From a competition point of view, one should avoid public money being treated worse than private money
<b>Reverse pari-passu</b>	The public participation is treated better than the private equity. In case of bankruptcy, the public is paid back first and the private is subordinated (comes later).

<b>SBA</b>	Small Business Administration
<b>SBIC</b>	Small Business Investment Company
<b>Small Equity Gap</b>	The difference between demand for and supply of equity for small, early stage amounts (1st round)
<b>Unicorn</b>	A Unicorn is a privately held start-up company valued at over \$1 billion (private unicorn). In this report we call 'exited' unicorns, those unicorns that went public via IPO or SPAC, and are no longer owned exclusively by venture capital firms
<b>Valley of death</b>	Valley of death is the initial phase where a start-up has commenced operations but is yet to make any money. During this period, the company depletes the initial equity capital provided by its shareholders. Often start-ups do not find investors to finance in exchange of equity at this stage, so that the firm has to close operations. In analogy to this 'first' equity gap, a ' <b>second' equity gap</b> may arise in the growth phase where scale-ups not find investors with deep pockets able to sustain the costly, but necessary expansion of the firm.

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## Annex: “Tackling the Scale-up” Gap Webinar – Agenda & Participants

The webinar “Tackling the Scale-up Gap” took place on 5<sup>th</sup> October 2021.

### 09:30 – 09:55 OPENING SESSION

Welcome – **Anna Panagopoulou**, Director RTD.A ERA & Innovation, European Commission  
Opening remarks – **Mariya Gabriel**, European Commissioner for Innovation, Research, Culture, Education and Youth  
Aims of the Webinar – **Mikel Landabaso**, Director JRC.B Growth & Innovation, European Commission

### 09:55 – 12:00 SESSION 1: Quantifying the scale-up gap for policy purposes

Chair and moderator: **Annalisa Ferrando**, Senior Lead Economist – Capital Markets/Financial Structure Division, European Central Bank (09:55 – 10:00)

#### 1.1 Evidence and statistics on the scale-up gap (10:00 – 10:20)

Key issues:

- What exactly is the scale-up financing gap?
- How is it measured and what is its value?
- How does the EU compare to the US, China, elsewhere?

Speaker: **Joseph A. McCahery**, Tilburg University, The Netherlands 10 mins

Open discussion on potential actions to be taken to measure and monitor the scale-up gap (e.g. tools, metrics, good practices in the Member States, national measures, etc.): 10 mins

#### 1.2 The consequences of not adopting active measures (10:20 – 10:40)

Key issues:

- What is known about the causes & effects of the scale-up gap?
- What is its impact on EU technological sovereignty, competitiveness, innovation, jobs & economic growth?

Speaker: **Armin Schwienbacher**, SKEMA Business School, France 10 mins

Open discussion on where policy would benefit from more evidence and analysis to measure the impact (e.g. available data, potential quantitative models, ...): 10 mins

#### 1.3 Should EU policy intervene and why? (10:40 – 11:00)

Key issues:

- Is there a particular market failure? Should policy makers become active?
- What sort of policy measures can be proposed and justified?
- What are the potential trade-offs of different types of policy intervention?

Speakers: **Julie Ferrari**, Independent Advisor & **Karoline Hallmeyer**, Alumni Board Member of the MA Program in Climate Society at the Columbia Climate School, co-authors of the World Economic Forum report “Bridging the Gap in European Scale-up Funding (June 2020)” 10 mins

Open discussion on what should be the role of government in addressing the scale-up gap, according to the evidence: 10 mins

### **BREAK (11:00 – 11:15)**

#### **1.4 Moderated Discussion (11:15 – 12:00)**

Which questions need to be further researched and analysed to design better policies?

Discussants: (5 mins each + open debate)

**Gordon Murray**, University of Exeter, UK

**Martina Lawless**, ESRI, Ireland

**Monika Wieczorek-Kosmala**, University of Economics in Katowice, Poland

### **12:00 – 17:00 SESSION 2: Addressing the scale-up gap**

Chair and moderator: **Marie Wall**, Start-up Director, Swedish Ministry of Enterprise and Innovation (12:00 – 12:05)

Presentation and discussion of potential financial instruments, with proposals and other considerations relevant to solving the scale-up gap and the way forward

Introduction to "Addressing the scale-up gap" and EU policy overview scene-setter (12:05 – 12:15)

**Jean-David Malo**, Director European Innovation Council and SMEs Executive Agency

**Xabier Goenaga Beldarrain**, DG JRC

#### **2.1 Relevant policy measures, constraints and potential developments (12:15 – 13:05)**

Speakers: (5 mins each followed by open discussion)

InvestEU – **Giorgio Chiarion Casoni**, DG ECFIN

European Innovation Council (EIC) – **Keith Sequeira**, EISMEA

European Scale-up Action for Risk capital (ESCALAR) – **Rudy Aernoudt**, DG GROW

Growth capital for Strategic Digital Technologies – **Helen Köpman**, DG CNECT

Scale-up and structural funds – **Sara Dagostini**, DG REGIO

### **LUNCH BREAK (13:05 – 14:30)**

#### **2.2 Stakeholder Groups Perspectives on the scale-up financing gap (14:30 – 15:00)**

Speakers: (5 mins each followed by open discussion)

EU Unicorns Group – **Mariano Sylveira**, VP of Public Affairs at Cabify

EU Innovation Ecosystems Leaders Group – **Jan Bormans**, European Start-up Network

European Women in Venture Capital Group – **Kinga Stanislawska**, General

Partner, Experior Venture Fund

#### **2.3 Financial actor/ investor perspectives (15:00 – 16:00)**

Speakers: (5 mins each followed by open discussion)

**Benedikt Kronberger**, BTOV Venture Capital, Germany

**Laurent Braun**, European Investment Fund

**Anton Malkin**, Chinese University of Hong Kong, Shenzhen – *Lessons from China*

**Samuel J. Boyd Jr.**, Chief Investment Officer, U.S. SBA – *SBIC Model*

### **BREAK (16:00 – 16:15)**

Page Break

## **2.4 Moderated discussion (16:15 – 17:00)**

Key issues:

- The appropriateness/ feasibility of the type of Sovereign Mega-fund proposed as well as the individual alternatives discussed
- Possible actions to address the scale-up financing gap, including under a forthcoming Commission communication on a renewed innovation policy
- The size of the public contribution needed to leverage private investment when risk levels are above normal commercial practice
- How to make best use of the existing instrument and initiatives in funding scale-up
- Efficiency and fitness-for-purpose means of implementation

Discussants: (5 mins each followed by open discussion)

**Albert Medrán**, Director General, Office of the High Commissioner for ‘Spain Entrepreneurial Nation’

**Maja Tomanič Vidovič**, Director, Slovene Enterprise Fund

**Philippe Huberdeau**, Secretary General - Scale-Up Europe

**Jörg Goschin**, Managing Director of KfW Capital, Germany

## **17:00 – 17:20 CLOSING SESSION**

### **Summary of Sessions (17:00 – 17:10)**

Rapporteur I: **Anita Quas**, University of Milan, Italy, Summary of session 1

Rapporteur II: **Colin Mason**, University of Glasgow, UK, Summary of session 2

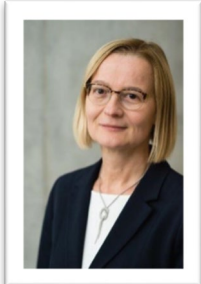

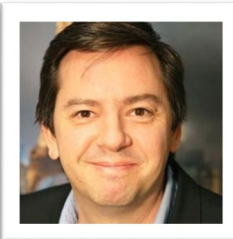
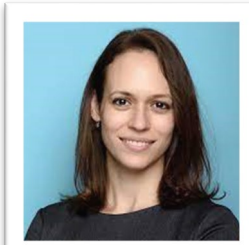
Conclusions & next steps – **Anna Panagopoulou** and **Mikel Landabaso** (17:10 – 17:20)

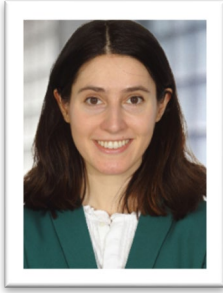
**\*\* Webinar Close @ 17:20 \*\***

## European Commission Webinar “Tackling the Scale-up Gap” 5<sup>th</sup> Oct 2021

### Programme participant bios

	<p><b>Anna Panagopoulou</b> is Director of ‘European Research Area &amp; Innovation’ at the Research and Innovation Directorate General of the European Commission. She is responsible together with her teams to co-create with Member States and stakeholders policies to shape a globally competitive European research and innovation system that is open, performant, cohesive and conducive to transformative innovation for a sustainable future. She has been working in the Commission in various policy and management roles for 24 years. She holds a master degree in electrical engineering and has a long professional experience in private and public sector.</p>
	<p><b>Mariya Gabriel</b> is the European Commissioner for Innovation, Research, Culture, Education and Youth. Under her leadership, the new Horizon Europe, Erasmus+, and the cultural strand of Creative Europe programmes (2021-2027) will be defined and implemented. Between 2017 and 2019, Mariya Gabriel was European Commissioner for Digital Economy and Society. She proposed the new Digital Europe programme, worked on an EU Strategy for AI, online disinformation, cybersecurity and launched the EuroHPC strategy. She has extensively engaged with external EU partners to enhance digital cooperation, in particular with the Western Balkans and Africa. She was elected a Member of the European Parliament in 2009, 2014 and 2019. Mariya Gabriel is First Vice-President of the European People’s Party (EPP), and, since 2012, Vice-President of EPP Women. Commissioner Gabriel is a board member of the United Nations youth programme Generation Unlimited (GenU). She is ranked among the 50 most influential women in Europe in the field of cybersecurity by the leading European cybersecurity magazine SC Media UK (2019). Mariya Gabriel is also known for her involvement in the fight for gender equality. Among others, she received the prestigious Italian prize “Golden Apple”. In the European Parliament, she was twice awarded “MEP of the year” - in 2016 for the category “Development”, and in 2013 for the category “Gender Equality”. In November 2020, Commissioner Gabriel received the Annual Award of the Vienna Economic Forum “Partner of the Year 2020”</p>
	<p><b>Mikel Landabaso</b> has worked in the European Commission since 1990. He has been Director of Growth &amp; Innovation in the Joint Research Centre in Seville since December 2019. Previously, he was: Director of Strategy and Corporate Communication in DG Communication 2016-19; acting Director for Inclusive growth, Urban and Territorial development in DG Regional Policy and Head of Cabinet of Commissioner for Regional Policy 2014-15. From 1986-1990, he was Head of the Research Department and Assistant to the Director General of the Basque Regional Development Agency. He has a PhD (1994) and Bachelor’s degree (1983) in Economics from the University of the Basque Country 1994), an M.A. in Development Economics (University of East Anglia 1984), a Diploma in Advanced European Studies (College of Europe 1986). He was part-time lecturer at the Free University of Brussels 2000-7, the University of Deusto 1988-1990 and the Basque Public University 1987-88 and a Visiting Scholar at the University of North Carolina at Chapel Hill (2000).</p>

	<p><b>Annalisa Ferrando</b> is Senior Lead Economist at the Capital Markets/Financial Structure division at the European Central Bank. Previously she worked at the Research Department of the Bank of Italy and at the European Commission, DG-Enterprise. She has also been a visiting Advisor at the European Investment Bank. She holds an MPhil in Economics from Oxford University. Her current research interests lie in firms' financial decisions with a focus on small and medium enterprises and financing constraints. She is also an expert on firm-level surveys. In these fields, she has published several journal articles and working papers.</p>
	<p><b>Joseph A. McCahery</b> is Professor of International Economic Law at Tilburg University Law School and a research associate of ECGI. His research interests and main publications fall in the areas of investment regulation and financial markets. Some of his research shows the effect of financial regulatory reforms on the capacity of SMEs to access external financing. His work has been published in various academic journals, such as the Journal of Finance, the Journal of Corporate Finance, the Journal of International Business Studies and the Journal of Management and Governance. Recent interests include the impact of ESG for private equity firms, and the influence of ESG ratings on firms' disclosure policies and performance.</p>
	<p><b>Armin Schwienbacher</b> is full professor of finance at SKEMA Business School since 2010. He previously worked at the Université Lille 2 (France), Louvain School of Management (Université catholique de Louvain, Belgium) and Universiteit van Amsterdam (the Netherlands), and as guest lecturer at Duisenberg School of Finance (the Netherlands), Rotterdam School of Management (the Netherlands) and the European School of Management and Technology (Germany). He obtained his PhD in 2003 at the University of Namur (Belgium) on exit strategies of venture capital funds. He was a visiting scholar at the Haas School of Business (UC Berkeley, USA) in 2001-2002 and visiting professor at Schulich School of Business (York University, Canada) in 2014-2015. Armin currently teaches courses in entrepreneurial finance and fintech. He has presented his research on crowdfunding, venture capital and various other topics in corporate finance at many universities, financial institutions and international conferences, and his work has been published in several international academic journals.</p>
	<p><b>Julie Ferrari</b> is a passionate advocate for innovation with purpose. As Data Policy Platform Curator and former Global Leadership Fellow at the World Economic Forum, she has led complex, multi-stakeholder initiatives including the Digital Europe Initiative and Digital Leaders of Europe community; projects for the Technology Governance: Data Policy, Future of Urban Development, and Future of Advanced Manufacturing Platforms; and the Global Future Councils on Cities (2017-18) and Entrepreneurship (2019). Previous to the Forum, she has over a decade of experience in strategy, operations, and project management across telecoms, financial services, and academia. Julie holds an MBA from INSEAD Business School, dual BA in Economics and Psychology from Northwestern University, and a PMP certification from the Project Management Institute. She is currently based in Madrid, Spain.</p>



**Karoline Hallmeyer** is manager in the climate strategy team at PwC Germany, and an Alumni Board Member of the MA program in Climate Society at the Columbia Climate School, from which she graduated in 2015. Karoline has more than six years of experience working in climate finance, climate strategies, market transformation, and innovation finance. After designing financial instruments to catalyze sustainable investment in emerging markets at Climate Policy Initiative, she gathered experience at KPMG, where she completed a secondment to the World Economic Forum, authoring the report “Bridging the Gap in European Scale-up Funding: The Green Imperative in an Unprecedented Time”. At PwC, Karoline works on net zero strategies and climate risk scenario analysis projects for asset managers, banks, and insurances.







**Gordon Murray** is Professor Emeritus in Management (Entrepreneurship) at the University of Exeter Business School. Former academic positions include being a full-time faculty member of both Warwick and London Business Schools. Long-term research interests include: public policy support for high potential and innovative young firms; how national venture capital (VC) industries have evolved over time; the role of government policy actions in VC and Business Angel (BA) industry development; entrepreneurship policy formation; the identification and support of high growth young firms and the genesis, growth and internationalisation of new technology-based firms.



**Martina Lawless** is a Research Professor at the Economic and Social Research Institute (ESRI). Before joining the ESRI, she received her doctorate from Trinity College Dublin and worked as a research economist at the Central Bank of Ireland. Her research has focused primarily on firm-level dynamics and decision making, covering a range of topics such as access to finance for small and medium firms, effects of taxation and participation in exporting. More recently, she has investigated the potential effects of Brexit and COVID-19 on firms in Ireland. Her work has been published in a number of leading international academic and policy journals. From 2017 to 2020, she was a member of the Irish Fiscal Advisory Council.



**Monika Wieczorek-Kosmala** is an Associate Professor and Researcher at the University of Economics in Katowice (Poland). Her research interests and expertise merge risk management and financial management, with a special interest in the buffering role of financial slack, capital structure optimization, and the emphasis on the specifics of SMEs position within these aspects. She is a member of the Committee of European Risk Research Network. She gained professional experience in risk management and property insurance as an insurance broker.

	<p><b>Marie Wall</b> start-up director at the Swedish Ministry of Enterprise and Innovation, is the bridge between the ministry and the start-up community and has in this role a broad portfolio that covers all different aspects of start-up and scale-up support, from financing to competence and ecosystem building. She is also the advisor to Nordic Innovation regarding how to strengthen support to scale-up. She has a background from the early start-up community, and has worked for companies such as Everyday.com (one of the first portals in Sweden), Sendit (mobile internet company, bought by Microsoft), Cypak (printed electronics), Bosieboo (business to consumer) and Speedventure (venture capital). She has experience from Silicon Valley as a technical attaché and as a visiting scholar at Stanford University. Before joining the Ministry she was responsible for the national incubation programme at the Swedish Governmental Agency for Innovation (Vinnova). She has an MSc in computer science from the Royal Institute of Technology (KTH) in Stockholm.</p>
	<p><b>Jean-David Malo</b> is the Director of the European Innovation Council (EIC) and SME Executive Agency (EISMEA) since April 2021. In 2019 following the European Council's request to set up the European Innovation Council (EIC), he became Director of the EIC Task Force. Director for Open Innovation and Open Science in 2017, he designed and expanded initiatives such as the VentureEU Initiative and the RDI dimension under the European Fund for Strategic Investments (EFSI) among other things. Jean-David Malo became Head of Unit in charge of regional aspects in DG R&amp;I (2006-2010) and of the unit (2011-2013) in charge of increasing private finance and closing market gaps by expanding existing EU innovative financial instruments (see RSFF) and by developing new ones in the fields of debt (including guarantees) and equity financing (InnovFin). Horizon 2020 SMEs was also addressed by the unit (i.e. EUROSTARS II, SME Instrument and the Fast Track to Innovation).</p>
	<p><b>Xabier Goenaga Beldarrain</b> is Head of the Knowledge for Finance, Innovation and Growth Unit at the Joint Research Centre of the European Commission. The Unit he leads represents the JRC in European Semester country teams responsible for identifying policy challenges of the EU Member States as well as for assessing and monitoring their Recovery and Resilience Plans. His team assesses trends at Member State level regarding productivity and high growth enterprises, as well as EU vulnerabilities in global value chains. It evaluates the economic and labour market impacts of a number of EU programmes at regional level and publishes yearly the global Industrial R&amp;D Scoreboard. It also monitors and assesses industrial, trade and innovation developments in China vis-à-vis the EU. He graduated from the Basque Country University in 1982, holds a PhD in chemical engineering from the University of Wales and a Master degree in Public administration from the École Solvay in Brussels.</p>
	<p><b>Giorgio Chiarion Casoni</b> is Director for InvestEU and financial institutions in the European Commission's Directorate General for Economic and Financial Affairs. His professional career at the European Commission has involved managing financial programmes in support of SMEs, and coordination of the activities of the European Commission with the European Investment Bank (EIB), the European Investment Fund, the European Bank for Reconstruction and Development and other IFIs.</p>



**Keith Sequeira** is head of the governance and coordination unit of the European Innovation Council (EIC) and SME Executive Agency, responsible for the EIC Board and strategy. From 2016 to 2020, Keith was senior advisor to Carlos Moedas, European Commissioner for research and innovation, on open science and open innovation, including Horizon Europe, scientific advice to policy, the European Innovation Council and the European Research Council. He was previously in the Cabinet of the Commissioner Máire Geoghegan-Quinn and has worked in the European Commission extensively on the development and implementation of EU research and innovation programmes and policies. He has previous experience in the UK government and private sector. Keith studied physics at Cambridge University and has a doctoral degree in innovation studies from the Science Policy Research Unit (SPRU) at the Sussex University








**Rudy Aernoudt** is an experienced Professor of Corporate Finance and European policy and has outstanding International and European experience (MIT, OECD, European Commission, European Council and European Social and Economic Committee). Uniquely, he has occupied Chief of Staff (Director of Cabinet) positions at different governance levels (Europe, Belgium, Flanders, Wallonia). He served in the Belgian government as Secretary-General for Economy, Science and Innovation, was director-general of OLPC (one laptop per child, spinoff MIT) and curator TEDx Brussels. Actually, he is professor at the universities of Ghent and Nancy and senior economist at the European Commission dealing with space economics, enterprise and entrepreneurship, financing of enterprises and industrial policy. He holds Masters (triple cum laude) in Thomistic Philosophy (University of Leuven), in Industrial and Monetary Economy (University of Leuven) and in European economy (college of Europe).






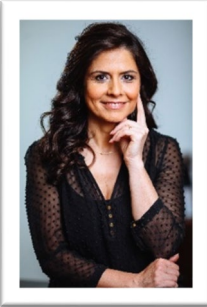



**Helen Köpman** is Deputy Head of Unit for Digital Innovation & Blockchain, at DG Communications Networks, Content and Technology at the European Commission in Brussels. The unit elaborates policy initiatives under the Digital single Market to support digital innovation, blockchain and growth of start-ups and include Start-up Europe, ICT standardisation and Innovation Procurement. The unit leads along with DG FISMA, the European Commission Task Force on Financial Technology. Previously, she was Deputy Head of Unit, managing Community supported research and innovation in the area of ICT applied to mobility. She also worked as program officer in the area of International Scientific Cooperation. She has a M.Sc. in Applied Physics and Electrical Engineering, from the University of Linköping, Sweden. She joined the European Commission in 2003 after a thorough industrial experience in the management of ICT service development in international companies that include Infonet, AT&T Unisource and Cap Gemini.



**Sara Dagostini** is a Policy Officer in DG Regional and Urban Policy, in the unit responsible for financial advisory. She provides horizontal support about financial instruments and financial intermediaries to colleagues and national authorities. She has joined the European Commission in 2013, at first in DG CNECT as a financial officer. Since 2015 to 2019, she has worked as Senior Expert for the Single Resolution Board, responsible for resolution of European banks in financial distress. Before joining the EU institutions, she has gained a pluri-decennial work experience in the private sector, in the field of banking and financial markets, with a special focus on financial services.

	<p><b>Mariano Silveyra</b> is VP of Public Affairs at Cabify. The Spanish company started operations in 2011 and is a multimobility technology platform providing safety and quality services to millions of users in more than 130 cities in Spain and Latam. Cabify is facing a huge growth combined with an economically, socially and environmentally sustainable strategy to transform and improve the bright life of the cities. Before Cabify, Mariano was the Country Manager from Spain at Globant (GLOB:NYSE), a very disruptive software development company with more than 8.000 employees, US and Europe as main markets, and clients as Google, LinkedIn, Disney or BBVA among others from Fortune 500 list. He had previously worked more than 16 years in the global retail sector leading operations, marketing and sales among other challenges. Mariano has an Aeronautical Engineering degree from Universidad Nacional de la Plata, Argentina, and he has also an Executive MBA degree from IAE Business School.</p>
	<p><b>Jan Bormans</b> Ph.D., MBA, has been active in the fields of innovation and entrepreneurship for more than 20 years. Jan's roles included strategy advisor at the world leading IMEC nanotechnology research centre and valorisation manager of the Flanders DC/Vlerick Business School knowledge centre. He has been actively involved in various start-up initiatives such as Start it @KBC and start-ups.be since 2010. From 2019 on, Jan is the CEO of the European Start-up Network. Jan also performs the secretariat functions for the 'leading independent start-up ecosystem leaders' group, first called upon by Commissioner Gabriel, aiming to significantly increase the number of unicorns in Europe.</p>
	<p><b>Kinga Stanislawska</b> is Founder of Expor VC and of European Women in VC. She has been working in investments, banking and finance for 20 years. She is member of the IC at EIC Fund. She is on the boards of Tylko, Kliniki.pl and Ten Square Games. She was Vice President of the Polish PE/VC Association (PSIK) for 5 years and is active in supporting women led companies and funds.</p>
	<p><b>Benedikt Kronberger</b> has been a partner at the venture capital firm 'btov Partners' since 2011 where he manages new and existing investments. He has worked in corporate development and in M&amp;A for OMV and Rothschild. He also co-founded two start-ups. He studied International Business in Vienna, International Management at CEMS and International Development at Harvard's Kennedy School.</p>
	<p><b>Laurent Braun</b> is in charge of business development at the European Investment Fund, where he leads investment or guarantee programmes the EIF manages on behalf of the European Commission, the European Investment Bank, or other large mandators. He has experience in private equity both as an LP at the EIF and as a GP in a large venture fund based in London. He has also extensive transaction experience from positions he held in EIB, where he helped restructure more than twenty large project finance transactions across Europe as part of the work-out team, and at Bertelsmann, where he co-led several M&amp;A transactions in the media sector in both Europe and the US. Prior to that, he was a consultant for the Boston Consulting Group, where he worked on strategy and organization projects in</p>

	<p>the Benelux, France, Germany and Argentina. He holds an MBA from INSEAD and a commercial engineering degree from the Solvay Business School in Brussels.</p>
	<p><b>Anton Malkin</b> is an Assistant Professor in the department of Global Studies at the Chinese University of Hong Kong, Shenzhen. His current research examines the impact of US-China technological rivalry on China's ICT firms, as well as the role of financial markets and intellectual property in China's economic development. From 2016 to 2020 Anton was a Research Fellow at Centre for International Governance Innovation (CIGI). From 2012 to 2013, Anton was a senior visiting scholar at the School of International Studies at Peking University. His Ph.D. thesis examined the role of foreign financial institutions in the transformation of China's financial markets and state-owned enterprises.</p>
	<p><b>Samuel J. Boyd Jr.</b>, Director of Program Development, joined the U.S. Small Business Administration, Investment Division on June 4, 2012 as the Director of the Office Program Development (OPD). In this role, Mr. Boyd is in charge of managing all SBIC program front end engagements with prospective SBIC applicants and institutional investors, to include pre-screening and advisory. He is also responsible for creating and executing SBIC's outreach strategy and ensuring it aligns with the agency's overall goals and objectives. OPD also assesses Management Assessment Questionnaires (MAQs) of SBIC applicants and prepares the applications for presentation to the SBIC Investment Committee. Mr. Boyd is a voting member of both the SBIC Investment and Licensing Committees.</p> <p>Immediately prior to joining the SBIC program, Mr. Boyd served as the President &amp; CEO of the National Association of Investment Companies (NAIC), the private equity trade association for firms that represent or invest in the underserved market. Mr. Boyd has an MBA from the Darden Graduate School of Business at the University of Virginia and a BS in Civil Engineering from North Carolina A&amp;T State University.</p>
	<p><b>Albert Medrán</b> is the Director General of the High Commission for Spain Entrepreneurial Nation. Born in Sabadell (Barcelona) in 1984, he graduated with a BA in Political Science from Universitat Pompeu Fabra, and later from ICPS-Universitat Autònoma de Barcelona with a MA in Marketing and postgraduate studies in Policy Communication. From 2018 to 2020, he served as the Chief of Staff at the Secretariat of State for Digital Advancement of the Ministry of Economy and Business. He was also the State Representative on the Board of Trustees of the Barcelona Mobile World Capital Foundation, and a member of the Board of Directors of Red.es and Incibe. Mr. Medrán worked as the Communications Director at Actuable and Change.org from 2011 to 2017. Previously, he was a communications consultant at LLYC.</p>

	<p><b>Maja Tomanič Vidovič</b> is a strategic leader for growth and development of entrepreneurship, SMEs, start-ups and scale-ups in Europe. She has a Master Degree in economics and business finance. She has a proven 14 years CEO track record of leading and managing a development fund for entrepreneurship with more than 80% of financial sources from EU cohesion and development funds, with strong international network for support policy for business sector and more than 20 years of successful management of wide support policies with active portfolio (loans, guarantees, venture capital, grants, networking, knowledge and mentoring support,...) in amount of €900 mio of balance sheet and 12.000 active projects in entrepreneur sector (SMEs, start ups, scale ups, deep tech, social companies, industry 4.0, society 5.0; including gender, social and environmental aspects,...).</p>
	<p><b>Philippe Huberdeau</b> is Secretary General of <b>Scale-Up Europe</b>, an initiative launched by President Macron to activate new tech finance and accelerate the growth of European innovation. Passionate about international business development with an extensive track record in European affairs. Strong believer in the huge untapped potential in private-public co-operation to boost transnational trade, investment and innovation. Looking forward to bring Scale-Up Europe to the next level in the framework of the French Presidency of the EU in 2022. Previously, Philippe organized the G7 Summit in Biarritz in 2019. He also worked at the French foreign ministry as well as the European Commission, DG Trade. Philippe graduated from Ecole polytechnique.</p>
	<p><b>Jörg Goschin</b> is Co-CEO and Senior Managing Director of KfW Capital. As a founder and an experienced investment professional, he has in-depth market knowledge and a close-knit network in the venture capital community. Previous stations of his career include Metzler, The Boston Consulting Group, BNP Paribas, Cerberus, Blackstone and Alstin. Jörg hold a PhD in finance and diploma in electrical engineering and economics. Together with Alexander Thees, he set-up and manages KfW Capital as Co-CEO.</p>
	<p><b>Anita Quas</b> is a Senior Researcher of Corporate Finance at University of Milan since 2019. Anita obtained her PhD at Politecnico di Milano and has worked as Innovation and Policy consultant at Technopolis group, and as an associate professor at emlyon business school. She conducts research in the field of entrepreneurial finance and venture capital. Her area of expertise is governmental intervention in entrepreneurial finance and specifically governmental venture capital. She published her research in international peer reviewed journals including Entrepreneurship: Theory and Practice, Journal of Business Venturing, Small Business Economics, Research Policy. She is also a member of the EBAN Research and Innovation Advisory Board.</p>



**Colin Mason** is Professor of Entrepreneurship in the Adam Smith Business School, University of Glasgow. He has held visiting positions at universities in Canada, Australia, New Zealand and Argentina, University of Otago, University of Adelaide and University of South Australia. He has recently been appointed a Visiting Professor in the Faculty of Business Administration at Memorial University of Newfoundland (Canada). His research is on entrepreneurship and regional development with specific research focus on (i) entrepreneurial finance - specifically business angel investing - and (ii) entrepreneurial ecosystems. His research has a strong policy and practitioner focus and he has engaged with numerous external organizations and government, including Canada's National Angel Capital Association (NACO), HM Treasury, Scottish Government, European Commission, Eurochambres, InterTrade Ireland, Growth Analysis (Sweden) and OECD. He was joint winner of the ESRC's 2015 Outstanding Impact in Business award for his research (with Prof Richard Harrison) on business angels.

## European Commission Webinar “Tackling the Scale-up Gap” 5<sup>th</sup> Oct 2021

### Full list of participants

Last Name	First Name	Organisation	Country
ADDARII	Filippo	PlusValue	Italy
AERNOUDT	Rudy	European Commission	Belgium
ALPEROVYCH	Yan	Emlyon Business School	France
AMATI	Luigi	META	Italy
AMBROSIO	F	World Bank	⌵
AMICO ROXAS	Salvatore	European Commission	Belgium
ANDONOVA	Elena	European Commission	Belgium
ANDREOLI	Job	Nyenrode Business University	Netherlands
BATTISTON	Anna	JRC Brussels	Belgium
BÉJAR	Jerónimo	SOPREA, S.A.	Spain
BOHAN	Sarah	National University of Ireland, Galway	Ireland
BORMANS	Jan	European Startup Network	Belgium
BORUNSKA	Katerina	EISMEA	Belgium
BOTELHO	Tiago	University of East Anglia	United Kingdom
BOTSARI	Antonia	European Investment Fund	Luxembourg
BOUHMADI	Laura	Ghent University	Belgium
BOYD	Samuel	SBA - SBIC Model	United States
BRALEY	Alex	SustainablePublicAffairs	Belgium
BRAUN	Laurent	European Investment Fund	Luxembourg
BRETAS	Vanessa	National University of Ireland, Galway	Ireland
BRODERSEN	Jochen	European Commission	Belgium
BURSTRÖM	Thommie	Hanken School of Economics	Finland
CAMPOLONGO	Francesca	JRC Ispra	Italy
CARDONA	Melisande	JRC Seville	Spain
CHEHTOVA	Emilia	European Commission	Belgium
CHIARION CASONI	Giorgio	European Commission	Luxembourg
COAD	Alexander	Waseda University	Japan
COMPAÑÓ	Ramón	JRC Seville	Spain
COWLING	Marc	University of Derby	United Kingdom
CUSMANO	Lucia	OECD	France
DAGOSTINI	Sara	European Commission	Belgium
DE CARVALHO AMARAL GARCIA	Sofia	JRC Brussels	Belgium
DE MENNA	Bruno	OECD	France
DE NIGRIS	Sarah	JRC Ispra	Italy
DE SAN JOSE	Amparo	Eitfood	Spain
DE CROMBRUGGHE DE PICQUENDAELE	Charles-Antoine	European Commission	Belgium
DELATOUR	Arnaud	Hello Tomorrow	France
DE-SANCHO MAYORAL	Rebeca	EISMEA	Belgium
DOMNICK	Clemens	JRC Seville	Spain
DRIEVER	André	SOPREA, S.A.	Spain

ELIAS	M	European Investment Fund	Luxembourg
ENJOLRAS	Valerie	JRC Brussels	Belgium
FAKO	Peter	JRC Brussels	Belgium
FATICA	Serena	JRC Ispra	Italy
FAZIO	Alessandro	JRC Brussels	Belgium
FERRANDO	Annalisa	European Central Bank	Germany
FONTANAZZA	vittorio	JRC Brussels	Belgium
GABRIEL	Mariya	European Commission	Belgium
GATTI	M	European Investment Bank	Luxembourg
GAVIGAN	James	JRC Seville	Spain
GLUNTZ	Philippe	BAE	France
GOENAGA BELDARRAIN	Xabier	JRC Brussels	Belgium
GOSCHIN	joerg	KfW	Germany
GRASSANO	Nicola	JRC Seville	Spain
GUIBERT SUAREZ	Javier	European Commission	Belgium
HALLMEYER	Karoline	Columbia University Climate School	Germany
HERVAS SORIANO	Fernando	JRC Seville	Spain
HUBERDEAU	Philippe	Scale-Up Europe	France
HUDINA	Ulla	European Commission	Belgium
INOTAI	Andras	European Commission	Belgium
JAKIMOWICZ	Katarzyna	European Commission	Belgium
KACER	Marek	University of Leeds	United Kingdom
KAPFINGER	Kathrin	European Commission	Belgium
KARIGER	Benedicte	EBRD	United Kingdom
KARVOUNARAKI	Athina	European Commission	Belgium
KERGROACH	Sandrine	OECD	France
KETIKIDIS	Panagiotis	Hellenic Business Angels Network (HeBAN)	Greece
KOEPMAN	Helen	European Commission	Belgium
KONSTANTINOVA	Radka	European Commission	Belgium
KRAMER-EIS	Helmut	European Investment Fund	Luxembourg
KRONBERGER	Benedikt	btov Partners	Germany
LANDABASO	Mikel	JRC Seville	Spain
LANG	Frank	European Investment Fund	Luxembourg
LASO	Isidro	European Commission	Belgium
LAWLESS	Martina	Economic and Social Research Institute	Ireland
LEMBCKE	Alexander	OECD	France
LEPPENS	Merel	European Commission	Belgium
LETOUT	Simon	JRC Petten	Netherlands
LOPATKA	Maciej	European Commission	Belgium
LOZAR	Borut	European Commission	Belgium
MALKIN	Anton	Chinese University of Hong Kong, Shenzhen	China
MALO	Jean-David	EISMEA	Belgium
MANIGART	Sophie	Vlerick Business School	Belgium

MASON	Colin	University of Glasgow	United Kingdom
MATANOVA	Natalia	Vlerick Business School	Belgium
MC GRATH	Barry	European Investment Fund	Luxembourg
MCCAHERY	Joseph	Tilburg University Law School	Netherlands
MEDRÁN	Albert	High Commission for Spain Entrepreneurial Nation	Spain
MELONE	Armando	European Commission	Belgium
MENON	Carlo	OECD	France
METZGER	Georg	KfW Group	Germany
MICHAUD	Bertrand	EISMEA	Belgium
MURRAY	Gordon	University of Exeter Business School	United Kingdom
NEPELSKI	Daniel	JRC Seville	Spain
NIAKAROS	Konstantinos	European Commission	Belgium
NOWINSKA	Natalia	EISMEA	Belgium
OUAKI	Stephane	EISMEA	Belgium
PALLU	Eric-Olivier	EISMEA	Belgium
PANAGOPOULOU	Anna	European Commission	Belgium
PARPALEIX	Laure-Anne	UNDP	United States
PEETERSON	Eve	Startup Estonia	Estonia
PEREIRA	Tiago	European Commission	Belgium
PISSAREVA	Lora	OECD	France
PORRINO	Fabrizio	FacilityLive	Italy
QUAS	Anita	University of Milan	Italy
QUIGLEY	Lauren	London & Partners	United Kingdom
RAAB	Georg	European Commission	Belgium
RADELLI	Cristiano		Italy
RÄSÄNEN	Petri	Council of Tampere Region / Tampere Startup Alliance	Finland
RÄSÄNEN	Markku	IQM Finland Oy	Finland
RENTOCCHINI	Francesco	JRC Seville	Spain
RUECKERT	Eva	EISMEA	Belgium
SALVO	Gabriele	European Commission	Belgium
SALZGEBER	Thomas	Hello Tomorrow	France
SCHENK	Peter	European Commission	Belgium
SCHUN	William	Bpifrance	France
SCHWIENBACHER	Armin	SKEMA Business School	France
SEQUEIRA	Keith	EISMEA	Belgium
SEURRE	Xavier	-	-
SEVDALIS	Panagiotis	European Commission	Belgium
SILVEYRA	Mariano	Cabify	Spain
SIMONELLI	Felice	Cassa Depositi e Prestiti (CDP)	Italy
STANDAERT	Thomas	Ghent University	Belgium
STANISLAWSKA	Kinga	Experior VC & European Women in VC	Poland
SUNNANMARK	Anna-Maija	Nordic Innovation	Norway
TANEVA	Albena	European Commission	Belgium
TAUPIN	Louise	Mines Paris	France

TERHAZAZ	Yasmine	Bpifrance	France
TESTA	Giuseppina	JRC Brussels	Belgium
TIPPMANN	Esther	NUI Galway	Ireland
TOMANIC VIDOVIC	Maja	Slovene enterprise fund	Slovenia
TORENBEEK	Carlijn	SustainablePublicAffairs	Belgium
TSONEVA	Rosina	European Commission	Belgium
TUEBKE	Alxander	JRC Seville	Spain
VARI	Laura	EISMEA	Belgium
VON WENDLAND	Bernhard	European Commission	Belgium
WALL	Marie	Swedish Ministry of Enterprise and innovation	Sweden
WARTIOVAARA	Markus	Hanken School of Economics	Finland
WIECZOREK-KOSMALA	Monika	University of Economics in Katowice	Poland
WILDNEROVA	Lenka	OECD	France
WILSON	Nick	CMRC	United Kingdom
ZISKIND FERRARI	Julie	Independent Advisor	Spain

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