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The market sentiment in European private equity and venture capital: Impact of COVID-19

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EIF Research & Market Analysis

Working Paper **2020/64**

The market sentiment in European Private Equity and Venture Capital: Impact of COVID-19

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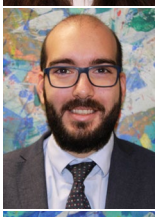

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Executive summary[1]

The COVID-19 pandemic and associated mitigation measures caused a major shock to the European and global economy in the first two quarters of 2020. The European Commission's Summer 2020 Economic Forecast (European Commission, 2020d) projects the EU economy (euro area economy) to contract sharply by 8.3% (euro area 8.7%) in 2020, and to grow by 5.8% (euro area 6.1%) in 2021 as economic activity normalises, helped by policy support.

One important question is how the economic impact of the COVID-19 pandemic will spill over to the European PE/VC markets, potentially restricting the funding for technology and innovation. In turn, this would prove detrimental to Europe's competitiveness, including its ability to pre-emptively address the risk of future pandemic spreads, similar systemic shocks and reduced EU autonomy in key strategic sectors (e.g. foregone innovation, acquisitions of EU companies by non-EU groups).

Against this backdrop, this paper provides unique insights into the impact of the COVID-19 crisis on the European private equity and venture capital ecosystem. It achieves this purpose in two ways. By exploiting the recent survey wave of EIF's signature BA/VC/PE MM survey series, which was launched just prior to the COVID-19 outbreak in Europe, we are able to gauge how the pandemic changed the sentiment among European fund managers. This qualitative analysis is complemented by the results from a simple time series model that simulates the potential impact of the COVID-19 pandemic on the European PE and VC markets. The results of our analysis can be summarised as follows:

What happened during the financial crisis?

- The historical fluctuations confirm that the European PE/VC ecosystem is sensitive to changes in the macroeconomic landscape.
- We look at past economic shocks, e.g. the global financial crisis (GFC), to draw a useful benchmark against which we can assess the potential effects of the COVID-19 pandemic. During and after the GFC, total PE (VC) fundraising in Europe suffered a 74% (55%) drop.
- The average fund size shrunk drastically, with a disproportionate impact on scale-up financing. The industry temporarily shifted away from seed/early stages towards later stage financing.
- However, the determinants of the COVID-19 crisis differ significantly from the global financial crisis (GFC). Therefore, it is debatable how much can be inferred from past crises about the prospects of the European VC/PE ecosystem after COVID-19.
- There is substantial lack of consensus with regard to the short-term developments of the European PE/VC ecosystem in the first two quarters of 2020. Nevertheless, most analyses agree that the investment activity in the wake of COVID-19 has stalled at best.
- We provide elements that support a cautious optimism vis-à-vis the recovery of the PE/VC ecosystem in the aftermath of COVID-19: e.g. a market that has so far stalled but not crashed, the increased experience and maturity of the industry, high levels of dry powder and the readiness of public policy intervention.
- However, uncertainty remains high and the risk for far more severe outcomes is substantial.

[1] We would like to thank the respondents to the EIF surveys. Without their support and valuable replies, this project would not have been possible. This paper benefited from comments and inputs by many EIF colleagues, for which we are very grateful; we would like to express particular thanks to Julien Brault, Andrea Crisanti, Cindy Daniel, Oscar Farres, Laurent Maurin, Barry McGrath, Carolin Städecke. We would also like to thank colleagues from Invest Europe and from the Trier University for their support. All errors are of the authors.

Market sentiment at the start of the COVID-19 crisis in Europe

- The latest regular waves of the three EIF surveys were closed in mid-March 2020, at a time when the most severe economic effects of the current COVID-19 crisis only started to materialise across Europe.
- To assess the change in the sentiment of European fund managers in the wake of COVID-19, we analyse discrepancies in responses received before and after the cut-off date of 1 March 2020.
- Our survey results confirm that expectations about the forthcoming months have considerably worsened.
- For PE MM fund managers, the pessimism increased particularly with respect to their state of business, the fundraising environment, the access to finance of portfolio companies, future portfolio development and exit prospects.
- VC fund managers were also particularly concerned about the fundraising environment and the exit opportunities in the near future.
- For BAs, the worsened outlook mainly concerned the access to finance of portfolio companies and finding co-investors.
- As per the biggest challenges arising since the onset of the COVID-19 crisis, PE MM fund managers and BAs were concerned about the general market volatility and the exit environment, while VCs stated that they worried more about fundraising.

The prospects of European PE/VC after COVID-19

- We use a Vector Auto-regression model to assess the potential impact of the COVID-19 pandemic on the European PE market. The model is able to capture the complex interdependencies between GDP, PE fundraising and PE investments fluctuations in the years 1998 to 2019.
- We find that the COVID-19 pandemic could have a strong and immediate adverse impact on the European PE market activity, at a time when activity levels had reached a new all-time high.
- The fall in fundraising and investment volumes has the potential to echo the drop in activity witnessed during the global financial crisis, e.g. between 2007 and 2009.
- However, the wide margin of error around our model forecasts confirms that uncertainty remains high.

Concluding remarks

- We provide evidence that the European PE/VC ecosystem has faced and will continue to experience significant challenges in the aftermath of the COVID-19 pandemic. A strong policy response in support of the PE/VC markets is imperative.
- For this reason, the EIF – as a leading provider of business finance, particularly to SMEs, in the European Union, and the largest public investor in the venture capital ecosystem in Europe – is considerably stepping up its policy response. This is in the context of the EIB Group's response to the pandemic and in cooperation with the European Commission.
- The EIF's activities represent viable policy instruments to mitigate the impact of the COVID-19 crisis. Against this backdrop, the EIF not only maintains its commitments to support the European PE/VC ecosystem, but also to continue analysing the markets' situation, sentiment and development, including the collection of new survey evidence, in order to tailor its interventions in line with market needs.

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1 Introduction

The COVID-19 pandemic and associated mitigation measures caused a major shock to the European and global economies in the first two quarters of 2020. The shock was initially transmitted via a complex mix of supply (e.g. labour restrictions due to illness of workers and/or their family members, school and business closures) and demand factors (e.g. reduced demand for specific goods and services, curtailing of investments). The shock was further amplified by financial markets and global trade linkages and spilled over to other segments of the economy. In this sense, the COVID-19 crisis differs from the Global Financial Crisis (GFC), where the contraction in economic activity was the result of an imbalance inherent in the structure of the financial system.

The European Commission's Summer 2020 Economic Forecast (European Commission, 2020d) projects the EU economy (euro area economy) to contract sharply by 8.3% (euro area 8.7%) in 2020, and to grow by 5.8% (euro area 6.1%) in 2021 as economic activity normalises, helped by policy support. It forecasts that the global economy (excluding the EU) will contract by 3.9% in 2020 and grow by around 4.9% in 2021. Growth projections for the EU and the Euro area have been revised down by around one percentage point compared to the Spring 2020 economic forecast, and ten percentage points compared to the Autumn 2019 economic forecast. The risks for even more severe outcomes, however, are substantial.

The immediate economic effects of the COVID-19 mitigation measures have mainly manifested in sectors that rely heavily on social interactions. However, the de facto shutdown of a significant portion of the economy subsequently hit all industries. Overall business sentiment fell to all-time low levels and fear about the significant hit to business activity contributed to extreme risk-averse sentiment, resulting in the repricing of equities, commodities, bonds and currencies. Although a number of business sentiment indicators have shown a tentative recovery during May and June 2020,[2] business sentiment remains below its long-term average. High levels of volatility will persist in the near future due to the uncertainty around how long it will take to contain the spread of the virus and, by extension, how long economic activity might be hampered. Against the backdrop that hopes to achieve herd immunity have so far proven too optimistic, a full scale-back of the lockdown/social distancing measures will only be possible once a vaccine has been developed and mass-produced.[3]

The adverse effects of the COVID-19 pandemic also spilled over to Private Equity (PE) and Venture Capital (VC) activities. The PE and VC markets are a crucial part of Europe's investment ecosystem, contributing to innovation, jobs and growth across the continent. At the fund level, there are adverse repercussions on fundraising, investment, and exits – and consequently on the financing of innovative Small and Medium-sized Enterprises (SMEs) in Europe (see e.g. Mason, 2020). General Partners (GPs) are expected to focus on cash flow management and resource management, while smaller and less established fund managers may struggle to source LP commitments (PitchBook, 2020).

This would prove detrimental to most young and innovative SMEs across Europe: a high portion of these are non-revenue generating and/or cash-flow negative. If access to PE/VC funding is restricted, they might be unable to access funding through alternative channels. Even for revenue-generating

[2] For example, the June 2020 Economic Sentiment composite Indicator produced by the Directorate General for Economic and Financial Affairs (DG ECFIN) of the European Commission was up by 8.1 percentage points compared to May 2020.
[3] For a brief summary regarding potential economic impact of COVID-19 and further readings see for example Hepburn et al. (2020).

innovative SMEs, the potential reduction in sales due to COVID-19 might erode their capital base. This would reduce their chances to capture any additional debt financing to avoid insolvency.

In addition, venture-backed start-ups are historically vulnerable to recessions and economic slowdowns. In addition to the potential drop in demand induced by COVID-19, start-ups are unlikely to generate significant revenues; they typically have immature operational infrastructure and must therefore rely on outside capital (usually venture) to fund further operations and growth. Start-ups and scale-ups with a problematic cash flow situation at the start of COVID-19 might involuntarily become the target of opportunistic acquisitions (PitchBook, 2020). This might be particularly likely for regions outside of major PE/VC hubs, which could exacerbate the existing cohesion gaps (Mason, 2020). Similarly, the COVID-19 crisis is likely to have diverging effects across industries, creating "winners" – e.g. consumer health, biotech – as well as "losers" – e.g. travel, mobility and jobs (see Dealroom and Sifted, 2020). Moreover, if European tech companies are acquired by non-EU buyers, this could lead to foregone EU innovation and job creation.[4]

The purpose of the present paper is to discuss the potential effects of the COVID-19 crisis on the European PE and VC ecosystem. To this end, this paper follows a twofold approach. It first discusses the sentiment of European investors in the wake of the COVID-19 crisis, as gathered by three separate waves of EIF's 2020 Surveys targeted to Business Angels, VC and PE Mid-Market investors respectively. In addition, this paper uses time series analysis to discuss the potential prospects of the European PE/VC ecosystem after the COVID-19 crisis.

This paper is mainly concerned with the cyclical behaviour of the European VC/PE market. However, the European PE/VC ecosystem also continues to be affected by a number of structural impediments, e.g. information asymmetries, thin markets due to the high fragmentation across (and within) national borders. We discuss these in Kraemer-Eis et al. (2016), with a focus on the structural failures of financing markets and an economic rationale for public intervention. For a practical approach to estimate the potential loss of activity induced by structural issues in the European PE/VC market, see Kraemer-Eis and Lang (2014) and fi-compass (2020).

The paper is organised as follows. Section 2 sets the scene by taking a brief look at the historical development of the European PE/VC markets, including during the Global Financial Crisis. Section 3 exploits the unique opportunity brought by three concurrent EIF Surveys administered in early 2020 to discuss the sentiment of investors at the outbreak of the crisis, when uncertainty increased dramatically. Section 4 discusses the results of a simple time series model to forecast the prospects of the European PE/VC market after COVID-19, based on the Spring 2020 GDP forecasts of the European Commission. Section 5 concludes.

[4] Based on an analysis of 3,600 EIF-supported seed and start-up VC investments from 1996 to 2015, Prencipe (2017) finds that about 50% of the performing EIF-backed European investees were acquired by non-European corporations, particularly from the US. This "raises the issue of whether the missing scale-up phenomenon in Europe could be linked to the lack of serial tech buyers, that is, incumbents in highly innovative and competitive sectors" (Prencipe, 2017).

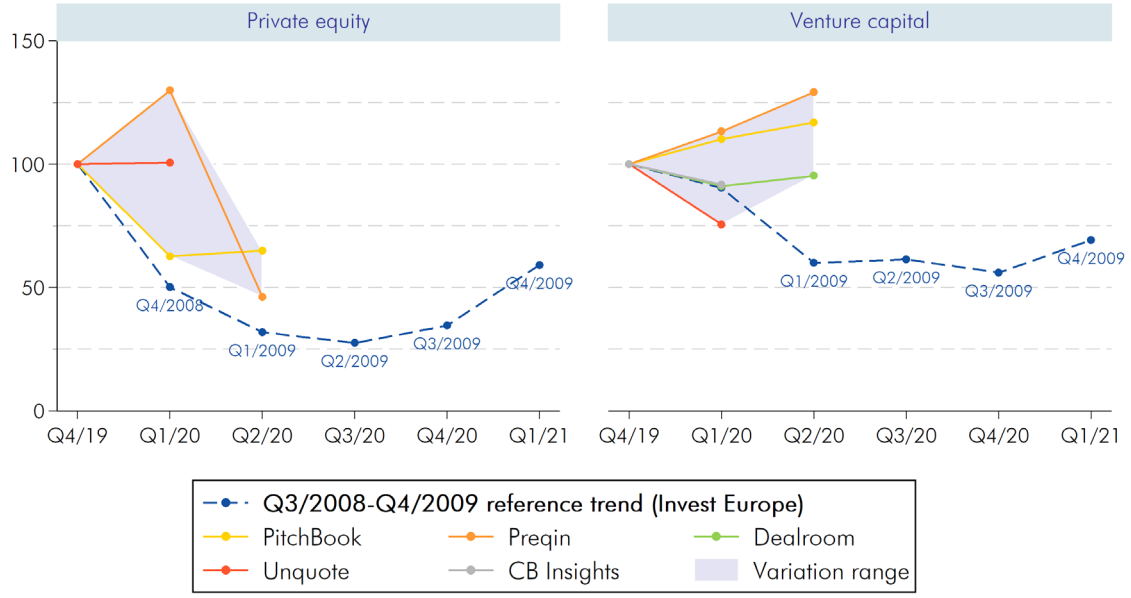
2 COVID-19 and the Global Financial Crisis: similarities and differences

As discussed in section 1, the COVID-19 pandemic has led to an unusual mix of supply and demand shocks that are rather unique in recent economic history. Therefore, the determinants of the COVID-19 crisis differ significantly from the GFC. It is thus debatable how much can be inferred from past crises about the prospects of the European VC/PE ecosystem after COVID-19 (Mason, 2020). As a consequence, the initial reactions in the European PE/VC market might prove more informative.

However, a complicating factor is the renowned opaqueness of the PE/VC market, resulting in the high degree of uncertainty about the initial reaction of the European PE/VC markets. Figure 1 plots the indexed growth of PE/VC investments in Europe according to various leading PE/VC data providers.[5] There is substantial lack of consensus with regard to the short-term developments of the European PE/VC ecosystem in the first two quarters of 2020. Nevertheless, most reports agree that the investment activity in the wake of COVID-19 has stalled at best. For instance, Dealroom reports that in early 2020 VC activity remained relatively stable due to the fact that many signed deals were already in the works before the introduction of lockdown measures.

Against this backdrop, the reaction to past economic shocks can provide at least a useful benchmark against which we can assess the potential effects of the COVID-19 pandemic. To this end, Figure 1 includes the quarterly evolution of the European PE/VC market during the GFC, based on data from Invest Europe, the European private equity and venture capital association.

Figure 1: Indexed real growth of PE/VC investments in Europe (Q4/2019 = 100), by data provider

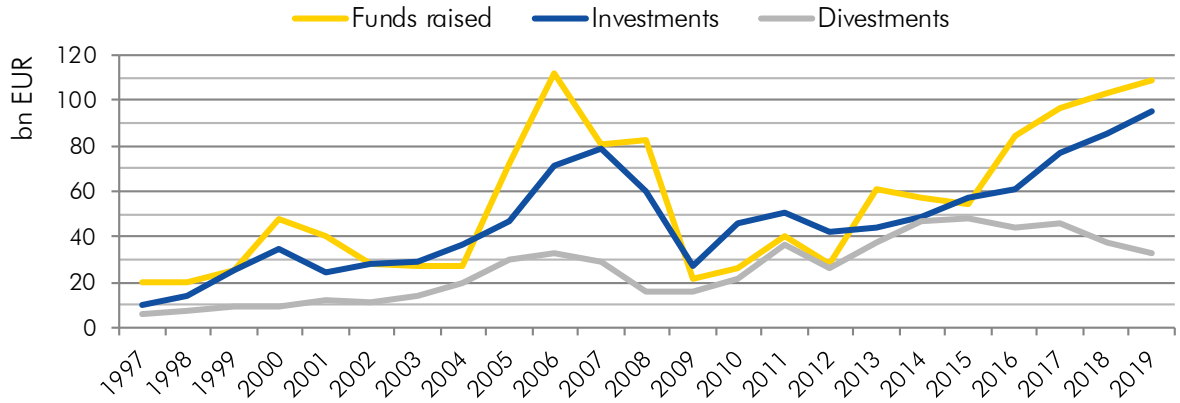


Source: Authors, based on data from Invest Europe, PitchBook, Preqin, Dealroom, Unquote, CB Insights.

[5] Invest Europe: "Quarterly Activity Indicator Q1 2007 - Q3 2015"; PitchBook: PitchBook database [Accessed: 2 July 2020]; Preqin: Preqin database [Accessed: 3 July 2020]; Dealroom (and Sifted): Dealroom and Sifted, 2020; Unquote (and Aberdeen Standard Investments): "Private Equity Barometer", Q1 2020 edition; CB Insights (and PwC): "MoneyTree Report Q1 2020".

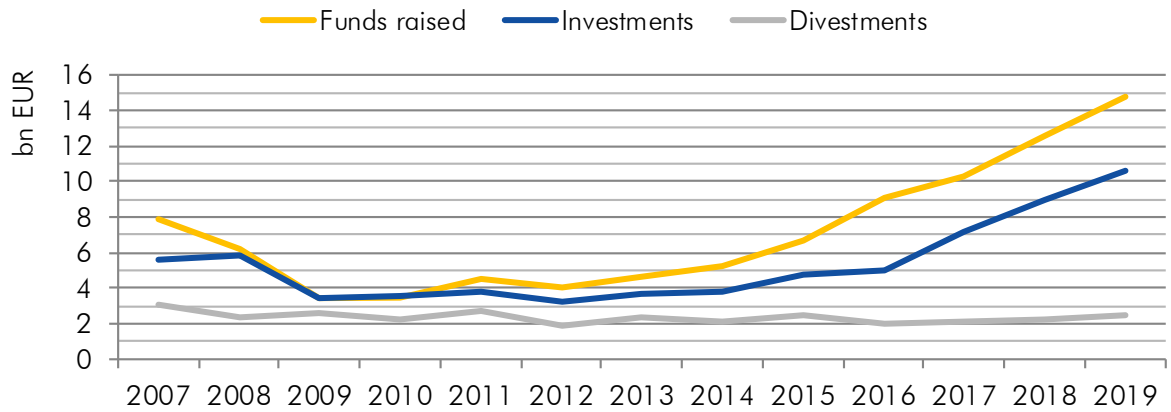
What happened following the GFC?[6] Data from Invest Europe (Figure 2) shows that total PE fundraising in Europe suffered a 74% drop, from EUR 83bn in 2008 to EUR 21bn in 2009.[7] Figure 3 shows that VC fundraising halved over the course of two years, from EUR 7.9bn in 2007 to EUR 3.5bn in 2009. As a consequence, the average fund size shrunk drastically, with a disproportionate impact on scale-up financing. The average PE fund size more than halved from EUR 358m in 2008 to EUR 128m in 2009. The average VC fund size decreased by about 40% over the course of two years, from EUR 56m in 2008 to EUR 32m in 2010. However, the relative fall in the number of active funds was higher in the VC than in the PE market.

Figure 2: Activity levels in the European Private Equity market over time



Source: Authors, based on Invest Europe data

Figure 3: Activity levels in the European VC market over time



Source: Authors, based on Invest Europe data

Data from Invest Europe also show that the industry temporarily shifted away from seed/early stages to later stages financing. As a consequence, fewer innovative firms were able to obtain financing and the (average) amount per funding round decreased. The anticyclical policy response led, inter alia, by the EIF caused an increase in the share of government agencies in VC fundraising, from less than 15% in 2007 to around 35% in 2011. Such anticyclical policy response helped the European

[6] See Kraemer-Eis et al. (2019) for more detailed information on the European PE/VC market development over time.
[7] For comparison, in the years following the dot-com crash total PE fundraising decreased by 44% between 2000 and 2003.

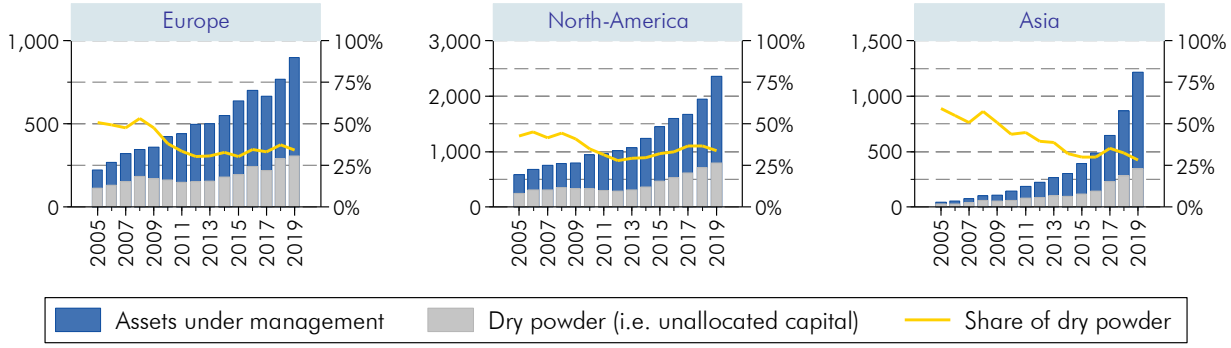
VC ecosystem to stay afloat during the GFC, and likely played a role in the rekindling of the overall market activity after 2012 (Kraemer-Eis et al., 2016).

Exit opportunities for investees also narrowed considerably: for instance, the number of IPOs in Europe decreased by almost 85% in the years 2007 to 2009 (PwC, 2012).[8] Start-up valuations shrunk significantly,[9] and holding periods until successful exit went up. It would take almost an entire decade, i.e. in 2015-2016, for PE and VC fundraising to revert to their pre-crisis levels.

Overall, the historical data confirms that the European PE/VC ecosystem is sensitive to changes in the macroeconomic landscape (Gompers and Lerner, 1999; Prencipe, 2017). However, there is mounting evidence that the European VC/PE ecosystem has matured in the past decades (Axelson and Martinovic, 2013; Sahut and Braune, 2015), which could potentially contribute to its stronger resilience during downturns.

In addition, analysts pointed to the increased availability of funds raised, though yet unallocated capital (i.e. "dry powder") as a potential mitigating factor that advantaged the PE/VC industry as it entered the COVID-19 crisis. Figure 4 shows the total dry powder levels and the share of dry powder over assets under management (AuM) by geographical focus of investments and over time, according to data from Preqin. The levels of dry powder in Europe almost doubled in 2019 compared to 2007. However, note that the relative share of dry powder was actually lower in 2019, consistent with the decreasing share observed across regions of the world.[10]

Figure 4: AuM and dry powder by Fund region focus over time, EUR bn



Source: Preqin

Following the deep downturn induced by the GFC, the European PE/VC ecosystem had undertaken a significant recovery. In fact, before the COVID-19 crisis hit, activity levels in the European PE market had reached a new all-time high (Invest Europe, 2020). The general sentiment among market participants was optimistic (Botsari et al., 2019; Kraemer-Eis et al., 2019). In the next chapter, we use newly collected survey data to analyse the revised market sentiment in the wake of COVID-19.

[8] In addition to IPOs, Prencipe (2017) shows that major recession events such as the dot-com bubble (2001–2002) and the European sovereign debt crisis (2009–2010) were also linked to peaks in investment write-offs in the EIF venture capital portfolio.

[9] For instance, Prencipe (2017) shows that the median valuation of EIF-backed early stage start-ups fell by 25% in the period Q1/2008 to Q4/2009.

[10] Note that one reason for the recent lowering of the share of dry powder over AuM might be the quicker deployment of PE/VC funds – anecdotal evidence suggests this dropped to 3-4 years versus 5 years in the past.

3 Market sentiment at the start of the COVID-19 crisis in Europe

This chapter focuses on the market sentiment among European private equity (PE) and venture capital (VC) investors at the start of the COVID-19 crisis in Europe. The results are survey-based and are derived from the latest waves of the *EIF VC Survey*, the *EIF Business Angels Survey* (*EIF BA Survey*) and the new *EIF Private Equity Mid-Market Survey* (*EIF PE MM Survey*).[11] Appendix B details the sample selection and data preparation process for each of the surveys.

All surveys target both equity investors that are EIF-supported as well as other VC/PE MM/BA investors. To the best of our knowledge, the combined *EIF VC Survey* and the *EIF PE MM Survey* currently represent the largest survey exercise among GPs in Europe. The questionnaires of these surveys mainly covered the following topics: general characteristics of the respondents' equity investment activities/market sentiment, valuations, the financing for scaling up companies in Europe, IPOs, environmental, social and governance (ESG) considerations and impact investing.

In our analysis, we aim at identifying respondents' perception of the current market situation and their outlook for the months ahead.[12] Hence, we focus on survey questions that asked for the respondents' market sentiment. The analysis covers a range of topics relating to the state of business of the respondents' firms, fundraising, investments, co-investments, the exit environment, the challenges in investors' business activities, valuations, the development and access to finance of portfolio companies, and long-term growth perspectives.

3.1 Before vs after COVID-19: choice of an appropriate cut-off date

The latest regular waves of the three EIF surveys were closed in mid-March, at a time when the most severe economic effects of the current COVID-19 crisis only started to materialise across Europe. In order to reveal the initial impact of the crisis on European PE and VC activities, we analyse discrepancies in responses received before and after a certain cut-off date, which we set to be 1 March 2020.[13] This cut-off date was chosen to ensure that the number of responses in both categories (i.e. received before and after that date) is sufficiently high to avoid random differences in the market sentiment between the two respondent groups. Moreover, we identified several changes in the political reaction to the crisis that support our choice of this particular date.[14]

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[11] The *EIF VC Survey* and the new *EIF PE MM Survey* are surveys among general partner (GP)/management companies active in the VC market and the private equity mid-market, respectively, and headquartered in the EU27, the UK and other European countries. The *EIF BA Survey* is a survey among business angels (BAs) in Europe.

[12] To provide timely information concerning the on-going crisis, we deviate from our usual approach to present the results of each EIF survey separately. Instead, we summarise, for all three surveys, those results that show the impact of the current crisis. The remaining survey results that are unrelated to the crisis will be presented in separate forthcoming EIF Working Papers (for example, results related to ESG or scale-up financing). For the results of previous EIF surveys, please see the overview of the EIF Working Paper series, which is available here: https://www.eif.org/news_centre/research/index.htm.

[13] Please note that, in our terminology in this chapter, "after 1 March" means after and including 1 March.

[14] On 2 March, the ECDC (European Centre for Disease Prevention and Control) announced that the coronavirus risk level had risen from moderate to high for people in the EU. At the same time, the European Commission established the coronavirus response team, bringing together different strands of action focused on three key areas of societal concern – medical, transportation, and economy. This reaction marks one of the first major coordinated political efforts in the EU (European Commission, 2020c). In Italy, the country that was hit particularly strongly by the Covid-19 crisis at the beginning of its spread throughout Europe, the period end-February/beginning of March marks a change in the crisis measures from an approach that had addressed the regional level to measures addressing the national level. On 1 March, the Italian Council of Ministers approved a decree to organise the containment of the outbreak. On 29 February, the US upgraded the status of Italy to Level 3 (guidance to avoid non-essential travel), and multiple companies deferred all non-essential travel to countries affected by major virus outbreak (source: https://en.wikipedia.org/wiki/COVID-19_pandemic_in_Italy).

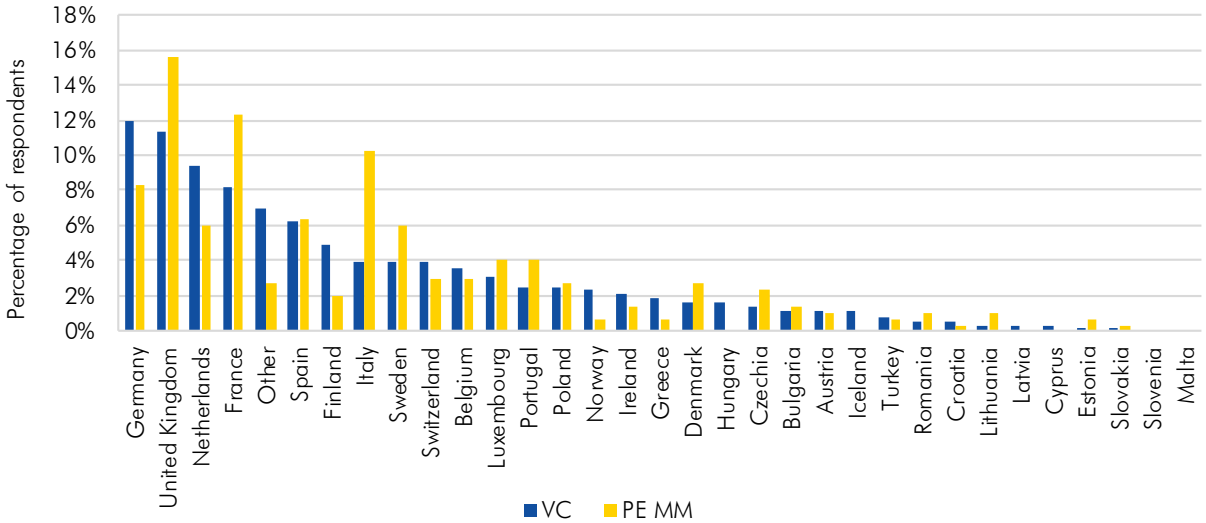
However, all the following analyses have to be read against the background that all surveys were closed very early in the crisis, i.e. before it reached its – so far – most severe period. Hence, we can expect that the respondents' feedback at a later date, e.g., in April or May, would have been much more pronounced to the negative side than the results presented here.

Based on the considerations described above, the following sections will look into the changes in the market sentiment after the start of the crisis. A common pattern documented across most market sentiment questions in all three surveys is that the impact of the COVID-19 crisis is more evident in the respondents' future outlook regarding their business situation and market developments. This is why, the questions relating to the respondents' current (at the time the surveys were conducted) market perception are analysed for the entire sample of survey participants, whereas for the respective forward-looking questions, we introduce the "before/after March 1st" disaggregation.

3.2 Respondents' profile

We discuss here some general features of our final sample of surveyed investors. Approximately 4 in 10 VCs come from VC firms headquartered in Germany, the UK, the Netherlands and France (Figure 5). In the case of PE MM fund managers, it is the UK, France, Italy and Germany that feature more prominently. In unreported results, the UK and Germany are the two European countries most frequently mentioned by BA survey participants as the main target countries for BA investments.

Figure 5: Distribution of respondents by firm headquarter country[15]

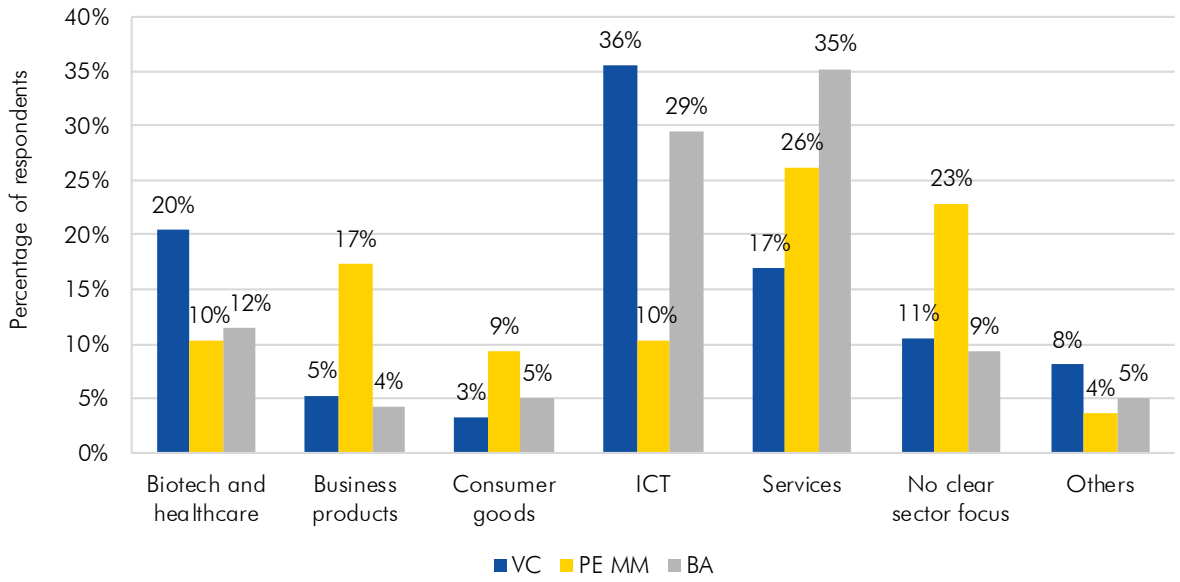


Q. In which country is your firm headquartered?

VC GPs target companies mainly in the ICT (36%) or in the Biotech and healthcare (20%) sector – see Figure 6. By contrast, PE MM fund managers mainly invest in Services (26%), while for BAs, Services (35%) and ICT (29%) constitute the two main sectors for investments.

[15] Unless stated otherwise, all figures in this chapter are authors' elaborations based on EIF's combined BA/VC/PE MM survey data.

Figure 6: Most important target industry for investments



Q. Please select the most important industries in which you/your firm invest/s.

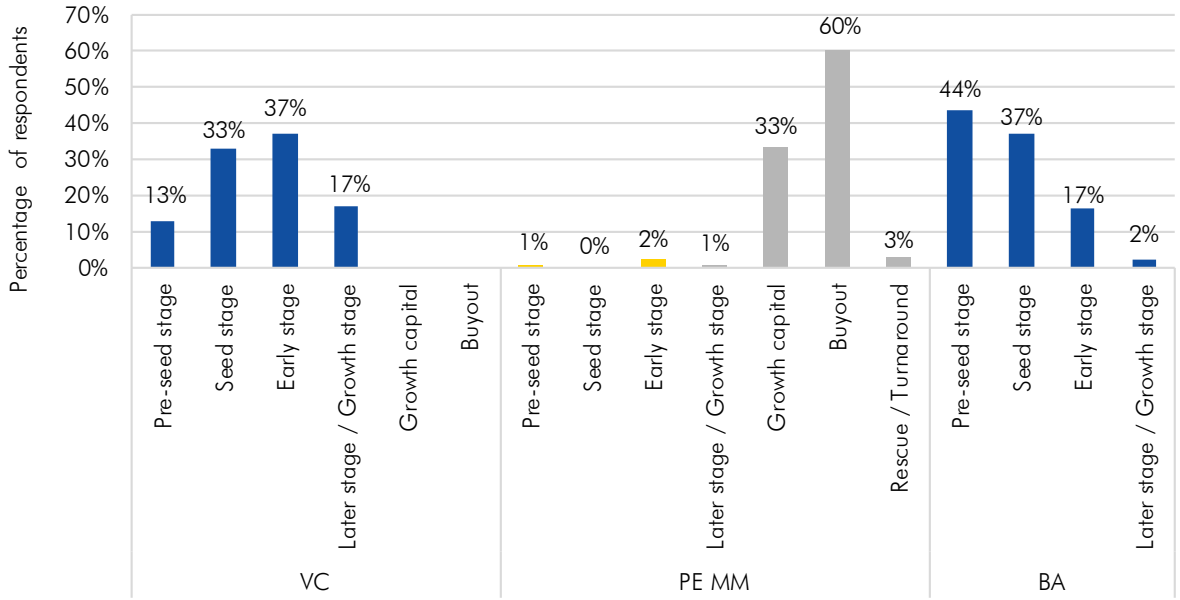
Note: The sector "Services" includes "Business services", "Consumer services" and "Financial and insurance services". The sector "Others" includes "Energy and environment" and "Chemicals and materials". As the question allowed for multiple selection in the responses, the Figure reflects the percentage of respondents who have indicated the respective industry as their first most important target industry for investments.

The results echo prior research findings that BAs tend to invest in younger companies compared to VC or PE MM fund managers – almost half of the surveyed BAs invest in the pre-seed stage (Figure 7). VCs mainly invest in early stage (37%) or seed stage (33%) companies, while for PE MM fund managers, the buyout stage (60%) takes clear precedence.

In this respect, it is also worth noting that the VC firms represented in the survey are relatively younger compared to the PE MM firms (the majority of the VC firms have been founded in the last decade) and relatively smaller in terms of assets under management (for the majority of the VC firms, assets under management do not exceed EUR 100m, while most PE MM firms fall in the EUR 100-500m range).

The profile of the respondents before and after the selected cut-off date of March 1st is qualitatively similar. Therefore, we are confident that any differences observed in the market sentiment of the respondents before and after March 1st are indeed driven by the COVID-19 impact rather than by differences in the underlying respondent characteristics.

Figure 7: Most important investment stage



Q. What is (are) the most important stage(s) in which you/your firm invest/s?

Note: As the question allowed for multiple selection in the responses, the Figure reflects the percentage of respondents who have indicated the respective stage as their first most important investment stage.

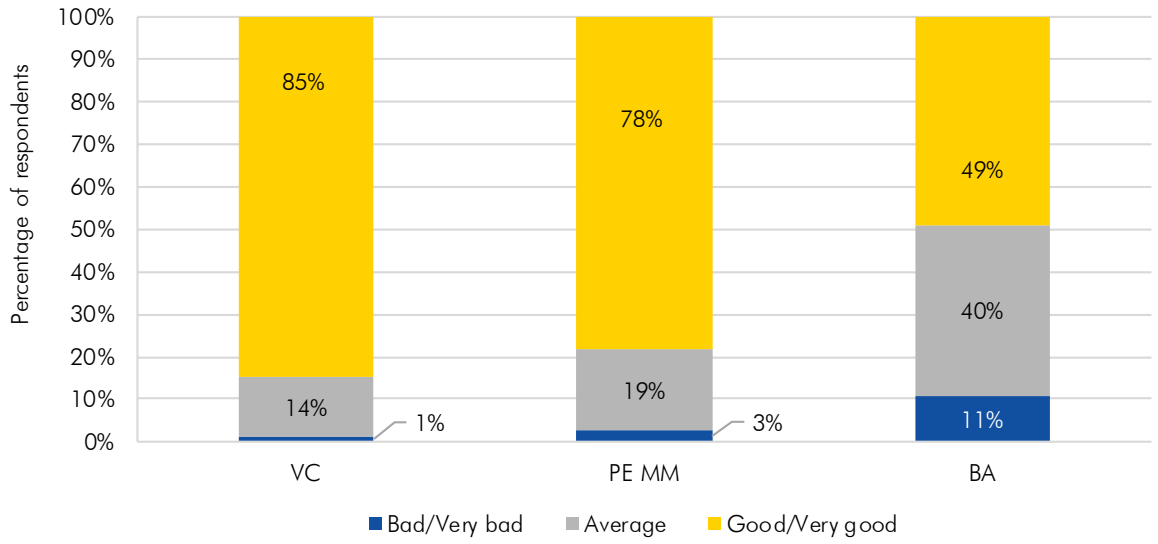
3.3 State of business/business environment

Both VC and PE MM fund managers evaluated very positively their current (i.e. at the time the surveys were conducted) state of business (Figure 8). Regarding VCs, an overwhelming majority of 85% (*EIF VC Survey 2019*: 86%) considered their current state of business to be "good" or "very good", with PE MM respondents exhibiting a similarly high percentage (at 78%). BAs were relatively more pessimistic, with just 1 in 2 expressing satisfaction with the business environment for BA activities in their main target country.[16]

Concerning expectations for the next 12 months (Figure 9), across all three surveys, we note (at varying degrees) an increase in the percentage of respondents who expect their state of business to deteriorate. This is particularly the case for PE MM fund managers: while only approximately 1 in 10 PE MM investors who responded before the 1st of March expect a deterioration of their state of business in the next 12 months, this number soars to nearly 1 in 2 PE MM fund managers for responses received after the 1st of March. Leaving aside differences in the underlying business lines, another plausible explanation for the particularly acute difference between the before/after March 1st results for PE MM fund managers could be that the *EIF PE Mid-Market Survey* ran for a longer period (compared to the other two surveys) in the course of March, and therefore it might have captured to a greater extent the aftermath of the crisis.

[16] In the *EIF BA Survey 2019*, BAs evaluated much more positively the business environment for BA activities – with 68% of the respondents rating it as good/very good. However, the results from the *EIF BA Survey 2019* and those from the *EIF BA Survey 2020* may not be entirely comparable, given that the *EIF BA Survey 2019* only targeted BAs that had been supported by the EIF under the European Angels Fund (EAF), whereas the *EIF BA Survey 2020* addressed the wider population of BAs active in Europe. This is why in all subsequent questions, we refrain from drawing on a comparison between the two BA survey waves.

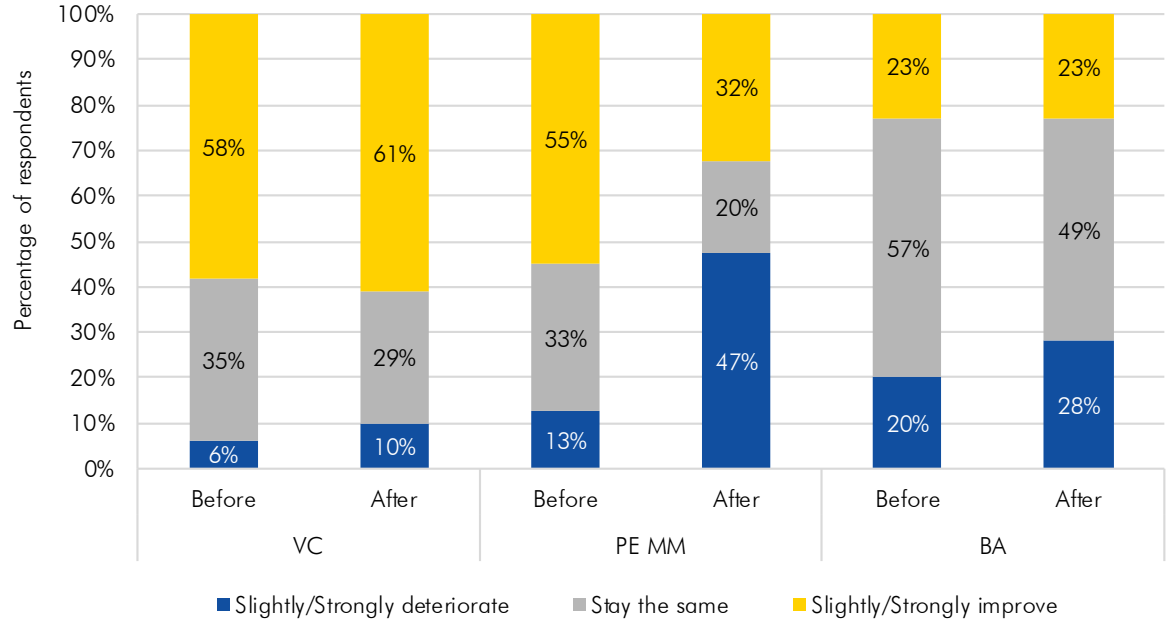
Figure 8: State of business



Q. How would you assess the current state of your business? / How would you rate the current business environment for BA activities in your main target country?

Note: As discussed in section 3.1, this Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

Figure 9: State of business, next 12 months

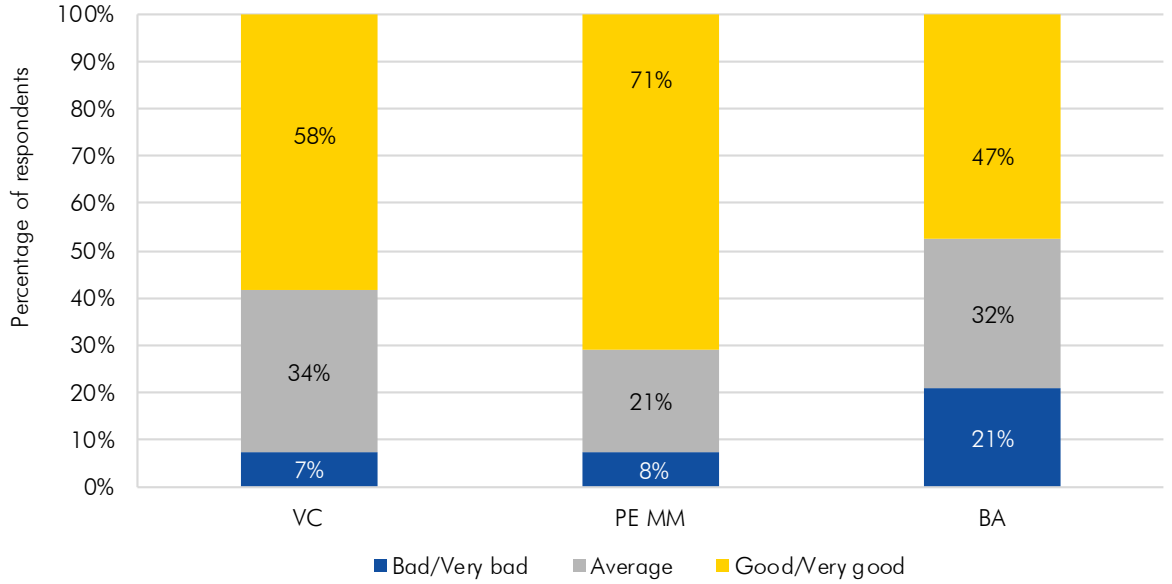


Q. How do you expect the state of your business to change over the next 12 months? / Over the next 12 months, how do you expect the business environment for BA activities in your main target country to change?

3.4 Access to external finance and fundraising environment

At the time the surveys were conducted, PE MM fund managers were the most optimistic in their evaluation of the access to external finance of their portfolio companies (71% of respondents), followed by VC fund managers (58%; *EIF VC Survey 2019*: 64%) and BAs (47%), see Figure 10.

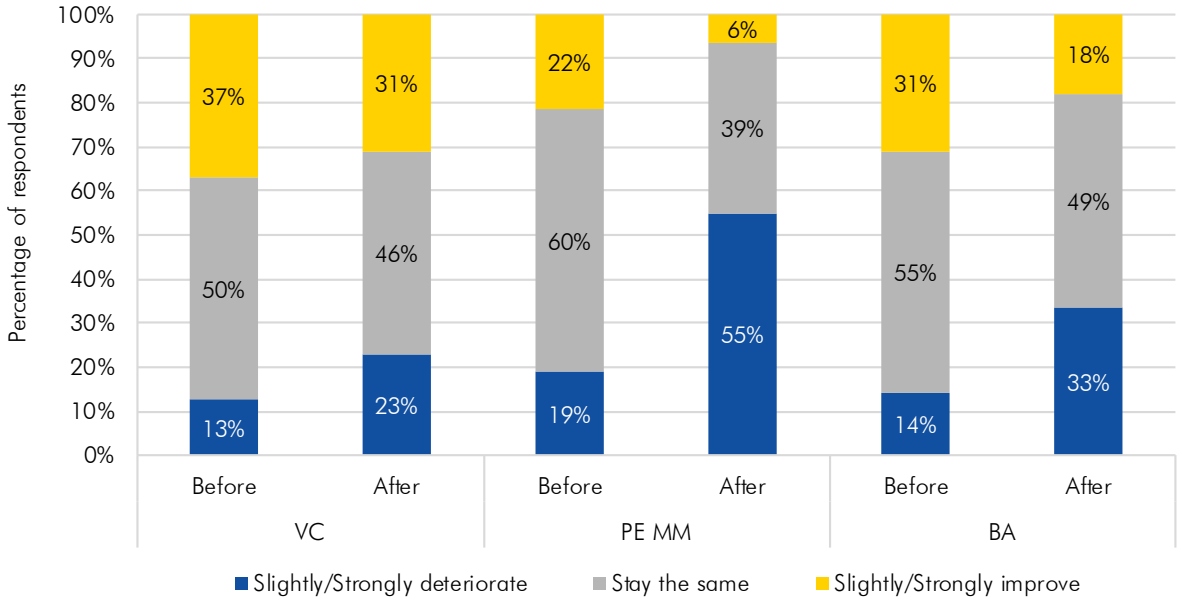
Figure 10: Access to external finance



Q. How would you rate the access to external finance of your portfolio companies?

Note: As discussed in section 3.1, this Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

Figure 11: Access to external finance, next 12 months



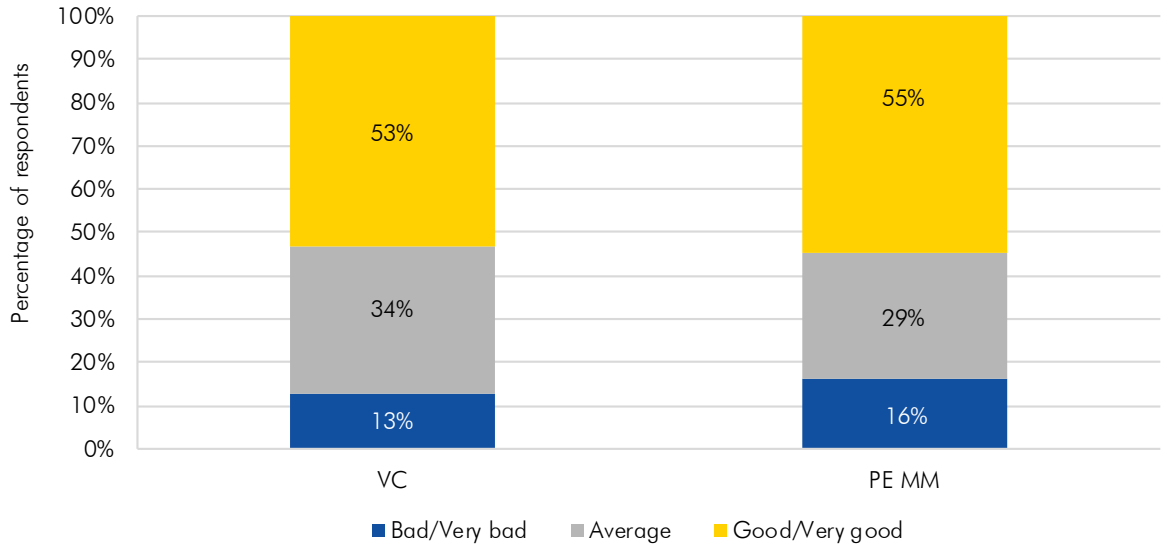
Q. Over the next 12 months, how do you expect the access to external finance of your portfolio companies to develop?

When the future outlook is considered (Figure 11), there is once again a significant increase in the percentage of respondents who expect the access to external finance for their portfolio companies to worsen in the next 12 months, particularly among respondents who participated in the surveys after March 1st. For BAs, the percentage of respondents who expect a deterioration of the access to finance more than doubles before and after the cut-off date, whereas for PE MM fund managers, the respective percentage almost triples.

The survey results regarding the fundraising environment[17] re-affirm that fundraising is always perceived as an important issue in the VC and PE MM business. Even before the crisis (Figure 12), just about 1 in 2 investors (VC: 53%, compared to 51% in the *EIF VC Survey 2019*; PE MM: 55%) considered the fundraising environment to be "good" or "very good".

When asked about fundraising expectations in the next 12 months (Figure 13), the investors' perception of the pre-crisis situation is completely reversed. In the case of VCs, for responses received after the cut-off date of March 1st, almost 4 in 10 VC fund managers expect the fundraising environment to deteriorate (twice the figure compared to the pre-March 1st responses) and only approximately 2 in 10 expect an improvement. PE MM fund managers are even more pessimistic. Among respondents who participated in the survey after the 1st of March, the vast majority of 67% expect a deterioration of the fundraising environment (up from 28% among the pre-March 1st respondents), while only a tiny 6% expect an improvement.

Figure 12: Fundraising environment



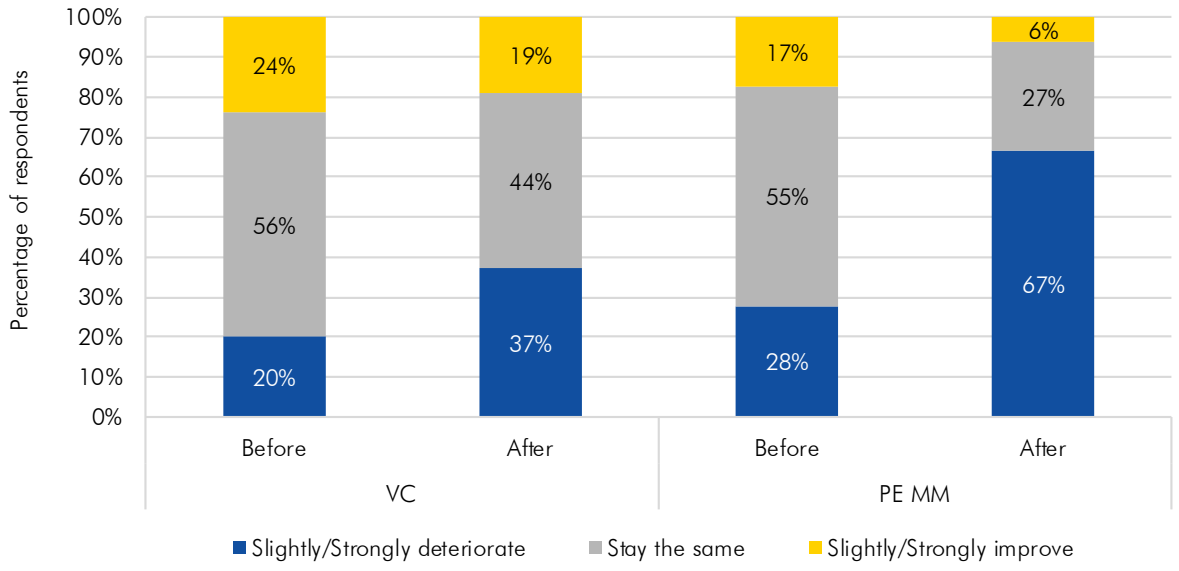
Q. How would you rate the current fundraising environment for VC/PE mid-market funds?

Note: As discussed in section 3.1, this Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

In the context of expected difficulties in the future fundraising environment, the EIF performed a separate ad hoc survey of institutional investors in private equity, venture capital and other alternative asset classes. We present the main results in Box 1, before we turn to the perception of fund managers and business angels as regards the easiness to find co-investors.

[17] The questions regarding the fundraising environment were only asked to VC and PE MM fund managers.

Figure 13: Fundraising environment, next 12 months



Q. Over the next 12 months, how do you expect the fundraising environment to develop?

Box 1: EIF Investor Sentiment Survey

In June 2020, the EIF's Institutional Client Relationship team conducted a survey among worldwide private equity and private debt limited partners (LPs). Among the 101 LPs that responded between 8 and 15 June, 67% were headquartered in Europe, 13% in Middle East, and 16% in other Asia. Most of the respondents work for banks (19%) or pension funds (20%). Other important respondent groups were asset managers (14%) and insurance companies (11%). The main survey topics covered the market outlook, the impact of COVID-19, and ESG.

In terms of the current market outlook, LPs assessed private equity, incl. venture capital, (overweight: 47%), private credit (44%) and secondaries (41%) to be the best investment opportunities over the next 12 months, with high-yield debt appealing more to Asian and Middle East investors. Real estate (underweight: 40%), emerging market equities (39%) and treasury/sovereign debt (34%) constitute the bottom of the ranking. Within private equity and private credit, respondents intend to favour VC-technology (48%) and VC-life sciences (39%), as well as special situations (41%), buyout (38%) and lower mid-market (36%), the latter in particular in Europe. Within infrastructure, renewable energy is seen as a clearly favoured opportunity strategy (73%), with waste management (44%) and utilities (33%) as runners up. Social infrastructure investment is more appealing in Europe, while transport and energy have more supporters in the Middle East.

In light of COVID-19, most LPs were planning to maintain their exposures to certain geographic regions, with 60% of respondents stating this for Europe, 59% for North America and 52% for Asia. Among the respondents, 25% stated to plan increases in their exposures to Asia, 19% to Europe and 15% to North America. Among the respondents, 78% of the LPs are equally considering both existing or new relationships when it comes to close new investment opportunities. When asked if investors make commitments in funds prior to a first close, 57% of the respondents are comfortable in doing so, with European LPs more comfortable than others.

With respect to the impact of COVID-19, the disruption caused by the crisis is expected to last more than 6 months for the vast majority (71%) of LPs. Asian and Middle East LPs appear more optimistic than European ones. The majority (66%) of LPs have reviewed their strategic allocation with a main focus on specific current investments while assessing the impact on the long run. For the moment, the current trend is not to reduce allocations to alternative investments for 49% of the respondents, with an additional 42% even increasing their

Box 1, continued:

allocation, in particular from Asian and European LPs. The picture is mixed with regard to the LPs' appetite for investing in first-time/debut funds: While 48% of the respondents expect no impact, 46% intend to reduce their exposures (35%) or stop all new investments (11%) with first-time/debut funds. The expected impact is particularly high for Asian and Middle East LPs.

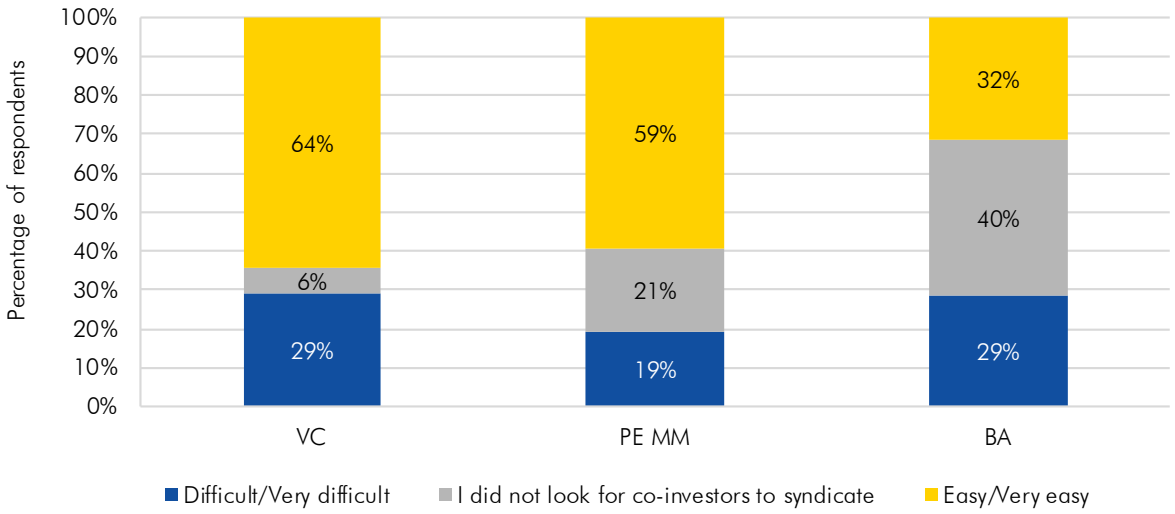
When asked what proportion of their investment strategy the respondents expect to qualify as "impact investment" over the next 12 months, 34% expected to reach more than 25%, 56% less than 25%, and 10% nothing.

The detailed results of this survey can be found in EIF (2020). The results will be used to help EIF gauge how to best tailor its ongoing support for both fund managers and institutional investors to ensure the continuation of a healthy and thriving ecosystem in Europe.

The current (at the time the surveys were conducted) situation in finding co-investors (Figure 14) was perceived difficult by 29% of VCs and BAs and only 19% of PE MM fund managers[18], with the majority of the respondents not expecting the situation to change over the next 12 months (Figure 15). For VCs, the situation was perceived similarly in the *EIF VC Survey 2019*.

However, after 1 March, we observe a higher share of respondents who expect greater difficulties in finding co-investors (Figure 15). This change is visible across all three surveys. The most remarkable change is observed in the PE MM market, where hardly any fund manager (just 3%) expected a more difficult access to co-investors before the crisis, with the respective share significantly increasing to 38% after our cut-off date.

Figure 14: Easiness in finding co-investors

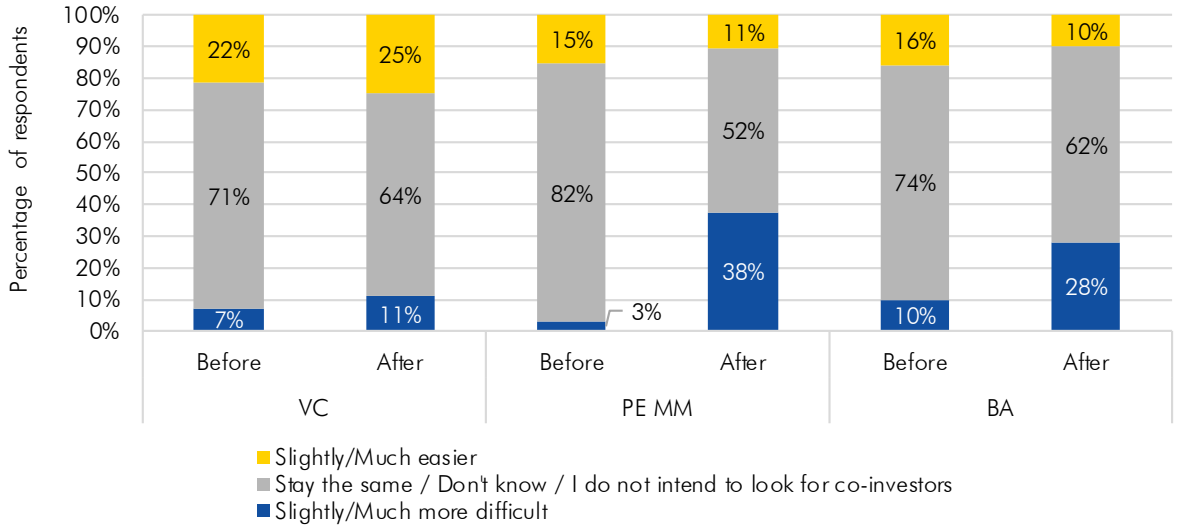


Q. How easy/difficult is it currently to find co-investors to syndicate?

Note: As discussed in section 3.1, tis Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

[18] The lower percentage recorded for PE MM fund managers may also reflect the fact that PE MM fund managers tend to rely to a lesser extent on co-investments for the average deal.

Figure 15: Easiness in finding co-investors, next 12 months



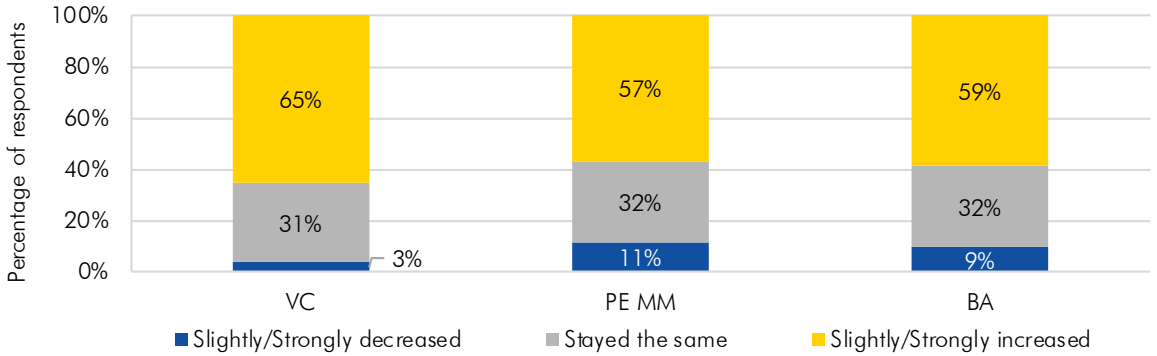
Q. Over the next 12 months, how do you expect finding co-investors to syndicate to become?

Note: In the case of BAs, the question asked for expectations regarding different co-investor types (other BAs, VCs, etc.). Here, we present the results for the co-investor type "other BAs".

3.5 Investments

The majority of all three types of equity investors reported an increase in the number of investment proposals received over the last 12 months (Figure 16).[19] The COVID-19 crisis does not seem to significantly influence the future outlook in this respect (Figure 17), given that, on balance, all three types of equity investors still expect a net increase in the number of investment proposals to be received over the next 12 months. This pattern may reflect investors' expectation for increased financing needs by companies battered by the pandemic.

Figure 16: Investment proposals, last 12 months

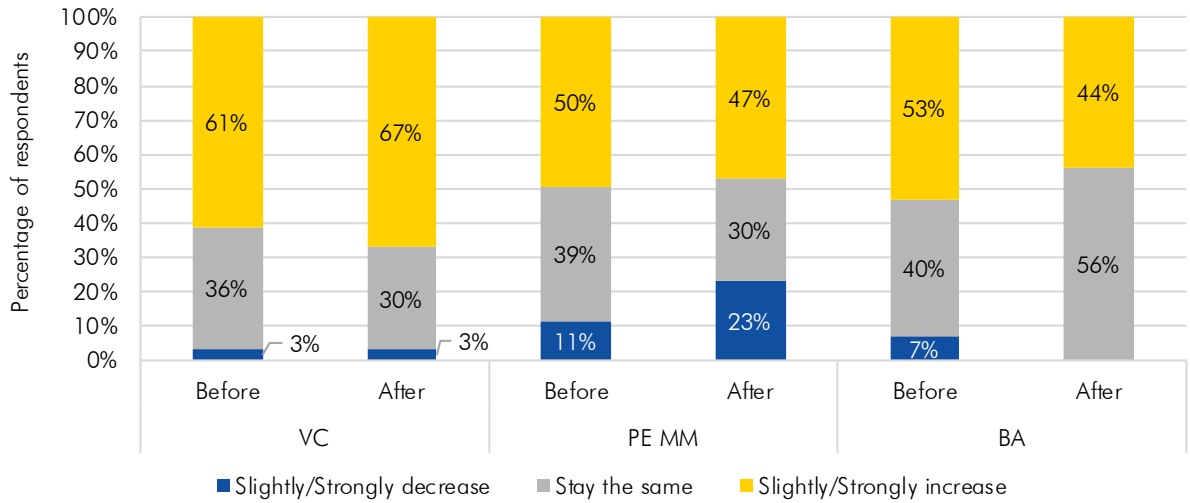


Q. How has the number of venture/PE mid-market investment proposals to your firm developed over the last 12 months? / How has the number of investment proposals to you developed over the last 12 months?

Note: As discussed in section 3.1, this Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

[19] In all Figures relating to investment proposals and new investments, the reported percentages do not include respondents for whom the respective questions are not applicable (e.g., in case the respondents' fund has not yet reached the investment stage or in case the respondents' fund has been closed).

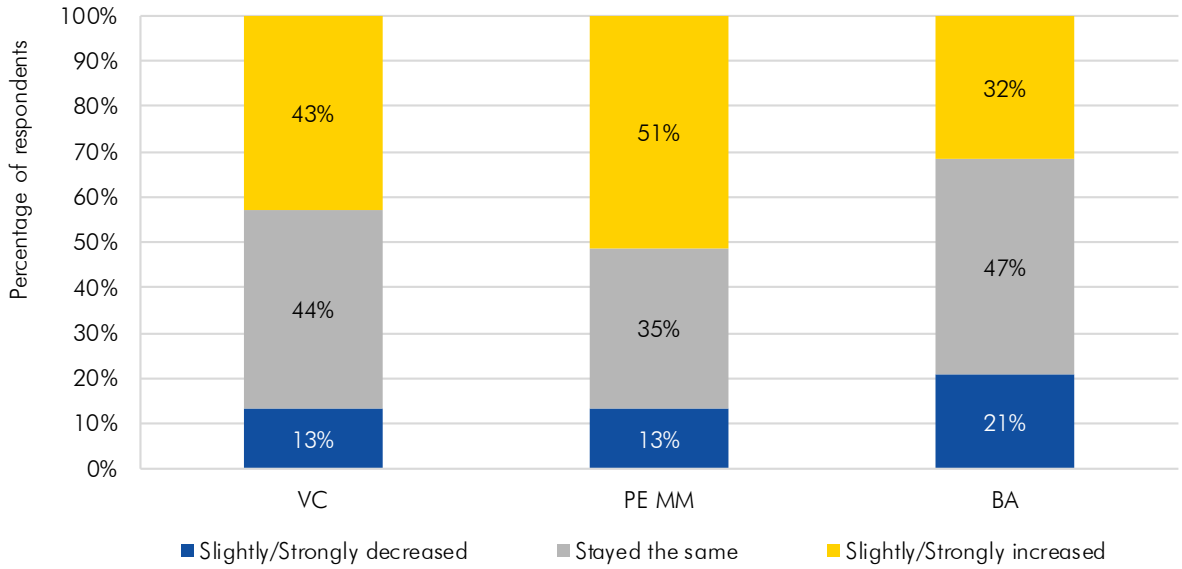
Figure 17: Investment proposals, next 12 months



Q. How do you expect the number of venture/PE mid-market investment proposals to your firm to develop over the next 12 months? / How do you expect the number of investment proposals to you to develop over the next 12 months?

This is also echoed in the analysis regarding the actual investments undertaken (Figure 18). Almost 9 in 10 VCs and PE MM fund managers as well as 8 in 10 BAs reported to have at least maintained the number of new investments undertaken over the last 12 months (with a significant percentage of respondents even reporting an increase).

Figure 18: New investments, last 12 months



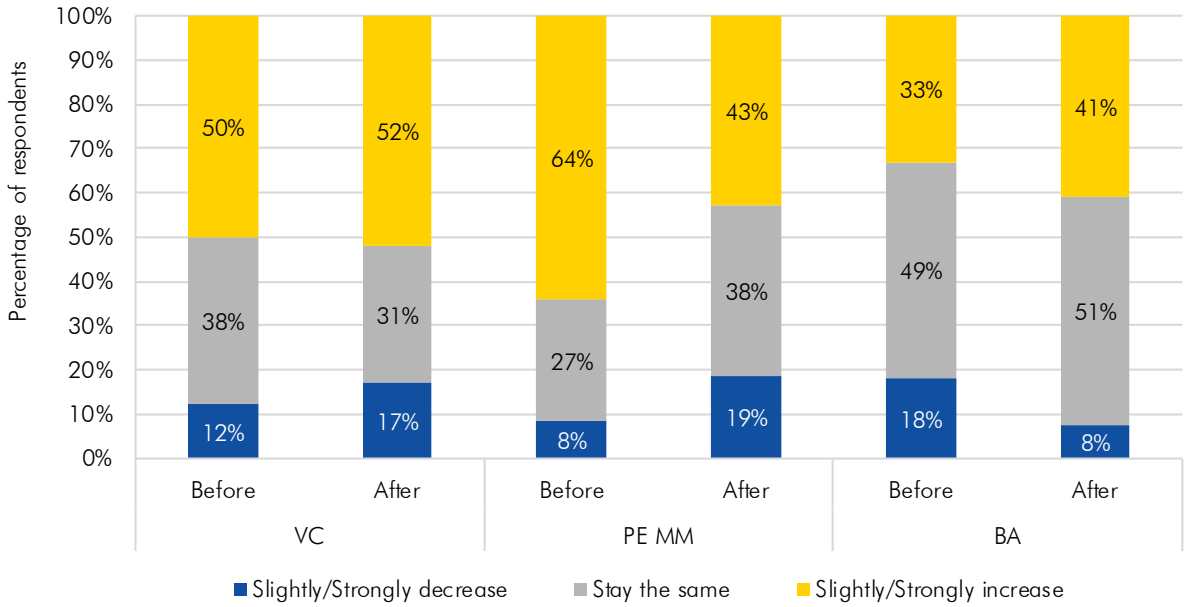
Q. How has the number of your new investments developed over the last 12 months?

Note: As discussed in section 3.1, this Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

In the course of the next 12 months (Figure 19), the percentage of VCs and BAs who expect an increase in the number of new investments to be undertaken rises further, both among investors who responded before March 1st as well as among investors who responded after this cut-off date.

However, in the case of PE MM fund managers, those who participated in the survey before March 1st exhibit a much more optimistic outlook regarding future investments (64% expect an increase and just 8% expect a decrease) compared to post-March 1st respondents (among whom 43% expect an increase and a non-negligible 19% expect a decrease).

Figure 19: New investments, next 12 months



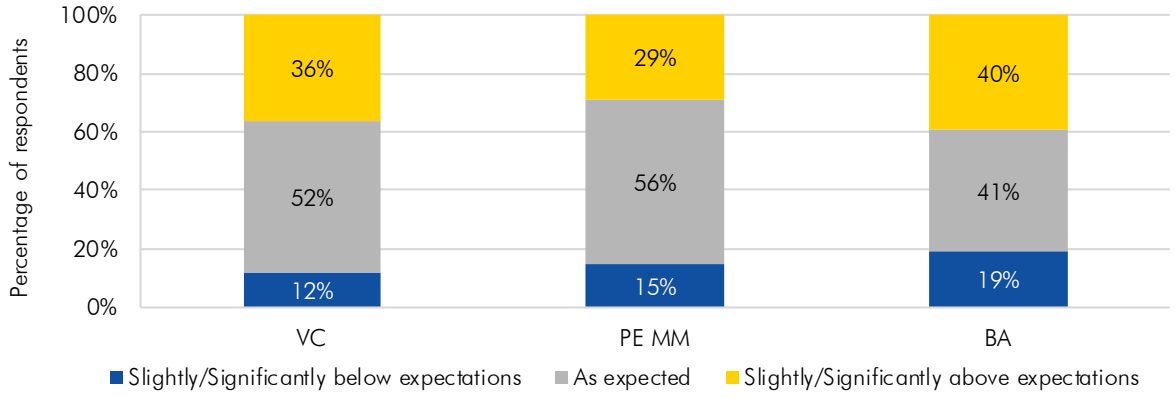
Q. How do you expect the number of your new VC/PE mid-market investments to develop over the next 12 months? / How do you expect the number of your new investments to develop over the next 12 months?

3.6 Portfolio development and exit environment

When asked about the development of their portfolios over the last 12 months (Figure 20), around half of the respondents across all three surveys stated that it was in line with expectations (in the *EIF VC Survey 2019*, 44% of the respondents stated that portfolio development exceeded expectations and 43% stated that it was according to expectations).

The 40% of the BAs who stated that past portfolio development exceeded expectations was the highest percentage across the three surveys. At the same time though, the share of respondents who reported that over the last 12 months portfolio companies have developed below expectations is also the highest among BAs (19%), compared to PE MM (15%) and VC fund managers (12%).

Figure 20: Portfolio development, last 12 months

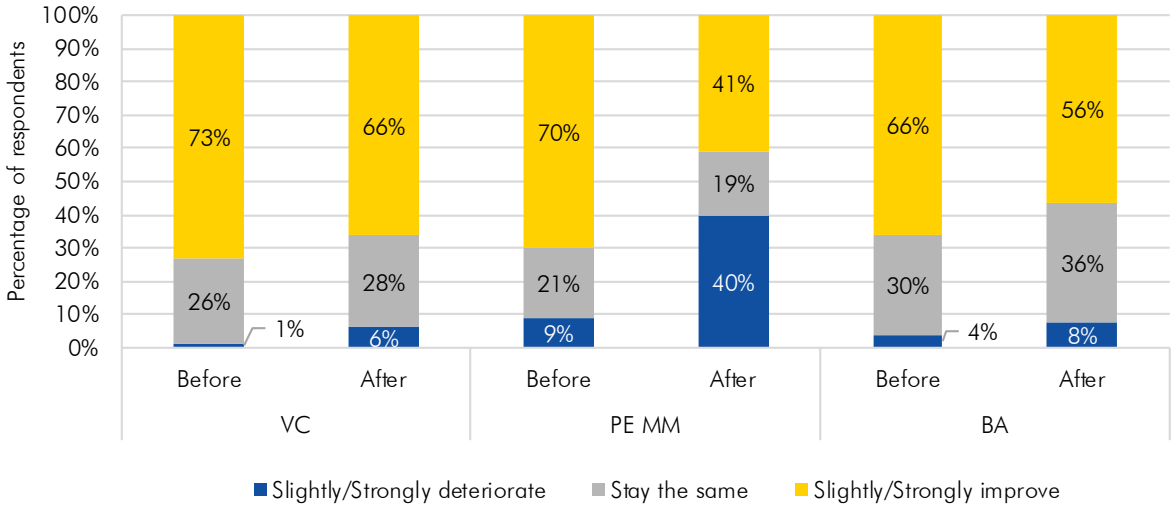


Q. How did your portfolio companies develop over the last 12 months?

Note: As discussed in section 3.1, this Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

With respect to future portfolio development (Figure 21), the share of PE MM fund managers expecting a deterioration increased drastically to 40% among respondents after the cut-off date of March 1st, compared to only 8% for BAs and 6% for VCs. Furthermore, the percentage of PE MM fund managers expecting an improvement in future portfolio development almost halved in the post-March 1st period compared to the pre-March 1st responses, while much less dramatic changes are observed in the case of VCs and BAs. Given that PE MM firms focus on more mature companies, a higher exposure to capital markets may have driven this increase in negative sentiment. Furthermore, the industries targeted by PE funds have been more severely affected by COVID-19, whereas ICT and Life Sciences start-ups targeted by VC fund managers are at the centre of very positive trends in digital transformation and health-related needs.

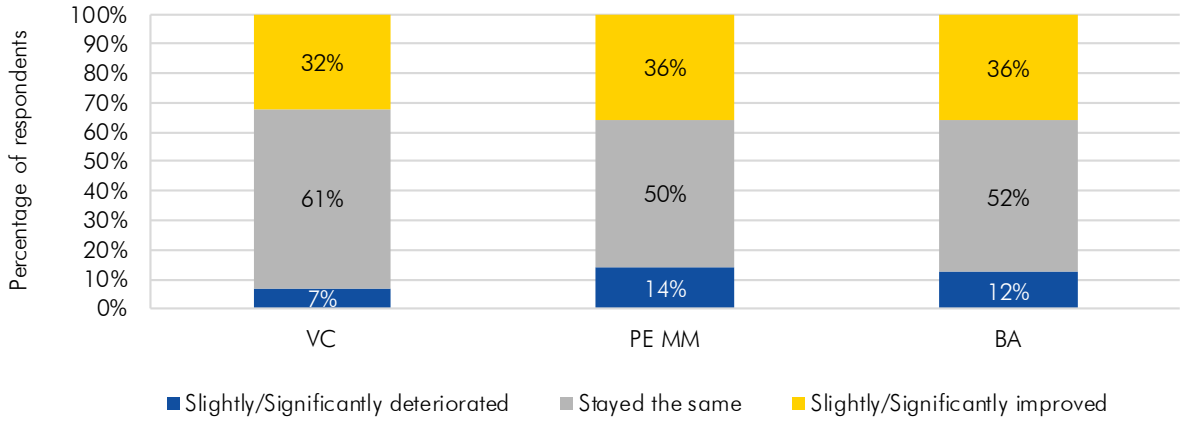
Figure 21: Portfolio development, next 12 months



Q. Over the next 12 months, how do you expect your overall portfolio to develop?

When asked about the development of their portfolio companies' exit environment over the last year (Figure 22), the responses across all three surveys reflect a common theme, namely that around a third of the respondents are positive when looking back on the exit environment, with the remaining majority largely indicating that the exit environment has stayed the same.

Figure 22: Portfolio companies' exit opportunities, last 12 months

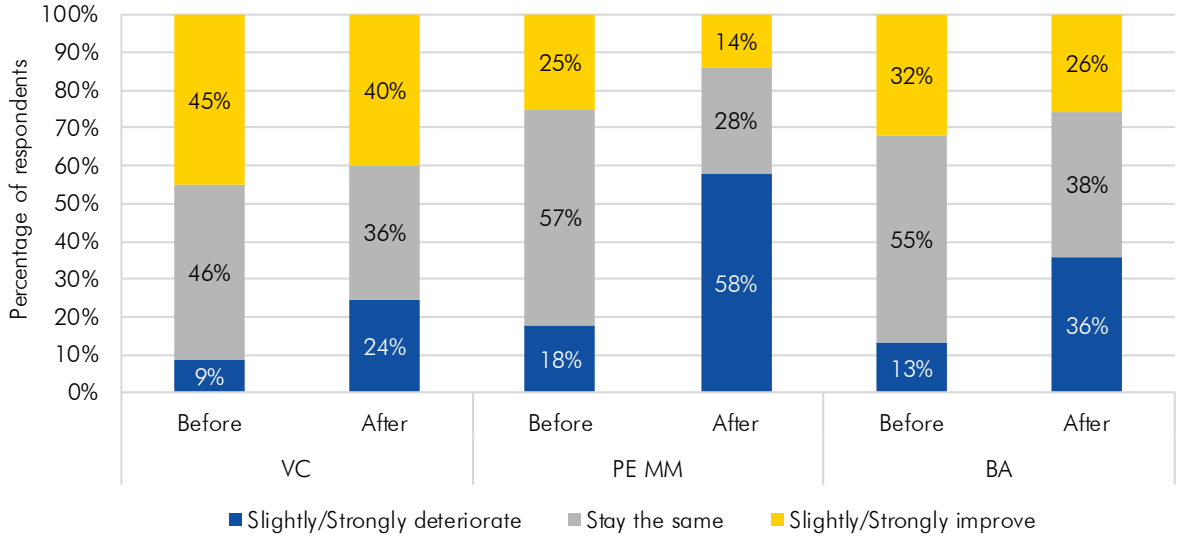


Q. Over the last 12 months, how has the exit environment for your portfolio companies developed?

Note: As discussed in section 3.1, this Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

On future exit prospects (Figure 23), there is variation both within surveys as well as across surveys. Most notably, for all three types of investors, the percentage of respondents expecting a deterioration in exit opportunities is around three times higher among responses received after 1 March compared to responses received before the cut-off date. Nonetheless, both the percentage point increase and the before/after variance in the sentiment of VC fund managers is the lowest among the three surveys. VCs are relatively more positive both before and after 1 March – they exhibit the lowest percentage of respondents expecting a deterioration of exit prospects as well as the highest percentage of respondents expecting an improvement.

Figure 23: Portfolio companies' exit opportunities, next 12 months

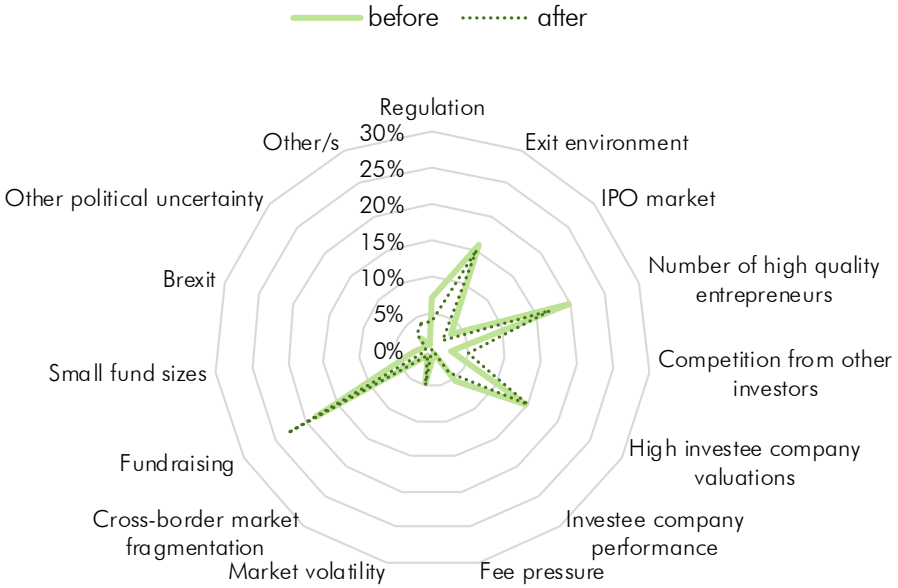


Q. Over the next 12 months, how do you expect the exit opportunities of your portfolio companies to develop?

3.7 Challenges and valuations

Our three respondent groups revealed a quite heterogeneous perception as regards the impact of COVID-19 on the challenges for their business. For this survey question, the distribution of VC fund managers' responses was quite similar before and after our cut-off date (Figure 24). Fundraising, the number of high quality entrepreneurs, the exit environment, and high investee company valuations remained the issues that respondents ranked most frequently as the first most important challenge in VC business. The most pronounced change was recorded for fundraising, for which the share of respondents who selected this item as their most important challenge increased from 19% before the crisis to 23% in March.

Figure 24: Biggest challenges in VC business

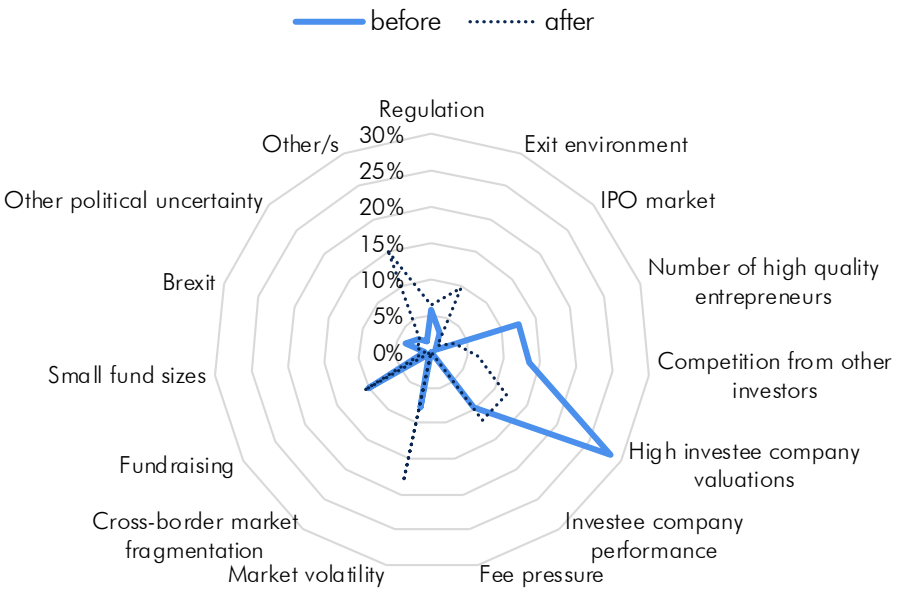


Q. Please select the biggest challenges you currently see in venture capital business.

Note: This question allowed for multiple selection; the Figure shows the responses for the items that respondents ranked as their first most important challenge.

The picture looks quite different for fund managers active in the private equity mid-market (Figure 25). Before the crisis, high investee company valuations were ranked most frequently (28%) by respondents as the most important challenge in PE mid-market business, followed by competition from other investors (13%), the number of high quality entrepreneurs (13%), fundraising (10%), and investee company performance (10%). After the crisis, respondents were particularly concerned about market volatility (18%), while valuations (12%) were stated by far fewer respondents than before the crisis. The exit environment was also increasingly mentioned as the most important challenge (selected by 10% of respondents after 1 March vs. 3% before).

Figure 25: Biggest challenges in PE mid-market business



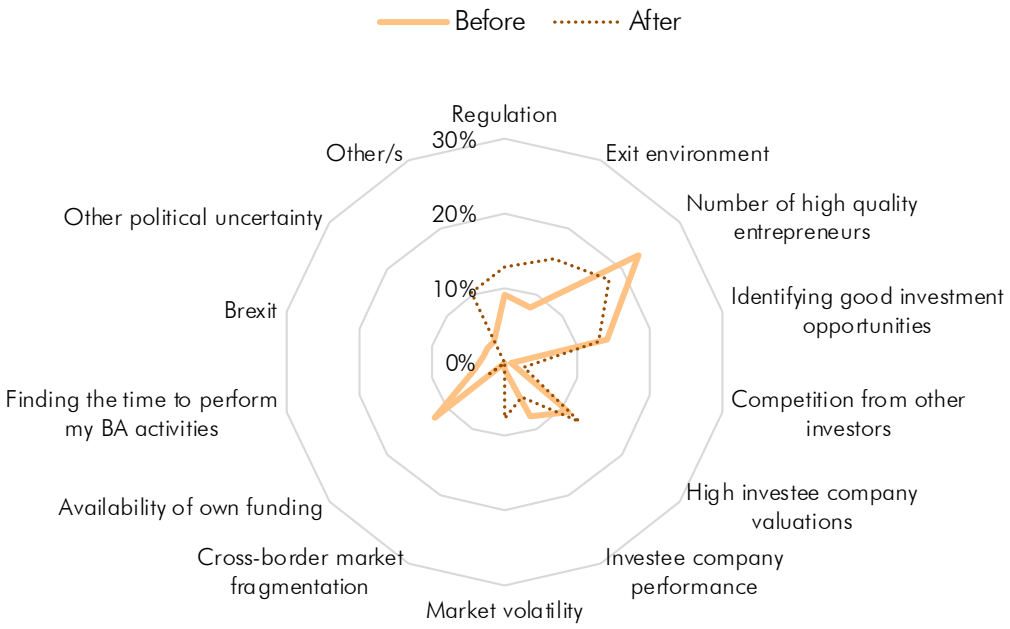
Q. Please select the biggest challenges you currently see in PE mid-market business.

Note: This question allowed for multiple selection; the Figure shows the responses for the items that respondents ranked as their first most important challenge.

For business angels (Figure 26), we observed the strongest increase for the challenges regarding market volatility (increase from 1% before 1 March to 8% thereafter) and the exit environment (increase from 8% to 15%). The most pronounced change in the opposite direction was recorded for BAs' concerns about the availability of own funding, for which the share of respondents who stated this item to be their most important challenge in their BA activity decreased from 12% to 3%.

Company valuations increased over the 12 months preceding the survey, according to a large majority of respondents in all three surveys (VC: 74%, PE MM: 66%, BA: 76%), see Figure 27. Looking ahead, a remarkable change in expectations was recorded for company valuations (see Figure 28). This was observed across all three respondent groups. The most pronounced changes were documented among BAs and PE MM fund managers. While almost half of the PE MM respondents (48%) expected an increase in valuations before the cut-off date, a majority of those fund managers (53%) who responded after March 1st expected a decline in valuations. Among the BAs, almost all respondents (89%) expected an increase in valuations before the crisis, while after March 1st, respondents were virtually equally split between those expecting further growing valuations (53%) and those anticipating a downturn (47%). Among VC fund managers, the share of respondents who expected lower valuations picked up in a less pronounced way, i.e. from 7% before March 1st to 28% after the cut-off date.

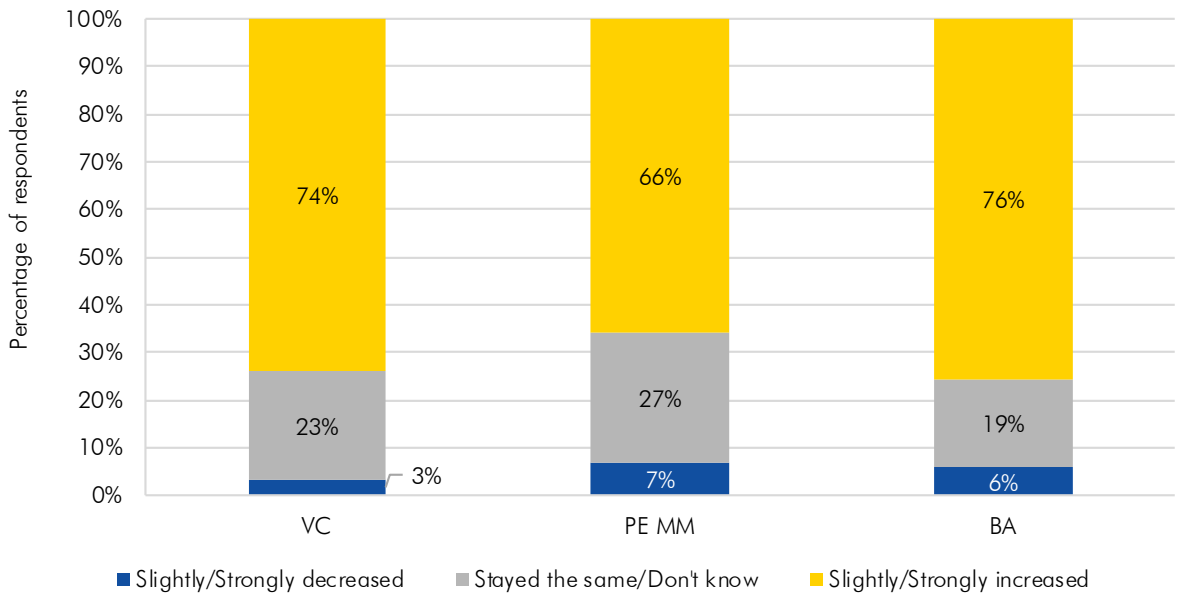
Figure 26: Biggest challenges in BA activity



Q. Please select the biggest challenges you currently see in your BA activity.

Note: This question allowed for multiple selection; the Figure shows the responses for the items that respondents ranked as their first most important challenge.

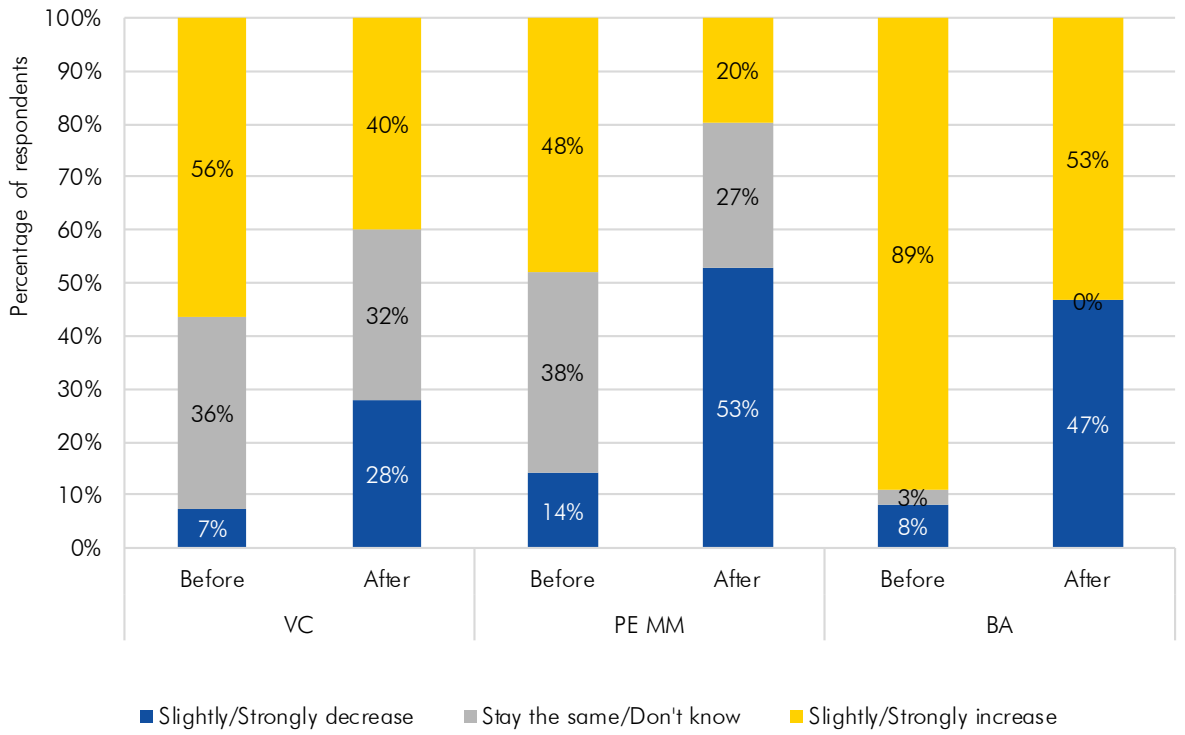
Figure 27: Company valuations, last 12 months



Q. When you consider your market over the past 12 months, how have the following items developed? VC/PE MM: Investee company valuations; BA: Current valuations in portfolio companies.

Note: As discussed in section 3.1, this Figure does not show the split between responses received before and after the start of the crisis, as we did not observe any considerable difference between these two groups.

Figure 28: Expected change in company valuations, next 12 months



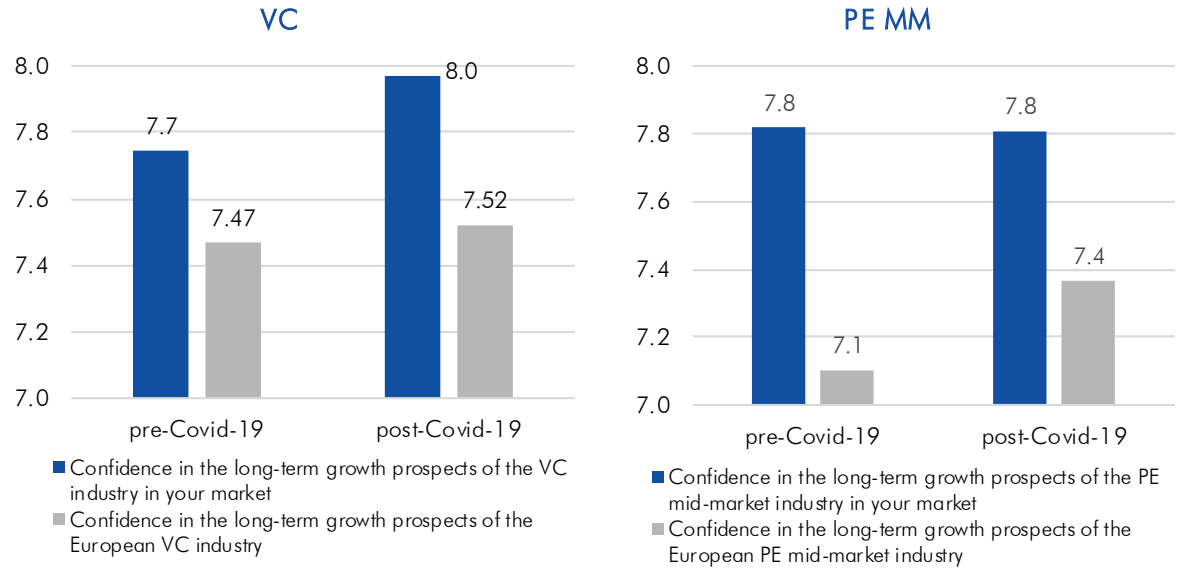
Q. When you consider your market over the next 12 months, how do you expect the following items to develop? VC/PE MM: Investee company valuations; BA: Current valuations in portfolio companies.

3.8 Long-term growth prospects[20]

Contrary to the results presented above, which showed an increase in negative market expectations after the start of the COVID-19 crisis in Europe, fund managers have a different view of the long-term growth prospects (Figure 29). When asked about their own market, VC fund managers have become more optimistic on balance. Before the crisis, the average respondent scored the long-term growth prospects of the VC industry in her/his own market with a value of 7.7 on a scale of 1 to 10. By contrast, respondents who provided their answer in March, gave an average score of 8.0. PE MM fund managers' sentiment after the start of the crisis was the same as before the crisis (7.8). However, this respondent group showed an increased optimism for the overall European PE MM industry, as the average score increased from 7.1 to 7.4. Fund managers also became more optimistic for the European VC industry. The increase was less pronounced (from 7.47 to 7.52), but the level of the average score was still slightly higher than that for the European PE MM industry.

[20] The *EIF Business Angels Survey* did not include this question.

Figure 29: Confidence in long-term growth prospects (averages)



Q. On a scale of 1 to 10, how confident are you in the long-term growth prospects of… the VC (PE MM) industry in your market / the European VC (PE MM) industry?

3.9 EIF counterparts' feedback early in the COVID-19 crisis

Apart from providing general policy-oriented suggestions based on its market insight, the EIF takes into account market players' feedback in its own business development. In order to gather such feedback as regards the impact of COVID-19 on fund managers' activities and on their portfolio companies, the EIF performed additional surveys at the beginning of the crisis, which were addressed only to its own counterparts. Box 2 summarises the main results.

Box 2: Surveys of EIF counterpart fund managers

To obtain more information about the impact of COVID-19 on EIF counterparts, their portfolio companies and the European private equity/venture capital markets, the EIF's Investments Technology & Innovation and Lower Mid-Market teams surveyed fund managers active in the European VC and PE mid-market at the beginning of the crisis. The surveys addressed only fund managers, in which EIF has invested. PE mid-market fund managers were surveyed between 29 February and 5 March; the survey had 106 participants representing more than 900 companies. VC fund managers were surveyed between 17 and 20 March 2020; the survey had 198 participants representing more than 5,000 companies. Key takeaways are as follows:

Venture Capital Markets:

In the VC market segment at fund level the impact of the market crash has been immediate:

- Already in the early days of the crisis (i.e. at the survey period in mid-March), 40% of VC fund managers felt an immediate impact on their fund raising traction, with private sector investors pulling out of even imminent closings ;
- At the same time, 77% of VC fund managers believe that they will be negatively impacted in their fundraising by the COVID crisis;
- The average delay in fundraising was estimated by them to be in the magnitude of 7 months.

Box 2, continued:

At portfolio company level, VC fund managers observe and/or anticipate:

- Syndicates for follow-on financing rounds have been halted or significantly been reduced in size as fund managers centralise their resources on rescuing their own portfolios;
- Exit negotiations even for imminent exits are halted or aborted;
- Fund managers expect to lose up to 27% of their portfolio due to capital shortage if lockdown measures are not lifted by June 2020;
- In the biotech sector the impact is of particular relevance as capital shortage cannot be tackled through hibernation measures: interrupted clinical trials are sunk-cost and, if resumed, need to be redone from start.

In the Mid-Market Segment:

- Already at the beginning of the crisis, 62% of the 130 funds were impacted;
- At the same time, 25% of the 905 investee companies were impacted, either on sales or on supply chain;
- Fund Managers reported an impact in all EU-27 countries;
- Despite the early days of the crisis in Europe, Fund Managers were already confirming liquidity issues in their portfolios (reduction of demand, higher production costs);
- Most impacted sectors: Manufacturing, Consumer products & services, IT & Telecommunications.

3.10 Summary of key findings

In this chapter, we combined market sentiment insights from our three surveys targeting business angels and fund managers active in venture capital and the private equity mid-market. Despite differences in the response periods of the three EIF surveys, we identified a number of challenges faced by these investor types after the start of the crisis, both on a fund and on a portfolio company level. We summarise here some notable results.

Expectations for the 12 months succeeding the surveys (i.e. until early 2021) have considerably worsened. For PE MM fund managers, the pessimism increased particularly with respect to their state of business, the fundraising environment, the access to finance of portfolio companies,[21] future portfolio development and exit prospects. VC fund managers also became particularly more concerned about the fundraising environment and the exit opportunities in the next 12 months. For BAs, the most remarkable increases in negative expectations were observed for the access to finance of portfolio companies and with respect to finding co-investors. When asked about their biggest challenges after the start of the crisis, PE MM fund managers and BAs were much more concerned about the general market volatility and the exit environment than before the crisis, while VCs started to worry more about fundraising.

Our analysis offers the unique opportunity to compare results from BAs vis-á-vis VC and PE lower mid-market fund managers. The differences in the feedback received from our three respondent groups reflect the different nature of their business models as well as the different impact of the crisis on their targeted companies. As discussed earlier in this chapter, PE MM fund managers exhibit a

[21] In this respect, it needs to be noted that at the time the surveys were conducted, no government support plans (state-backed loans or equivalent) had been put in place. It would therefore be worth monitoring the sentiment regarding the access to finance in the long term.

more negative sentiment after the cut-off date. Arguably, the industries targeted by PE funds have been more severely affected by COVID-19, whereas ICT and Life Sciences start-ups targeted by VC fund managers are at the centre of very positive trends in digital transformation and health-related needs. Business angels, unlike formal VC investors, do not have to report to LPs. However, given that BAs invest their own money, any impact on their portfolio can take a more painful toll. Having said this, BAs often invest for the very long term in start-ups, which makes the current turmoil less of a factor for many of them (Lewin, 2020). Rather than fundraising or their state of business, BAs have become more worried about their portfolio companies' access to finance and the opportunities to co-invest alongside other BAs. This is because co-investing is a fundamental part of BA deals. BAs rarely invest alone due to limitations in the amounts they can invest and the desire to have further validation of the investment proposal at such early stage of financing. Finally, a common concern among all three respondent groups after the start of the crisis, which is visible either through a worsening in expectations or through an increased mention as the biggest challenge, is the future exit environment. Divesting their portfolio companies is indeed a common concern among all equity investors.

4 The prospects of European PE/VC after COVID-19

The central purpose of this chapter is to assess the potential impact of the COVID-19 pandemic on the European[22] PE and VC markets.[23] To this end, we introduce and discuss the results from a simple Vector Auto-regression model (VAR, see Sims, 1980). VARs provide a simple macroeconomic framework to capture the complex dynamics in multiple time series. Using the VAR framework and the historical developments of European GDP and the European PE industry over the past 20 years, this chapter provides indicative estimates on the short-term prospects of European Private Equity and Venture Capital after COVID-19.

4.1 Where were the European PE/VC markets headed before COVID-19 hit?

As discussed in Chapter 2, since the deep downturn of the GFC, the European PE ecosystem had undertaken a significant recovery and developing path. In fact, before the COVID-19 crisis hit, activity levels in the European PE market had reached a new all-time high. Had the COVID-19 crisis not taken place, how would the activity look like in the near future?

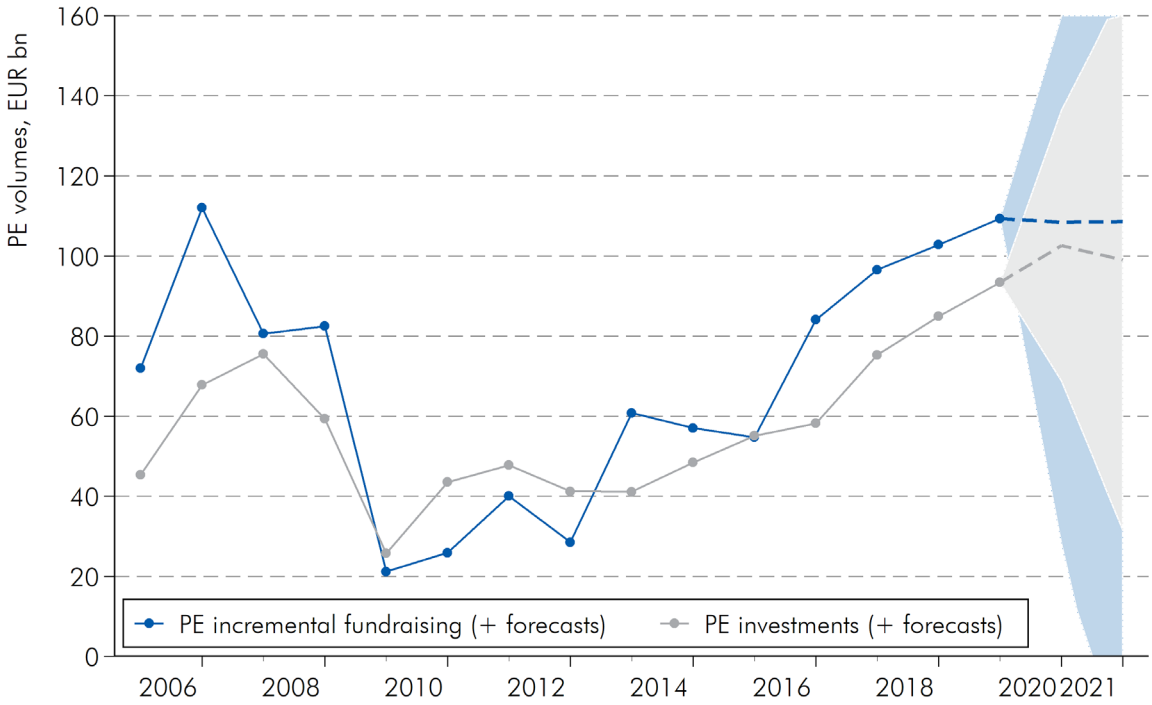
The VAR framework can help us address this counterfactual question by means of dynamic forecasts. However, VAR estimation requires long-term and high frequency time series about the quantities of interest. To this end, we transform Invest Europe yearly time series to quarterly via the Denton interpolation method (Denton, 1971). We used PitchBook's quarterly fundraising and investment series for European PE as the high-frequency indicator variable.[24]

Our quarterly VAR model contains three variables – GDP, PE fundraising and PE investments – selected according to economic reasoning. To satisfy the requirement of stationarity, we transformed all series into the first difference of logarithms. This transformation was instrumental in ensuring the series contained no unit-root. Moreover, we determined the number of lags in our model using several lag-length tests. Our final VAR specification appears appropriate and stable. See Appendix B for additional information.

Figure 30 displays the forecasted path of the European PE market in the absence of COVID-19. Notice the large uncertainty of the estimates in 2021, as shown by the 90% confidence bands. The point estimates of the VAR forecasts point to a 10% increase in investment activity in 2020 had the COVID-19 crisis not hit the European PE ecosystem. The VAR forecasts also point to a stable fundraising market in 2020, with virtually no change from 2019 levels. PE investments were expected to hit an inflection point in 2021, with a 3% drop from 2020 levels, while fundraising once again was not expected to experience much change. However, the extreme uncertainty around 2021 forecasts indicates that this is just one of many possible scenarios that could have taken place.

[22] For the purpose of this analysis, the "European market" relates to EU-27, Norway, Switzerland and United Kingdom.
[23] PE market figures in this analysis pertain to the entire private equity sphere, i.e. including Venture Capital investments.
[24] PitchBook's quarterly time series contain a significant amount of noise, either due to measurement error and/or the presence of "mega-deals". Both phenomena are able to sway the underlying trend in the time series for a given quarter. In order to reduce statistical uncertainty and provide a more robust estimate of the impact of a GDP shock on the European PE market, we smooth PitchBook data via a four-quarter moving average filter. We implemented this data processing step before carrying out the quarterly interpolation of Invest Europe's annual data.

Figure 30: Short-term forecasts of European PE activity levels



Source: Authors, based on Invest Europe, PitchBook, and European Commission data. Note: 90% confidence bands estimated through bootstrapping (2,000 simulations). For presentation purposes, we cap the confidence intervals at a minimum of zero and a maximum of EUR 160bn.

4.2 Where are the European PE/VC markets headed after COVID-19?

The Spring 2020 economic outlook of the European Commission (EC, 2020b) confirms that the COVID-19 crisis will lead to a severe GDP contraction in the EU-27, Norway, Switzerland and United Kingdom.[25] The EC forecasts assume that the major economic impact of COVID-19 will be observed in Q2/2020, with more subdued economic repercussions from the pandemic during the second half of 2020 (EC, 2020b). As a result, the aggregate economy in the European region is expected to shrink by 7.0% in 2020.

How is this adverse, exogenous shock to GDP likely to impact the European PE market? The *impulse response function* derived from our VAR model tackles this important question. However, a number of additional assumptions are necessary in order to estimate this function and identify the potential COVID-19 shock to the European PE market.

First, we need to represent the forecasted COVID-19 impact on GDP as a one-off drop in economic output, *i.e.* a one-quarter shock. To this end, we assume that the economic impact of the COVID-19 crisis will coincide with the period of strictest lockdown measures, manifesting its full economic impact in Q2/2020. Following the initial shock, economic growth reverts to its pre-COVID-19

[25] The forecasts in the Spring 2020 economic outlook of the European Commission were, at the time of writing, the latest available GDP predictions about the EU-27, Norway, Switzerland and United Kingdom. The recently published Summer 2020 economic outlook provides a slightly worsened outlook. We are confident that results incorporating such updated forecasts would be similar to the ones presented in this chapter.

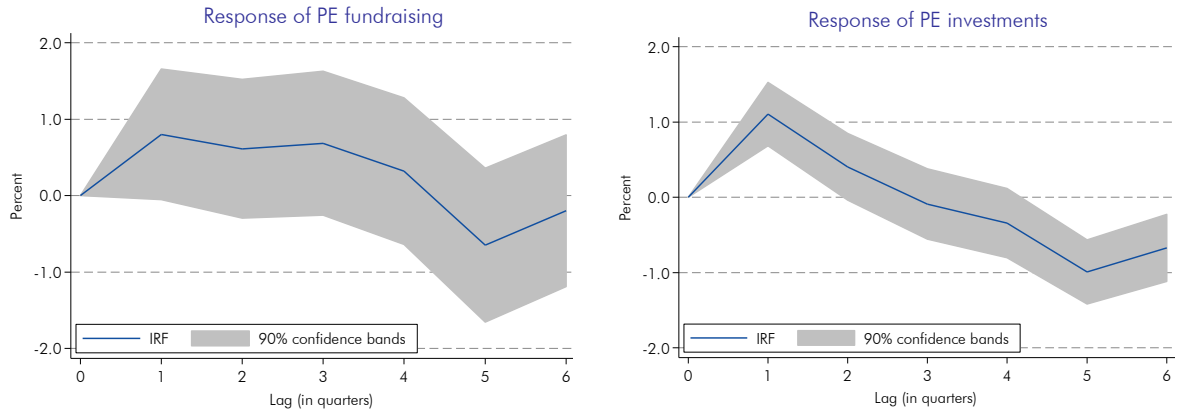
forecasted path. We use the European Commission's Winter 2020 forecasts (European Commission, 2020a) to construct the pre-COVID-19 forecasted path.[26]

This approach leads to an implied one-off contraction of the European economy by 38% in Q2/2020. It is important to stress that such quarterly GDP contraction, unprecedented in recent economic history, represents only a convenient device to accommodate the quarterly specification of our VAR model.[27] Hence, the one-off drop is not the direct outcome of the Commission's forecasts that show a less extreme, but more prolonged, U-shaped recovery spanning several quarters.

We need a second assumption to identify the potential effects of COVID-19 on the European PE market. As customary in the VAR literature, we need to specify a variable whose contemporaneous shocks do not immediately affect the other variables. In other words, the selected variable impacts the other indicators with a lag of at least one quarter. Based on the literature about the PE market (see e.g. Gompers and Lerner, 1999), we are persuaded to assume that the effects of GDP on PE investments and fundraising only occur with a lag.

Figure 31 shows the impulse response function (IRF) for PE fundraising (left panel) and PE investments (right panel). Figure 31 shows the percentage growth of PE fundraising and investments in response to a one percent GDP shock. For instance, the right panel of Figure 31 shows that a 1% increase in GDP leads to an approximately 1% increase in PE investments, one quarter after the GDP change. The confidence bands for the IRF of PE fundraising (left panel) show that, according to our data, GDP shocks do not affect PE fundraising in a statistically significant way.

Figure 31: Impulse responses of PE fundraising and PE investments



Source: Authors, based on Invest Europe, PitchBook, and European Commission data. Note: 90% confidence bands estimated through bootstrapping (2,000 simulations).

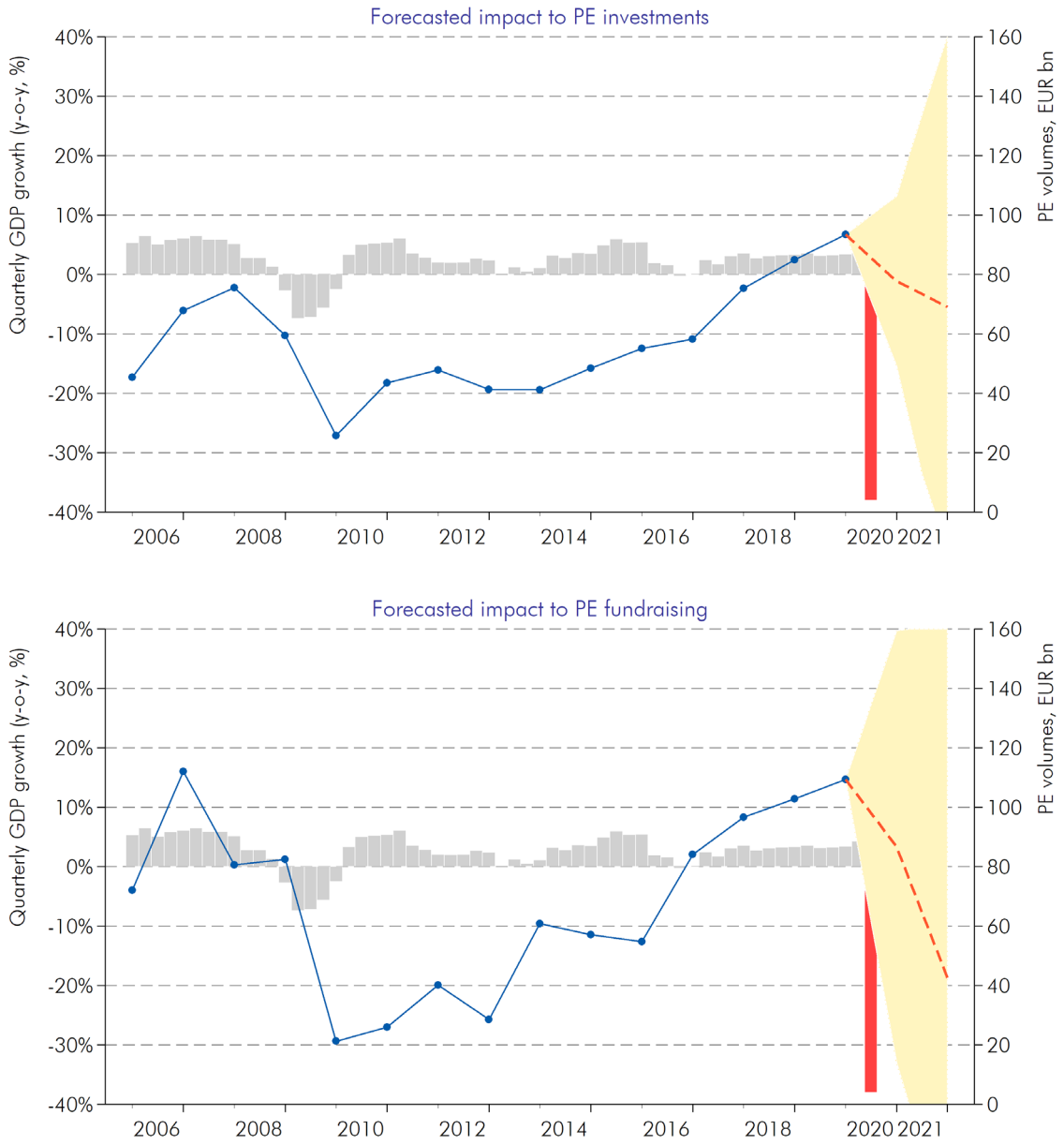
Based on Figure 31, we can extrapolate the potential response of the PE market to the COVID-19 induced GDP shock (-38%). In Figure 32, we use the estimated impulse response curve to forecast PE fundraising and investment levels in the aftermath of the COVID-19 crisis (right scale). Figure 32 also plots the quarterly GDP fluctuations and the assumed COVID-19 GDP shock (left scale).

[26] We should note that our VAR GDP forecasts almost perfectly overlap with the Commission's Winter 2020 GDP forecasts. Thus, the exercise would be unchanged had we used the GDP forecasts estimated in section 4.1.

[27] As a robustness check, we re-estimated the VAR model using semi-annual frequency data and a more spread out, but still one-off, GDP shock. Although the main conclusions are confirmed, the reduced sample size decreases the reliability of the estimated impacts. This ultimately rendered such alternative approach inconclusive.

Figure 32 shows that the COVID-19 pandemic could have a strong and immediate adverse impact on PE market activity. PE investments (Figure 32, upper panel) are estimated to decrease by 17% in 2020. Point estimates indicate further decline during 2021 (-11% compared to 2020), but the high degree of statistical uncertainty indicates that 2021 forecasts should be interpreted with caution. The fall in investment volumes in 2020 echoes the drop in activity witnessed during the global financial crisis, e.g. between 2007 and 2008. Fundraising volumes (Figure 32, bottom panel) could also decline significantly by 20%. Once again, the drop in PE fundraising is comparable to the fall in activity caused by the GFC.

Figure 32: The potential impact of the COVID-19 shock on the European PE Market



Source: Authors, based on Invest Europe, PitchBook, and European Commission data. Note: 90% confidence bands estimated through bootstrapping (2,000 simulations).

The average estimate for 2021 PE fundraising shows an even more severe fall, with a -50% drop compared to 2020 levels. However, the extreme uncertainty around 2021 forecasts indicates we should interpret these results with caution.

Comparing the post-COVID-19 scenarios with our counterfactual forecasts described section 4.1, we can quantify the PE fundraising and investment shortfall induced by COVID-19. Beneficiaries of European PE investments are expected to suffer from an investment shortfall of EUR 24.8bn by the end of 2020. The average estimated impact on PE fundraising is equally severe, with an expected fundraising gap of EUR 21.7bn by the end of 2020. Due to the high uncertainty in our estimates, we cannot draw an unambiguous picture of the PE fundraising and investment markets at the end of 2021.

As discussed in Section 4.1, complete, long-term and high frequency time series about the quantities of interest are essential to reap the full benefits of VAR estimation. Due to these requirements, we are constrained in the measures suitable to track the developments of the various segments of the European PE market, which are likely to experience a different trend compared to the overall market (e.g. the Biotech sector). While the main focus of this chapter remains the overall European PE market, Box 3 discusses the potential impact of COVID-19 on the European VC market. In Appendix B, we discuss potential limitations and further research.

Box 3: the potential impact of COVID-19 on the European VC market

Venture capital investments are a type of early stage private equity funding that mostly targets companies before they have "started mass production/distribution with the aim to complete research, product definition or product design, also including market tests and creating prototypes" (Invest Europe, 2020). This type of financing can be vital for a subset of young and innovative companies that disproportionately contribute to job creation and innovation. In terms of number of companies financed, the VC segment typically accounts for the majority of PE investments.

We extend our baseline approach to estimate the effects of the COVID-19-induced GDP shock to VC investments. We use total PE fundraising as a proxy for VC fundraising, due to the lack of long-term trends for the latter measure. Consistent with our baseline effects on the European PE market, the COVID-19 pandemic will also have a strong and immediate adverse impact on VC activity. Based on our model, VC investment volumes are estimated to decrease by 16% in 2020. The estimate for 2021 VC investment volumes shows a sustained depression, with a 33% drop compared to 2020 levels. The overall drop in activity follows the one witnessed after the GFC. However, once again our estimates are to be interpreted with caution, given the high uncertainty of the model's forecasts.

5 Concluding remarks

As the COVID-19-induced economic crisis unfolds at a global scale, society is set to face numerous and unprecedented challenges. In this paper, we looked at the potential ripple effects to the European PE/VC industry, which disproportionally contributes to innovation, value and job creation across the continent.

In section 2, we set the scene by discussing the historical fluctuations of the European PE/VC market. However, given that the determinants of the COVID-19 crisis are fundamentally different from previous recessions (e.g. the GFC), we conclude that the historical performance can only provide a reference framework to assess the future effects of the COVID-19 pandemic. We provide elements that support a cautious optimism vis-à-vis the recovery of the PE/VC ecosystem in the aftermath of COVID-19 (e.g. a market that has so far stalled but not yet crashed, the increased experience and maturity of the industry, high levels of dry powder and the readiness of public policy intervention). At the same time, uncertainty is high and the risks for far more severe outcomes remain substantial.

In section 3, we substantiate the negative economic outlook brought by the COVID-19 pandemic on the European PE/VC market by means of a combined survey exercise towards Business Angels, VC and PE MM investors. Our results confirm that expectations about the forthcoming months have considerably worsened. For PE MM fund managers, the pessimism increased particularly with respect to their state of business, the fundraising environment, the access to finance of portfolio companies,[28] future portfolio development and exit prospects. VC fund managers were also particularly concerned about the fundraising environment and the exit opportunities in the near future. For BAs, the worsened outlook mainly concerned the access to finance of portfolio companies and finding co-investors. As per the biggest challenges arising since the onset of the COVID-19 crisis, PE MM fund managers and BAs were concerned about the general market volatility and the exit environment, while VCs stated that they worried more about fundraising.

In section 4, we use a simple Vector Auto-regression model to assess the potential impact of the COVID-19 pandemic on the European PE market. We find that the COVID-19 pandemic could have a strong and immediate adverse impact on the European PE market activity, at a time where activity levels had reached a new all-time high. The fall in fundraising and investment volumes has the potential to echo the drop in activity witnessed during the global financial crisis, e.g. between 2007 and 2009. An important caveat of our analysis is the wide margin of error around our model forecasts.

Overall, we provide evidence that the European PE/VC ecosystem has faced and could continue to experience significant challenges in the aftermath of the COVID-19 pandemic. This is likely to result in the curtailing of investments to young and innovative businesses. In the absence of appropriate policy responses, the COVID-19 crisis will thus restrict the funding for technology and innovation, which would prove detrimental to Europe's competitiveness, including its ability to pre-emptively address the risk of future pandemic spreads or similar systemic shocks.

[28] In this respect, it needs to be noted that at the time the surveys were conducted, no government support plans (state-backed loans or equivalent) had been put in place. It would therefore be worth monitoring the sentiment regarding the access to finance in the long term.

Crucially, the economic consequences of the COVID-19 pandemic will not be uniform, but vary according to e.g. the geography, industry and investment development stage. The shortage of funding might be particularly significant in regions outside of major PE/VC hubs, which is likely to exacerbate the existing cohesion gaps (Mason, 2020). Similarly, the COVID-19 crisis will likely have diverging effects across industries, creating "winners" – e.g. consumer health, biotech – as well as "losers" – e.g. travel, mobility and jobs (Dealroom and Sifted, 2020).

In addition to mitigating the short-run negative effects of the COVID-19 pandemic, increased availability of equity funding could prove an important policy tool to prevent excessive EU SMEs debt overhang, considered a burdensome legacy of the financial crisis that led to deleverage and to improve shock resilience. Furthermore, PE/VC funding could bring significant advantages to SMEs through the strengthening of their capital structure, i.e. improving loss absorbency and credit risk profiles. Equity funding would provide liquidity and growth capital to SMEs in the EU to safeguard their continued operations through the crisis and to position them for renewed growth thereafter.

Our surveys to Business Angels, VC and PE MM investors show that market players are particularly concerned about the potential worsening of the exit environment in the wake of COVID-19. Divesting their portfolio companies ranks high among the concerns of all types of equity investors. Policy measures that aim at improvements in this area were already called for before COVID-19 spread across Europe. They have become even more relevant in the current crisis situation in order to incentivise equity investments and to sustain the growth of innovative companies in Europe.

Against this backdrop, a strong policy response in support of the PE/VC markets is imperative. It is also a desirable strategy in light of the significant public policy efforts to build a thriving risk-capital ecosystem for SME financing in Europe over the past decade (also in the context of creating a Capital Markets Union). For this reason, the EIF – as a leading provider of SME finance in the European Union, and the largest public investor in the venture capital ecosystem in Europe – is considerably stepping up its efforts, both in the equity and debt markets.[29] This is in the context of the EIB Group's response to the pandemic and in close cooperation with the European Commission.

On the equity side, EIF's policy response entails a combination of new and existing financial instruments. The new financial products are specifically aimed at addressing the key challenges brought by the COVID-19 pandemic, as evidenced throughout this paper. To mitigate the potential shortage of fundraising opportunities, the EIF will target active funds to help them support their portfolio companies by providing top-up commitments. This strategy also envisages co-investments alongside active fund managers and the support of fund recapitalisations through, e.g. continuation funds. In addition, the EIF will strengthen its cooperation with other institutional partners, such as National Promotional Institutions. This will ensure a deeper outreach that would meet the financing needs of young and innovative SMEs less likely to be served by VC and PE funds.

The EIF will continue to support emerging funds via cornerstone investments throughout the difficult post-COVID-19 fundraising environment. This will ensure that the core policy goals towards the PE/VC ecosystem are maintained, but also it will allow the EIF to support strategies that could prove particularly relevant during the crisis (e.g. hybrid debt-equity funds, turnaround funds).

[29] EIF's debt products fall outside the scope of this working paper. For a brief overview, see Brault and Signore (2020).

To address the potentially adverse post-COVID-19 exit environment, the EIF aims to expand its activities to support the strengthening of a European IPO market for innovative SMEs. Finally, new instruments are under development to support the provision of equity and quasi-equity: a portfolio protection product will allow beneficiary financial intermediaries to lower the risk of quasi-equity investment portfolios; an investor protection product will aim to incentivise new commitments to VC and PE funds from institutional investors.

The track record of past and existing EIF equity products proves that they delivered high economic impact. The scientific consensus to date is that public intervention in the European ecosystem has led to predominantly positive results. EIF research[30] shows that start-ups supported by EIF VC investments experienced higher revenues and higher job creation in the first five years following the VC investment, with levels almost doubling compared to a scenario in which they had not received VC investments. Moreover, the studies find that VC investment helped start-ups achieve higher liquidity, investment and borrowing levels, which could prove crucial to withstand the COVID-19 crisis.

Overall, numerous studies support the view that EIF equity products can help to mitigate the impact of the COVID-19 crisis. This view is also backed by findings from EIF's VC Survey. As a general outcome, the fund managers' perceptions of the EIF's value added, products and processes are highly positive. Overall, the EIF's involvement in a fund is perceived to have a positive impact on its fundraising and the structuring process, as well as to the longer-term sustainability of the management firm. In particular, the EIF played a vital role in helping funds reach a viable fund size to operate.[31]

Our research confirms the effectiveness of EIF's policy response in the past. As such, the EIF's activities represent viable policy instruments to mitigate the impact of the COVID-19 crisis. Against this backdrop, the EIF not only maintains its commitments to support the European PE/VC ecosystem, but also to continue analysing the markets' situation, sentiment and development, including the collection of new survey evidence, in order to tailor its interventions in line with market needs.

In light of this, EIF's RMA intends to perform an additional survey in early autumn 2020, outside the regular annual survey schedule. This forthcoming survey will look purely into the impact of the COVID-19 crisis and will cover respondents' market sentiment, challenges and implications as regards recovery measures.

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[30] See Kraemer-Eis et al. (2016), Signore (2016), Prencipe (2017), Signore and Torfs (2017), Pavlova and Signore (2019), and Crisanti et al. (2019).

[31] Fund managers perceive very positively the role of the EIF in helping VC firms overcome insufficient private sector involvement, in encouraging other LPs to invest in VC funds and, ultimately, in reducing the SME financing gap. In general, the quality signal and the EIF's role as a stable long-term investor are mentioned as important reasons for turning to the EIF as an investor. See Kraemer-Eis et al. (2018).

References

Afonso, A., Baxa, J., and Slavík, M. (2018). Fiscal developments and financial stress: a threshold VAR analysis. Empirical Economics, 54(2), 395-423.

Axelson, U., and Martinovic, M. (2013). European venture capital: myths and facts. Working Paper, British Private Equity & Venture Capital Association.

Botsari, A., Crisanti, A. and Lang, F. (2019). EIF VC Survey 2019: fund managers' market sentiment and policy recommendations. EIF Working Paper 2019/59, EIF Research & Market Analysis. https://www.eif.org/news_centre/publications/EIF_Working_Paper_2019_59.pdf

Brander, J.A., Du, Q. and Hellmann, T.F. (2010). The effects of government-sponsored venture capital: International evidence. Working Paper 16521, National Bureau of Economic Research.

Brault, J. and Signore, S. (2020). Credit Guarantees in the COVID-19 crisis – Relevance and Economic Impact. SUERF Policy Note No 176. June 2020.

Crisanti, A., Krantz, J. and Pavlova, E. (2019). The VC factor: Data driven insights about VC-backed start-ups in Europe. Joint EIF–Invest Europe study. First online 5 December 2019. http://bit.ly/TheVCFactor

Dealroom and Sifted (2020). What does it take? Europe's startup ecosystem navigating the COVID-19 crisis. Retrieved at https://europeanstartups.co/. Accessed 2 July 2020.

Denton, F.T., (1971). Adjustment of Monthly or Quarterly Series to Annual Totals: An Approach Based on Quadratic Minimization. Journal of the American Statistical Association, 66, 99–102.

EIF (2020). Investors' sentiment survey. June 2020. https://www.eif.org/attachments/eif-investors-sentiment-survey-june2020.pdf

European Commission (2020a). European Economic Forecast, Winter 2020 (Interim). Institutional paper 121, February 2020.

European Commission (2020b). European Economic Forecast - Spring 2020. Institutional Paper 125. May 2020.

European Commission (2020c). President von der Leyen on the EU's response to COVID-19. STATEMENT/20/368. https://ec.europa.eu/commission/presscorner/detail/en/statement_20_368 on 10/06/2020

European Commission (2020d). European Economic Forecast, Summer 2020. Institutional paper 132, July 2020.

fi-compass (2020). Gap analysis for small and medium-sized enterprises financing in the European Union. Final Report. December 2019. https://www.fi-compass.eu/publication/factsheets/gap-analysis-small-and-medium-sized-enterprises-financing-european-union

Gompers, P. A., & Lerner, J. (1999). What drives venture capital fundraising? (No. w6906). National bureau of economic research.

Guerini, M. and Quas, A. (2016). Governmental venture capital in Europe: Screening and certification. Journal of Business Venturing, vol. 31, no. 2, pp. 175–195.

Hepburn, C., O'Callaghan, B., Stern, N., Stiglitz, J., and Zenghelis, D. (2020). Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change? Forthcoming in the *Oxford Review of Economic Policy 36(S1)*. 4 May 2020.

IMF (2020a). World Economic Outlook. April 2020.

IMF (2020b). Word Economic Outlook update. June 2020.

Invest Europe (2020). Investing in Europe: Private Equity activity 2019. Available at: https://www.investeurope.eu/research/data-and-insight/

Kraemer-Eis, H., and Lang, F. (2014). Guidelines for SME Access to Finance Market Assessments (GAFMA). EIF Working Paper 2014/22, EIF Research & Market Analysis. https://www.eif.org/news_centre/publications/EIF_Working_Paper_2014_22.htm

Kraemer-Eis, H., Botsari, A., Brault, J., and Lang, F. (2019). EIF Business Angels' Survey 2019: Market sentiment, public intervention and EIF's value added. EIF Working Paper 2019/60, EIF Research & Market Analysis. https://www.eif.org/news_centre/publications/EIF_Working_Paper_2019_60.pdf

Kraemer-Eis, H., Botsari, A., Gvetadze, S. and Lang, F. (2018). EIF VC survey 2018 – fund managers' perception of EIF's value added. EIF Working Paper 2018/51, EIF Research & Market Analysis. https://www.eif.org/news_centre/publications/EIF_Working_Paper_2018_51.htm

Kraemer-Eis, H., Botsari, A., Gvetadze, S., Lang, F. and Torfs, W. (2019). European Small Business Finance Outlook. EIF Working Paper 2019/61, EIF Research & Market Analysis. https://www.eif.org/news_centre/publications/EIF_Working_Paper_2019_61.htm

Kraemer-Eis, H., Signore, S. and Prencipe, D. (2016). The European venture capital landscape: an EIF perspective. Volume I: The impact of EIF on the VC ecosystem. EIF Working Paper 2016/34, EIF Research & Market Analysis. http://www.eif.org/news_centre/publications/eif_wp_34.pdf

Lewin, A. (2020). What's happened to the angels? Sifted. Retrieved from https://sifted.eu/articles/angel-investing-startups-europe-covid/ on 01/06/2020.

Mason, C. (2020). The Coronavirus economic crisis: its impact on venture capital and high growth companies. Joint Research Center, European Commission. Brussels. 30 April 2020.

Pavlova, E. and Signore, S. (2019). The European venture capital landscape: an EIF perspective. Volume V: The economic impact of VC investments supported by the EIF. EIF Working Paper 019/55, EIF Research & Market Analysis. https://www.eif.org/news_centre/publications/EIF_Working_Paper_2019_55.pdf

Pitchbook (2020). COVID-19's Influence on the European VC Market. How the pandemic will affect the dynamic between startups, GPs and LPs. 17 April 2020.

Prencipe, D. (2017). The European venture capital landscape: an EIF perspective. Volume III: Liquidity events and returns of EIF-backed VC investments. EIF Working Paper 2017/41, EIF Research & Market Analysis. https://www.eif.org/news_centre/publications/eif_wp_41.pdf

PwC (2012). IPO Watch Europe 2012.

Sahut, J.M. and Braune, E. (2015). Venture Capital in Europe. In Kent Baker, H., Filbeck, G. and Kiymaz, H., editors, Private Equity: Opportunities and Risks, p. 49. New York: Oxford University Press, 2015.

Signore, S. (2016). The European venture capital landscape: an EIF perspective. Volume II: Growth patterns of EIF-backed startups. EIF Working Paper 2016/38, EIF Research & Market Analysis. https://www.eif.org/news_centre/publications/EIF_Working_Paper_2016_38.htm

Signore, S. and Torfs, W. (2017). The European venture capital landscape: an EIF perspective. Volume IV: The value of innovation for EIF backed startups. EIF Working Paper 2017/45, EIF Research & Market Analysis.
https://www.eif.org/news_centre/publications/EIF_Working_Paper_2017_45.htm

Sims, C.A. (1980). Macroeconomics and reality. Econometrica: journal of the Econometric Society, 1-48.

Stock, J.H., and Watson, M.W. (1996). Evidence on structural instability in macroeconomic time series relations. Journal of Business & Economic Statistics, 14(1), 11-30.

Stock, J.H., and Watson, M.W. (2001). Vector Autoregressions. Journal of Economic Perspectives, 15 (4): 101-115.

ANNEXES

Appendix A: EIF surveys – sample selection and data preparation

The *EIF VC Survey 2020* (the third one in the EIF VC Survey series) was conducted between 29 February and 9 March 2020, while the *EIF PE MM Survey 2020* (the first one in the private equity mid-market area) was conducted between 13 February and 23 March 2020. We used EIF internal data and PitchBook to derive the contact details of the GPs who are active in the European VC/private equity mid market – our target populations. The survey questionnaires were received via e-mail by 5,504 VCs (3,810 PE MM fund managers), representing 2,781 distinct VC firms (1,726 PE MM firms) headquartered in the EU27, the UK and other European countries.

We received, on an anonymous basis, 608 completed VC responses (301 PE MM responses) from 493 VC firms (249 PE MM firms). Hence, both surveys achieved a good coverage of the underlying survey populations. The VC survey in particular was, for the second year in a row, the largest survey on venture capital in Europe. The vast majority of the respondents in both surveys hold the position of the CEO or Managing/General Partner, suggesting that their responses reflect the views of the decision-makers within the respective VC/PE MM firms.

The *EIF BA Survey 2020* (the second one in the EIF BA Survey series) was conducted between 5 February and 16 March 2020. A major difference between the 2020 and the 2019 BA survey waves is that the *EIF BA Survey 2019* only targeted BAs who had been supported by the EIF under the European Angels Fund (EAF[32]), whereas the *EIF BA Survey 2020* also targeted non-EIF supported BAs. As such, the online questionnaire was in total received by 1,896 BAs active in Europe, out of which 139 participated in the survey.

[32] See https://www.eif.org/what_we_do/equity/eaf/index.htm for more information about the EAF.

Appendix B: technical details about the VAR assessment

The data

We used several data sources for this analysis. We gathered information on private equity (PE) and venture capital (VC) investment volumes in European companies from 1998 to 2020 from PitchBook. Moreover, we gathered VC and PE fundraising volumes by General Partners (GPs) domiciled in Europe at closing date, spanning from 1998 to 2020. PitchBook data are quarterly, by EU member state and apply to all PE and VC stages and all PE types.

We also collected country annual PE and VC investment and fundraising data for the same time window from Invest Europe, the association representing the European venture capital and private equity industries. Invest Europe provides an unrivalled coverage of the European VC and PE ecosystems, since the data are directly sourced from affiliated PE and VC firms.

We consider data collected from Invest Europe to be more complete – particularly for pre-2007 developments. However, the data is only provided on an annual basis. We thus transform Invest Europe yearly time series to quarterly via the Denton interpolation method (Denton, 1971). We used PitchBook's quarterly data as the indicator series. This exercise also allowed us to build quarterly investment series by country of investee ("destination approach").

To reconcile incremental and closing date fundraising, we exploit a quarterly dataset published by Invest Europe for the quarters Q1/2007 to Q3/2015, containing both incremental and closing date fundraising for Europe as a whole. Using a simple model regressing the closing fundraising on the current and lagged quarterly incremental fundraising volumes (two lags in total), we derive an expression for the incremental fundraising volumes in terms of the forward closing fundraising volumes. As a last step, we applied the estimated parameters to predict the incremental fundraising of the PitchBook time series. Finally, we collected past quarterly GDP data on EU member states from Eurostat.

PitchBook's quarterly time series contain a significant amount of noise, either due to measurement error and/or the presence of "mega-deals". Both phenomena are able to sway the underlying trend in the time series for a given quarter. In order to reduce statistical uncertainty and provide a robust estimate of the impact of a GDP shock on the VC/PE market, we smooth Pitchbook data via a moving average filter as a pre-processing step before carrying out the quarterly interpolation of Invest Europe's annual data.

The VAR Model

A Vector Auto-regression (VAR) model is a macro-econometric framework that models *n* variables as functions of their own lagged values, and the lagged values of the *n-1* remaining variables (Sims, 1980). For the current analysis, this results in a system of three equations:[33]

[33] We estimated the 3-factor model for EU27&UK, CH and NO using 82 quarters, from Q3/1999 to Q4/2019.

$$dlnGDP_t = c_1 + B_1^{GDP} dlnGDP + B_2 dlnPE^{inv} + B_3 dlnPE^{fr} + u_t^{GDP}$$

$$dlnPE_t^{inv} = c_1 + B_1^{PE^{inv}} dlnGDP + B_2^{PE^{inv}} dlnPE^{inv} + B_3^{PE^{inv}} dlnPE^{fr} + u_t^{PE^{inv}}$$

$$dlnPE_t^{fr} = c_1 + B_1^{PE^{fr}} dlnGDP + B_2^{PE^{fr}} dlnPE^{inv} + B_3^{PE^{fr}} dlnPE^{fr} + u_t^{PE^{fr}}$$

Where GDP_t represents GDP growth in quarter t, PE_t^{inv} private investments in companies and PE_t^{fr}fundraising by private equity firms. GDP, PE^{inv} and PE^{fr} are three vectors containing nine lagged values, with their associated coefficient vectors B. The optimal lag length of nine was determined by minimising a number of lag-order selection statistics, e.g. the AIC criterion.[34] u_t^{GDP},$u_t^{PE^{inv}}$,$u_t^{PE^{fr}}$ are the error terms. As we are interested in simulating the immediate, short-run impact of shocks in GDP growth, all variables were turned to growth rates through log-differencing.[35]

The model was estimated for the EU-27, Norway, Switzerland and United Kingdom, based on quarterly time series data ranging from Q3/1999 until Q4/2019. The estimation results were subsequently used to forecast quarterly growth in GDP and VC/PE activity. These forecasted growth rates formed the basis of the business-as-usual scenarios in levels for PE investments and fundraising beyond Q4/2019, as illustrated by the dotted lines in Figure 30. The Impulse Response Function (IRF) derived from the VAR estimation was used to calculate the impact of a shock to quarterly GDP growth on quarterly growth in PE investment and fundraising, respectively. The resulting pattern of quarterly responses in the growth of PE investment and fundraising were used to generate estimates for the COVID-19 impact on levels.

VAR validity tests

For a VAR model to produce stable IRFs, all series are required to be stationary. The assumption of stationarity could not be rejected for any of the series at conventional significance levels (see Figure B1).

The results of the Wald causality tests are presented in Table B1. Variable X is said to *Granger-cause* variable Y if lagged levels of X are meaningful predictors for current levels of Y. In that sense, Granger causality between GDP growth and PE investment growth is bi-directional. PE investments also Granger-cause PE fundraising, while the reverse could not be confirmed at conventional significance levels. The presence of complex dynamics motivates the use of a three factor VAR model.

[34] The Akaike information criterion (AIC) is an estimator of out-of-sample prediction error and thereby relative quality of statistical models for a given set of data.

[35] The estimation results of the VAR model itself are omitted for brevity, as it is customary in the literature (Stock and Watson, 2001).

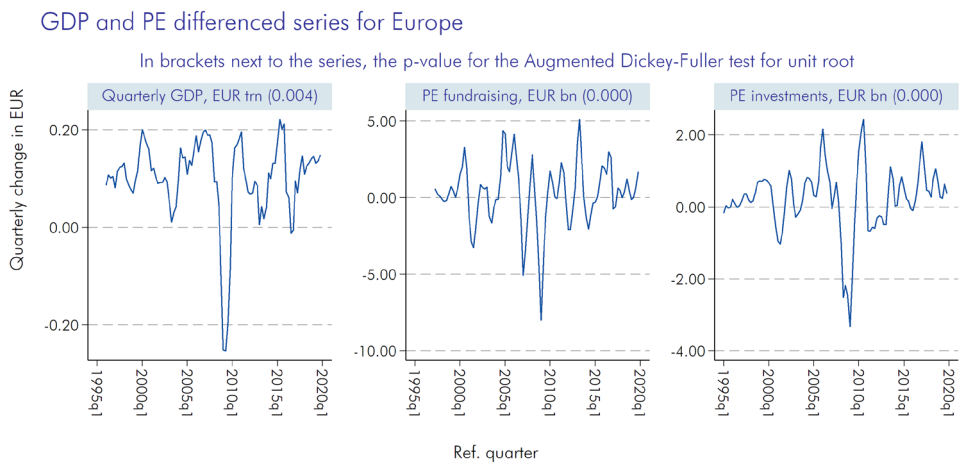
Table B1: Granger causality Wald tests

	H_0: …is Granger-caused by	p-value
$DlnGDP_t$	$DlnPE^{inv}$	0.000***
	$DlnPE^{fr}$	0.115
$DlnPE^{inv}$	$DlnGDP_t$	0.000***
	$DlnPE^{fr}$	0.017**
$DlnPE^{fr}$	$DlnGDP_t$	0.445
	$DlnPE^{inv}$	0.353

*, **, ***, denote significance at the 10, 5 and 1% level, respectively

Source: Invest Europe, Eurostat, PitchBook, Authors' elaboration.

Figure B1: Dickey-Fuller stationarity tests



Source: Invest Europe, Eurostat, PitchBook, Authors' elaboration.

Simulated quarterly shocks

The COVID-19 GDP impact is derived from the European Commission's most recent Economic Forecast (European Commission, 2020b), which provides the forecasted quarterly and annual evolution of GDP for 2020 and 2021. In line with our main empirical strategy, we convert the annual forecasted GDP shock to a one-time shock occurring in Q2/2020. The transformation requires solving for the following two identities:

$$\begin{cases} y_{2020} = y_{2019}\left(1+\rho_{2020}^{EC}\right) \\ y_{2020} = \sum_{i=1}^{4}\left(1+\rho_{2020}^{i}\right)q_{2019}^{i}, \end{cases}$$

where ρ_{2020}^{EC} is the EC annual GDP growth forecast for 2020, which incorporates the impact of the COVID-19 crisis. y_{2020} represents the (annual) GDP level in 2020, q_{2020}^{i} is the (quarterly) GDP level

in quarter i of 2020 and ρ_{2020}^{i} is the year-on-year growth of q_{2020}^{i}, compared to q_{2019}^{i}. Solving this for the year-on-year quarterly growth rate in Q2/2020, ρ_t^2, gives:

$$\rho_t^2 = \frac{y_{2020} - \sum_{j \neq 2}^{4} \left(1 + \rho_{2020}^{j}\right) q_{2019}^{j}}{q_{2019}^{2}} - 1,$$

To concentrate the annual GDP shock in Q2/2020 alone, we use the European Commission's quarterly GDP forecasts made prior to the outbreak of the pandemic (European Commission, 2020a) to forecast growth in Q1/2020, Q3/2020 and Q4/2020. The resulting "implied quarterly COVID-19 shock" is thus fully concentrated in Q2/2020, in line with the core assumption of our VAR analysis, while also remaining faithful to the magnitude of the shock forecasts provided by the European Commission. The resulting simulated Q2/2020 shock is illustrated in Table B2:

Table B2: Quarterly GDP nominal growth (vs same quarter in 2019)

Region	Q1/2020 growth (Winter 2020 forecasts)	Q2/2020 growth (Based on Spring 2020 forecasts)	Q3/2020 growth (Winter 2020 forecasts)	Q4/2020 growth (Winter 2020 forecasts)	Annual growth (Spring 2020 forecasts)
Europe	+3%	-38%	+4%	+3%	-7%

Source: Authors' elaboration, based on data from Eurostat and DG ECFIN.

In reality, the lockdown measures were introduced at the end of Q1/2020 and continued through the first half of the second quarter, after which they were gradually phased out from May 2020 onwards. Therefore, the resulting economic impact was partially spread out over Q1/2020 and Q2/2020, as indeed confirmed by the European Commission forecasts (European Commission, 2020b). This however, does not invalidate our approach, which condenses the entire shock into one quarter.[36]

Limitations and further research

As with most economic analyses, the interpretation of the results presented in this chapter should proceed with caution. First, it is important to stress that this analysis models a temporary exogenous shock in economic activity. Our simple VAR framework does not allow to model subsequent shocks. We leave this exercise to future research.

Although the VAR model is able to capture the dynamic and persistent impact of a one-off shock for several future periods, it also crucially assumes this shock disappears in the following period. If the pandemic flares up again, and lockdown measures in European countries are reinstated later in the year, the impact on the PE market might be substantially more severe. On the other hand, because of the peculiar nature of the COVID-19 shock, it is also possible that GDP will experience an overcompensated revival in the second half of 2020, or 2021. This would then lead to a stronger recovery in PE activity than the one predicted in this analysis. In addition, the Commission's proposal

[36] As a robustness check, we re-estimated the model using semi-annual frequency data. Although the main conclusions were confirmed, the reduced sample size decreases the reliability of the estimated impacts and renders the analysis ultimately inconclusive.

for a recovery plan, centred on a new instrument, "NextGenerationEU", is not factored into this forecast since, at the time of writing, it has yet to be agreed. An agreement on the Commission's proposal is therefore also considered an upside risk.

Second, it is important to account for the uncertainty inherent to statistical models. VAR models are best suited for short run predictions, just a few periods into the future. Moreover, the literature notes that small VARs containing a few variables might be unstable (Stock and Watson, 1996). In any case, as the forecast horizon grows, uncertainty grows along with it. This leads to large confidence intervals around the forecasted path. In this respect, the confidence intervals for our VAR forecasts are estimated via parametric bootstrap methods, using 2,000 simulations.

Third, using historical variation for forecasts necessarily assumes that the past relationship between the considered variables is representative for current and future dynamics. This could prove to be a strong assumption, particularly with respect to the COVID-19 crisis, as discussed in Chapter 2. In other words, our simple VAR framework does not account for the changing properties of the time series, which leads to estimating the effects of the current crisis by linearly extrapolating from the reaction to past GDP shocks. However, it is also plausible that the PE market response to a GDP shock varies non-linearly to the size of the GDP shock itself. This is a cause for concern, especially given the extreme one-off GDP shock modelled in this chapter. Autoregressive models that account for different "regimes" could overcome this limitation (e.g. Afonso et al., 2018), but we leave such efforts to further research.

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The European Investment Fund (EIF) is Europe's leading risk finance provider for small and medium-sized enterprises (SMEs) and mid-caps, with a central mission to facilitate their access to finance. As part of the European Investment Bank (EIB) Group, EIF designs, promotes and implements equity and debt financial instruments which specifically target the needs of these market segments.

In this role, the EIF fosters EU objectives in support of innovation, research and development, entrepreneurship, growth, and employment. The EIF manages resources on behalf of the EIB, the European Commission, national and regional authorities and other third parties. EIF support to enterprises is provided through a wide range of selected financial intermediaries across Europe. The EIF is a public-private partnership whose tripartite shareholding structure includes the EIB, the European Union represented by the European Commission and various public and private financial institutions from European Union Member States and Turkey. For further information, please visit www.eif.org.

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