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## Research Article

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# Firms' Financing Conditions Before and After the Covid-19 pandemic: a survey-based analysis

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## Abstract

In the paper we analyze how the economic situation and financing conditions of euro area firms have changed along different crises that hit the euro area in the 10 years with a focus on the changes before and after the Covid-19 pandemic. We use the responses of a large sample of euro area firms to a qualitative business survey run on behalf of the European Central Bank / European Commission (Survey on the access to finance of enterprises - SAFE) since 2009. Thus, all the analysis centers around firms' reported perceptions. We describe how during the Covid-19 crisis, and despite generally accommodative financing conditions and state aid measures, turnover and profits of firms decreased sharply, having a dampening impact on firms' employment and investment. As a result, firms' financial vulnerability peaked during the Covid-19 crisis which consequences for the subsequent periods. From the financing side, around the Covid-19 period, firms were signaling some deterioration in their access to finance as it is the case more recently due to the pass-through of increasing policy rates to the overall corporate financing conditions. We document that a deterioration in financing conditions does have an impact on both firm-specific and aggregate growth. Based on firms' perceptions only, we find a link between real decisions of firms (in terms of investment and employment), macroeconomic developments and some key survey-based indicators of financing conditions.

Keywords: Financing conditions, financing constraints, firm survey data

## Statements and declarations

The authors did not receive support from any organization for the submitted work.

## **1. Introduction**

Since the global financial crisis in 2009, euro area firms have witnessed several episodes of crises, from the sovereign debt crisis to the recent Covid-19 pandemic and the more recent energy cost crisis. All these crises had effects on the performance of firms, and they triggered responses by policymakers, notably through monetary and fiscal policies.

In this paper, we analyze how the economic situation, vulnerability and financial position of firms and their financing conditions have changed along the different crises through the lens of the firms. We rely primarily on a representative sample of euro area firms from the Survey on the access to finance of enterprises (SAFE) conducted on behalf of the European Commission and the European Central Bank (ECB). The survey gathers firm-level information about the financial situation, financing needs and access to finance of enterprises in the euro area on a bi-annual basis. The survey is widely used by the European Central Bank to analyze corporate business decisions and to assess the transmission of monetary policy. In this respect, this paper will review selected analyses carried out for these purposes in the last years.

Starting with the financial position of firms, we will describe how during the Covid-19 crisis and despite generally accommodative financing conditions and state aid measures, the turnover and profits of firms decreased sharply, having a dampening impact on firms' employment and investment. Since 2022, firms witnessed a significant rise in other costs related to materials and energy, negatively affecting their profitability. In addition, increasing interest expenses due to the hike monetary policy cycle represent a further drag on profitability.

As a result of firms' income and debt situation and the rise in their expenditures, their financial vulnerability peaked during the Covid-19 crisis and, once again, more recently. From a historical perspective, the dynamics of the survey-based vulnerability indicator is broadly aligned with that in bankruptcies. We will show that firms' decrease in turnover and increase in interest expenses are important in affecting the likelihood to become vulnerable firms, with additional consequence for the real decisions in terms of investment and employment.

The SAFE provides information on firms' perceived financing needs and availability across various instruments. During the Covid-19 pandemic, firms' financing needs related to bank loans and credit lines have sharply increased. Bank-related products and subsidized loans remained the most important financing source for SMEs, with the relevance of the latter largely expanding during the pandemic. More recently, firms signaled increased needs for credit lines, while only a small net percentage of firms indicated increased need for bank loans. In line

with the monetary policy tightening, in more recent survey rounds firms reported more often declining availability of banking products.

Another important indicator in the survey relates to the concept of financing constraints and it is used to detect the difficulties of firms to access bank loans. This indicator considers not only the outcomes of firms' loan applications, but also discouraged borrowers – the fraction of firms that would need finance but do not apply for it for fear of rejections. In this paper we describe how, around the Covid-19 period, firms were signaling some deterioration in their access to finance as it is the case more recently due to the pass-through of increasing policy rates to the overall corporate financing conditions. In the latest data available, referring to the period up to September 2023, 8% of SMEs and 4% of large companies considered themselves financially constrained. Among them, discouraged borrowers represent the largest fraction. In the paper we show that when compared to firms that applied for bank loans, the percentage of discouraged borrowers strongly increased since 2021 for SMEs, while it remained almost unchanged for large firms. From a policy perspective, it is important to understand what type of firms are discouraged, In the empirical analysis we show that these are more often small and young firms, with some deterioration in their creditworthiness and own capital. Furthermore, we show that discouraged firms more often informal sources of finance to counterbalance their financing needs.

In addition to the concepts of vulnerability and financing constrained, the SAFE also includes several questions that are regularly analyzed to get an overall picture of the financing conditions of NFCs in the euro area. They include questions related to the changes in the price and non-price terms and conditions (T&C) of bank financing, ranging from changes in interest rates to collateral requirements. Since the beginning of the pandemic, firms signaled some deterioration in price T&C conditions, which has continued along the recent tightening of monetary policy. By bundling together these replies with the changes in the financial position, it is possible to capture various aspects of the overall financing conditions of firms. The analysis conducted regularly by the European Central Bank focuses on three distinct indicators which are derived by applying factor analysis. These indicators suggest there have been several important phases in firms' perceptions of their overall financing conditions, which closely align with the monetary policy measures taken by the ECB over the last 10 years.

The ongoing monetary policy hike is gradually tightening financing conditions and influencing the supply of external finance as part of the standard transmission of monetary policy decisions. A key question is the impact of changes in financing conditions and access to finance on firm-specific and aggregate growth. We document

the link between real decisions of firms (in terms of investment and employment), macroeconomic developments and some key indicators in the SAFE.

The paper is organized as follows. Section 2 provides a description of the dataset. The analysis covers mostly the survey rounds from mid-2009 until September 2023. The following sections describe the evolution and determinants of the economic situation and vulnerability of euro area firms (Section 3); how the need and availability of bank loans (Section 4), financing constraints (Section 4) and overall financing conditions (Section 5) developed after different shocks. Section 7 focuses on what the survey can tell us on real decisions of firms, while Section 8 concludes.

## **2. Survey description**

Our analysis relies primarily on the data obtained from the Survey on the Access to Finance of Enterprises (SAFE) conducted on behalf of the European Commission and the European Central Bank (ECB). SAFE gathers firm-level information about the financial situation and the financing needs and access to finance in the euro area. It is an on-going survey that has collected data every 6 months since 2009 covering firms in the euro area, and once a year firms in all European countries.<sup>1</sup> Firms in the sample are randomly selected from the Dun & Bradstreet database. The sample is stratified by firm-size class, economic activity, and country. The sample size for each economic activity is chosen to guarantee representativeness across the four largest industries: manufacturing, construction, trade, and services. Also, the sample sizes are selected based on representativeness at the country level. The individual surveyed in each firm is a top-level executive and the questionnaire is administered in the local language.

For our analysis we use the information from firms in the euro area and our starting dataset comprises close to 300.000 observations for the period between spring 2009 and September 2023, on average 10.000 firms in each survey round. In the analysis we use weights that restore the proportions of firms within each size class, economic activity, and country. These weights at firm level are directly provided in the dataset and are originally derived by Eurostat's structural business statistics (SBS).

The questionnaire is mostly qualitative, and firms are asked to report how specific factors have changed in the previous six months (but also are going to change in the next six months) with three possible choices: they have decreased, remained unchanged or increased. Most of the aggregated analysis is then derived by using *net*

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<sup>1</sup> See for details [https://www.ecb.europa.eu/stats/ecb\\_surveys/safe/html/index.en.html](https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/index.en.html).

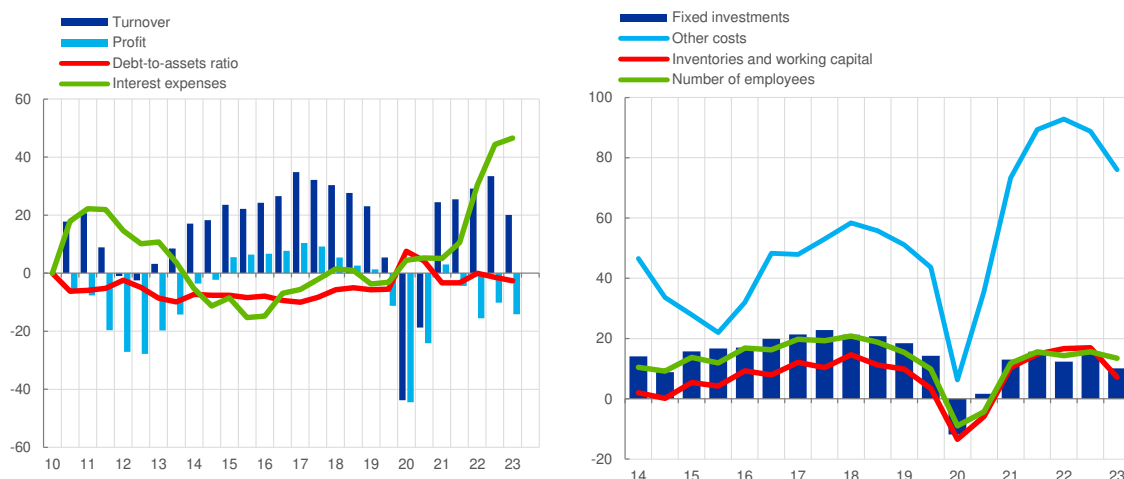
percentages, that means as difference between those firms that reported an increase and those that reported a decrease. Our focus of interest is what happened before and after the Covid-19 pandemic.

### 3. Firms' economic situation and vulnerability

Despite generally accommodative financing conditions and state aid measures, the turnover and profits of firms has sharply decreased during the Covid-19 crisis, having a dampening impact on firms' employment and investment (Figure 1). According to the replies in the survey, in 2020, a large net percentage of firms in the euro area indicated a decrease in turnover and profits, representing a historical low for both indicators. Firms' debt to assets ratio has also increased somewhat.

Since 2022, the energy crisis caused by the Russian invasion of Ukraine had a strong impact on the costs on materials and energy sustained by firms (Figure 1). In addition, increasing interest expenses represented a further drag on profitability. More recently, while cost pressures seem to have eased, the net percentage of firms reporting increased interest expenses reached a new historical since the beginning of the survey, while remaining well below the corresponding net percentages for labour and other costs. Despite the deterioration of the economic conditions, firms' investment and employment growth has broadly held up, but with fewer firms reporting increases.

**Figure 1: Changes in the situation of euro area enterprises**  
(net percentages)

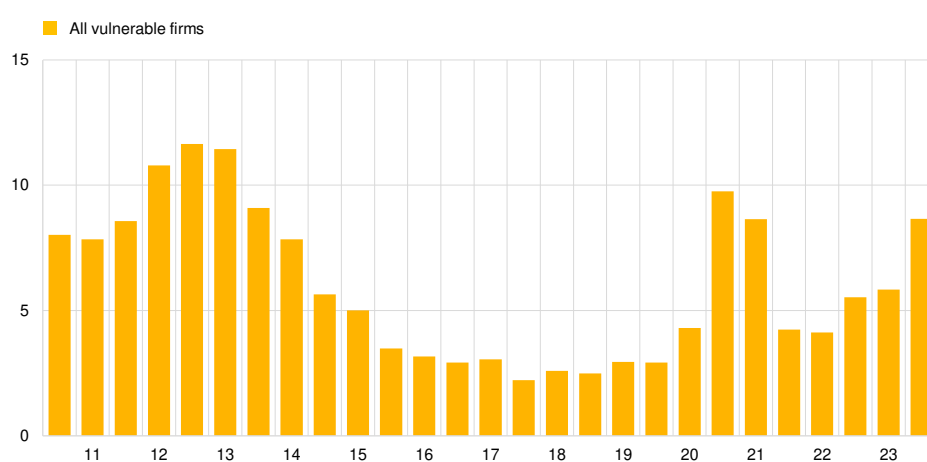


Sources: ECB and European Commission SAFE.

Notes: The left figure refer to waves 3 to 29 of the survey (April-September 2010 to April 2023-September 2023) and the right figure refers to waves 11 to 29 of the survey (April-September 2014 to April 2023-September 2023). All enterprises. Net percentages are the difference between the percentage of enterprises reporting an increase for a given factor and the percentage reporting a decrease.

As a result of firms' income and debt situation and the rise in their expenditures, the financial vulnerability of firms peaked during the Covid-19 crisis, and more recently (Figure 2). Firms in the SAFE are defined as vulnerable if they simultaneously report lower turnover, decreasing profits, higher interest expenses and a higher or unchanged debt-to-assets ratio. The derived indicator, which provides a comprehensive picture of firms' financial situation, suggests that at least 9% of euro area enterprises encountered major difficulties in running their business and servicing their debts in the latest survey round and that this percentage is as high as it was during Covid 19.

**Figure 2: Vulnerable enterprises in the euro area**  
(percentages)



Sources: ECB and European Commission SAFE.

Notes: The figures refer to the survey rounds covering March 2010 to September 2023.

From a historical perspective, the dynamics of the vulnerability indicator is broadly aligned with that in bankruptcies and with widely used indicators of insolvency that can be calculated using hard data (Figure 3). For the comparison we have used two of them.<sup>2</sup> The first indicator is a measure based on firm balance sheet data, showing the share of firms unable to cover their losses with equity<sup>3</sup>; the second one is a market-based measure of distance to insolvency.<sup>4</sup> Specifically, all indicators eased after the sovereign debt crisis. At the start of the Covid-19 pandemic, while the SAFE vulnerability and both insolvency indicators were on the rise due to deteriorating financial positions, firms were likely shielded from having to enter bankruptcy due to the provision of government guarantees (in the literature referred to as the “bankruptcy gap”). More recently, similar to the

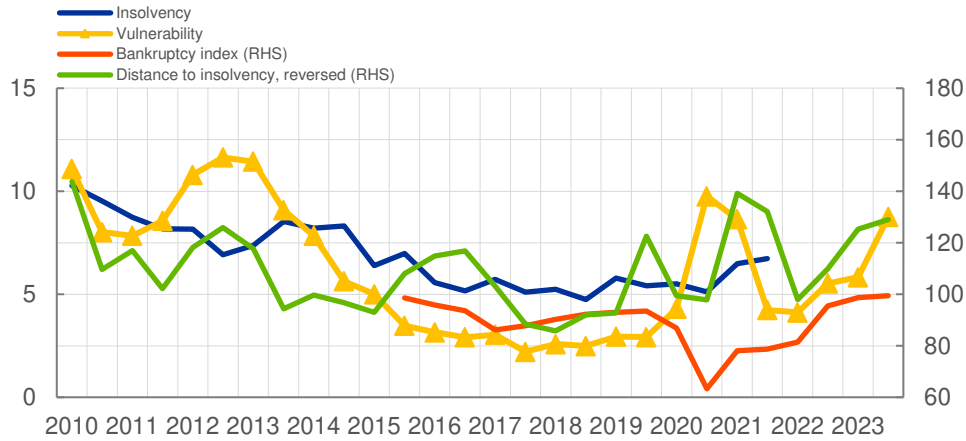
<sup>2</sup> See Attolini et al. (2024) for the analysis of bankruptcy ratios and SAFE vulnerability.

<sup>3</sup> The insolvency indicator shows the percentage of firms in the SAFE sample which have negative profits and are unable to cover the losses with equity (as in Lalinski T. and Pal R., 2022)

<sup>4</sup> Distance to insolvency is calculated as the inverse of the volatility of a firm's return on equity, based on a sample of large euro area listed firms (Ampudia et al., 2022)

evolution of bankruptcies and the SAFE vulnerability indicator, also the distance to insolvency points to increased corporate distress.

**Figure 3: The evolution of vulnerability, bankruptcies and corporate insolvencies**  
(lhs axis: percentages, rhs axis: 2015=100)



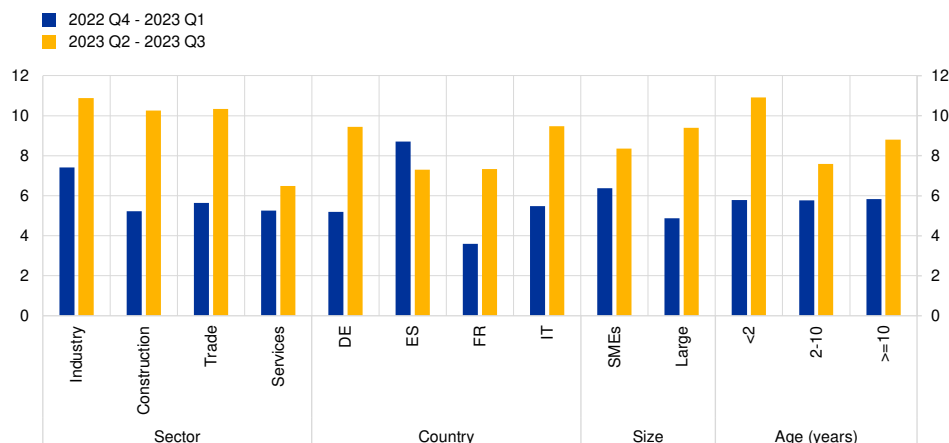
Sources: ECB and European Commission SAFE, Eurostat, Orbis and Refinitiv.

Notes: Vulnerable firms are defined as firms that simultaneously report lower turnover, decreasing profits, higher interest expenses and a higher or unchanged debt-to-assets ratio. Distance to insolvency is calculated as the inverse of the volatility of a firm's return on equity, based on a sample of large euro area listed firms. Lower values of the measure indicate that firms are closer to insolvency, anticipating future default. The chart displays an inverted distance to insolvency index (2015 =100). The number of bankruptcies are defined as an index (2015 =100). The insolvency indicator shows the percentage of firms in the SAFE sample which have negative profits and are unable to cover the losses with equity. The chart is on bi-annual frequency, matching the frequency of the SAFE survey waves.

The current rise in vulnerabilities in SAFE is driven by firms in industry, construction and trade and by large firms, rather than SMEs (Figure 4). There are substantial heterogeneities in vulnerability across economic sectors, countries, and firm characteristics such as size and age. The share of vulnerable firms has increased across all sectors to remain at a relatively low level in the service sector (6%), while reaching somewhat higher levels in industry (11%), construction (10%) and trade (10%) in 2023 Q2-Q3, relative to the previous survey round. Across the four big euro area countries, Italy and Germany have the largest share of vulnerable firms (9%) and for both countries there was a substantial increase in the share of vulnerable firms recently, reflecting that these countries have a relatively high share of industrial firms. The share of vulnerable firms has increased more among large firms, in comparison with SMEs over the past survey round, most probably because larger firms are more export-oriented and thus more adversely affected by higher geopolitical risks. As a result, there is now a larger share of vulnerable large firms than SMEs (9% compared to 8%). By contrast, SMEs historically tend to be more financially fragile than large firms. In addition, the share of vulnerable firms has increased to a larger extent among young firms, than among older firms recently.

**Figure 4: Heterogeneities in corporate vulnerability in the SAFE**  
(percentages)





Sources: ECB and European Commission SAFE.

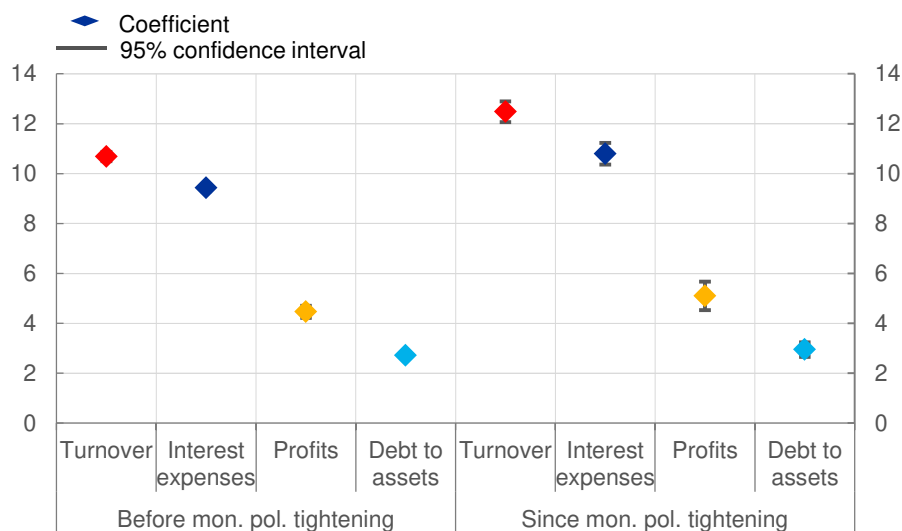
Notes: Bars show the share of vulnerable firms across sectors, countries, firm size and age in 2022 Q4-2023 Q1 and 2023 Q2-2023 Q3.

Turning to the factors affecting the likelihood that firms become vulnerable, we run the following regression:

$$\begin{aligned}
 Prob(vulnerability_{i,t} = 1) = F(\alpha + \beta_1(turnover)_{i,t} + \beta_2(interest\ expenses)_{i,t} + \\
 \beta_3(profits)_{i,t} + \beta_4(debt\ to\ total\ assets)_{i,t} + \beta_5 Country_i + \beta_6 Sector_i + \beta_6 Wave + \beta_5 Size_{i,t} + \\
 \varepsilon_{i,t}) \quad (1)
 \end{aligned}$$

where the indicator of vulnerability is regressed on the deterioration of the factors, i.e. on declines in turnover and profits and increases in interest expenses and increases or no changes in debt to total assets, conditioned to the size of firms and fixed effects for country, sector and time. Figure 5 illustrates that changes in turnover and interest expenses are quite more important. The reduced-form probit regressions suggest that in recent periods both the decline in a firm's turnover and the rise in interest expenses have increased their relative importance as determinants of the vulnerability indicator. Since mid-2022, on average, firms signaling a decline in turnover were 12% more likely to become vulnerable, while the likelihood was 11% for those reporting increases in interest expenses, 5% for firms with deteriorations in profits and 3% for increases in indebtedness. Hence, a continued period of weak economic activity and high interest rates could imply that more firms experience becoming vulnerable, thus affecting their viability going forward.

**Figure 5: Corporate vulnerability in SAFE and its drivers**  
(percentages)



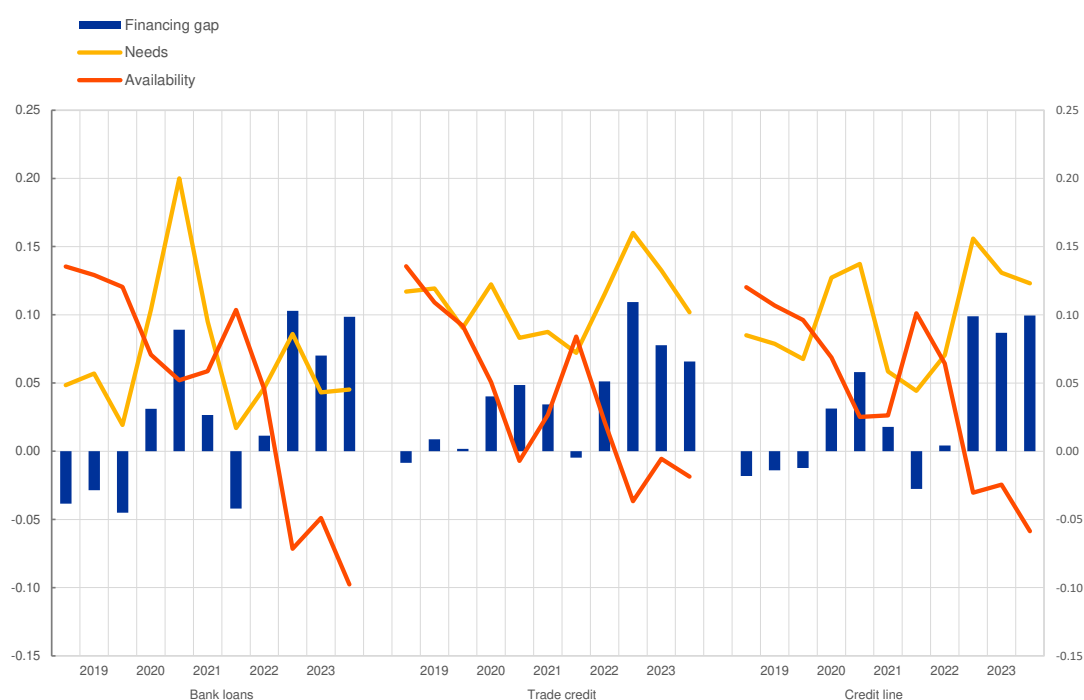
Sources: ECB and European Commission SAFE.

Notes: The chart plots regression coefficients for average marginal effects, showing the impact of declines in turnover and profits and increases in interest expenses and increases or no changes in debt to total assets on the probability of a firm becoming vulnerable. Regressions contain country, time, firm size and industry fixed effects. Whiskers represent 95% confidence intervals.

#### 4. Need and availability of external finance and financing gaps

The SAFE provides information on firms' perceived financing needs and availability across various instruments (e.g. bank loans, credit lines, trade credit, leasing or hire purchase or other loans, equity and debt issuance).

Figure 6 reports the perceptions for the most used sources of external finance: bank loans, credit lines and trade credit. During the Covid-19 pandemic, firms' financing needs related to bank loans and credit lines have sharply increased. It is established evidence that firms were running into a liquidity crisis after the shock related to the confinement measures on their economic activity and the intervention of public authorities tended to reduce their financing gap (Demmou et al., 2021). But the impact of the public intervention took some time as only a small net percentage of firms indicated improvements in the access across most financing instruments, relative to pre-Covid-19 levels. Indeed, by looking at the financing gaps, which is broadly the difference between financing needs and the availability of external finance (bars in Figure 6), we can get an idea of the easiness or difficulties faced by firms in covering their external financing needs. While during periods of the monetary policy easing by the ECB, the financing gaps tended to decrease, they jumped up just during the outbreak of the pandemic in 2020, to be again stabilized by monetary policy and public sector supports. The deterioration was therefore only temporary. Most recently, against the backdrop of weakening economic growth, rising inflation and the hike cycle of monetary policy, firms have started to signal once again widening financing gaps. This time the financing gap is mainly determined by the reduction in the availability of external funds, hence by the pass-through of the monetary policy tightening.



Sources: ECB and European Commission SAFE.

Notes: The financing gap indicator combines both financing needs and the availability of bank loans at the enterprise level. The change in the financing gap takes a value of 1 (-1) if the need increases (decreases) and availability decreases (increases). If enterprises perceive only a one-sided increase (decrease) in the financing gap, the variable is assigned a value of 0.5 (-0.5). The indicator is a weighted average of the financing gaps at the enterprise level.

## 5. Financing constraints

Financial crises put a lot of pressure on firms in need of external finance. This materializes through more firms getting their loan application rejected, but also through a larger number of firms being discouraged to apply.

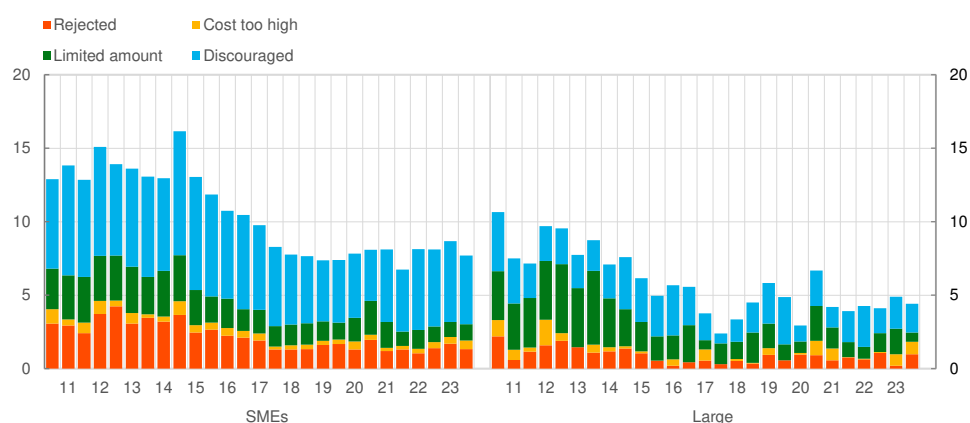
One important feature of the survey is that it collects information on the actual experience of firms in applying for a bank loan and whether they were successful or not in getting it. Firms' replies are then put together to get an indicator of "objective" financing constraints.<sup>5</sup> According to the indicator, firms are credit constrained if they report that: 1) their loan applications were rejected; 2) only a limited amount of credit was granted; 3) they themselves rejected the loan offer because the borrowing costs were too high or 4) they did not apply for a loan for fear of rejection (i.e. discouraged borrowers). The indicator is equal to one if at least one of the above conditions (1-4) is verified, and 0 otherwise.

Figure 7 reports the evolution of the indicator of financing constraints for SMEs and large companies with respect to the respondents for which bank loans are relevant. During the 2010-15 period, about 14% of euro area

<sup>5</sup> See Ferrando and Mulier (2015).

SMEs were constrained in obtaining a bank loan. In the second phase (until around March 2016), that percentage declined to approximately 11% and it has stabilized at around 8% in recent years. For large firms, the percentages have been consistently lower. Around the Covid-19 period, firms were signaling some deterioration in their access to finance, but the most recent increase is associated with the monetary policy tightening cycle. In the latest data available, referring to the period up to September 2023, 8% of SMEs and 4% of large companies considered themselves financially constrained.

**Figure 7: Obstacles to receiving a bank loan**  
(percentages of respondents for which bank loans are relevant )

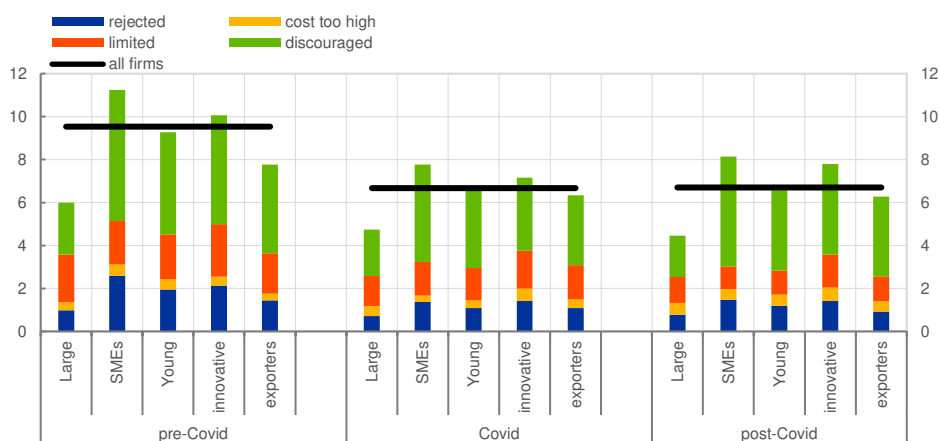


Sources: ECB and European Commission SAFE.

Notes: Financing obstacles are defined here as the total of the percentages of enterprises reporting (i) loan applications that were rejected, (ii) loan applications for which only a limited amount was granted, (iii) loan applications that resulted in an offer that was declined by the enterprise because the borrowing costs were too high, and (iv) a decision not to apply for a loan for fear of rejection (discouraged borrowers).

The share of financially constrained firms varied not only by firm size but also by age and degree of innovativeness as depicted in Figure 8. More interestingly, these cross-sectional differences did not change over time. Their difficulties might be related to the fact that SMEs and young are more likely to face a higher degree of asymmetric information and contracting problems as often referred in the literature. On top, firms involved in innovative activities experience greater obstacles to obtaining a bank loan than firms that were providing mostly traditional products and services. In general, financing innovation is often difficult for firms, given the additional uncertainty involved in those projects.

**Figure 8: Obstacles to receiving a bank loan**  
(percentages of respondents for which bank loans are relevant)



Sources: ECB and European Commission SAFE.

Notes: In this chart the pre-Covid period refers to the period 2009- until March 2020, Covid period between April 2020 and March 2022 and post-Covid from April 2022 to September 2023. Black horizontal lines show the average share of firms indicating financings obstacles across the periods.

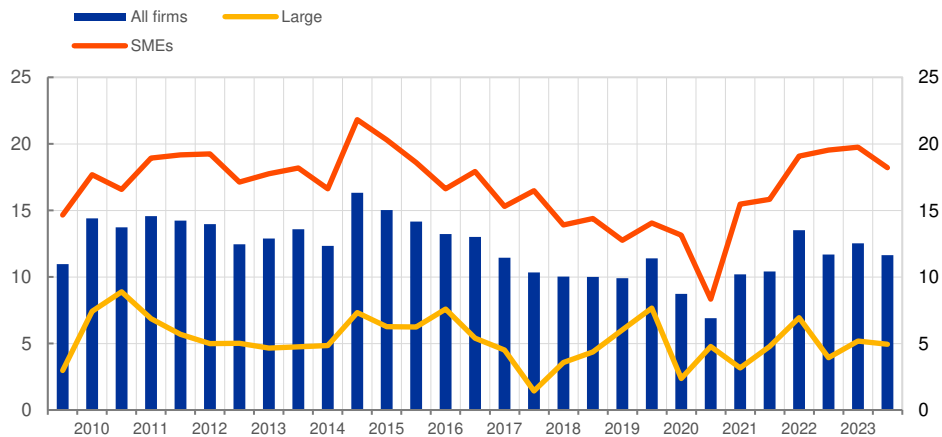
Looking at the different components of the indicator, discouraged borrowers represent a large fraction of firms facing financing obstacles, making them clearly a non-negligible group. Surprisingly, credit rejection received far more attention in the literature, while a better understanding of discouragement (and its consequences) could potentially be more important for the design of policies aimed at improving the access to finance of enterprises. It is therefore important to frame the investigation of the factors that drive firm discouragement. Many papers refer to the theoretical model from Kon and Storey (2003)<sup>6</sup>. In their model, firms in need of external finance trade-off the costs and benefits of applying for a bank loan, given their firm type and banks' screening quality. According to the model, the likelihood of discouragement is higher when the application costs and opportunity costs of bank lending are higher as well as when firms are riskier, or they have lower expected return on their business projects. Firm size and age are also found to be relevant for discouragement, as application costs of firms decrease with age and size, because older firms get more experienced and larger firms have lower fixed costs. The use of other sources of finance has also an impact on the discouragement, as they could increase the opportunity costs for firms to apply for bank loans.

From a policy perspective it might be more relevant to compare discourage borrowers to firms that have a need for external funds and applied for a bank loan. Figure 9 shows the evolution over time of the ratio of discouraged borrowers relative to those firms that applied for a bank loan across size classes. In the euro area

<sup>6</sup> Ferrando and Mulier (2022) use the SAFE data to assess the characteristics and behaviour of discouraged borrowers.

the ratio declined steadily since 2014 for SMEs until September 2020, while for large companies they reached the lowest point in 2017 and started to increase until the beginning of the Covid-19 pandemic. More interesting is the divergence since 2021, with the percentage of discouraged borrowers strongly increasing for SMEs (around 18% on average) and remaining almost unchanged at around 5% for large firms.

**Figure 9: Borrowers discouraged to apply for a bank loan (relative to firms that applied) (percentages)**



Sources: ECB and European Commission SAFE.

Notes: Weighted average percentages of a dummy variable equal to 1 if a firm is discouraged and 0 if the firm applied for a bank loan. SME are enterprises with less than 250 employees.

The empirical analysis takes into consideration not only demographic characteristics but also some factors related to the theoretical model:

$$\text{Prob}(\text{discouragement}) = \beta_0 \text{Firm characteristics}_{it} + \beta_1 \text{Business conditions}_{it} + \beta_2 \text{Lending conditions}_{it} + \beta_3 \text{other external funding sources}_{it} + \beta_4 \text{country, sector time}_{it} + u_{it} \quad (2)$$

The model is estimated using a probit specification where the dependent variable discouragement is a dummy equal to 1 if a firm is discouraged and equal to 0 if it has applied for a bank loan. Firm characteristics are size and age. Business conditions include a set of variables about the factors they consider having affected the availability of bank loans in the last six months. These are the changes in: (1) turnover, (2) own capital (capital provided by the owners or shareholders of the enterprise), (3) credit history, (4) the willingness of banks to provide credit and (5) access to public financial support. All these variables are equal to 1 if the conditions have deteriorated. The specification also considers increases in interest rates applied to bank loans. Other external funding sources include use of equity, retained earnings and other loans (from family and friends). All the specifications include country/time/sector fixed effects.

Table 1 reports the marginal effects of a set of regressions splitting the sample before and after Covid-19. For the overall period, the results confirm that smaller-sized firms and not-yet well-established firms are more likely to be discouraged (Table 1, first column). Looking at factors that affect access to finance, the probability of discouragement is highest when the lenders' attitude to provide credit is decreasing (almost 3 % more likely to be discouraged) and when firms report some worsening in their credit history and own capital (around 1%). Furthermore, we can see that firms that are discouraged from applying for a bank loan use more often informal sources of finance and they counterbalance their financing needs by using more often internal funds. By splitting before, during and after the Covid-19 pandemic, the empirical results show that some characteristics are persistent, like size and the deterioration in the attitude of banks to provide credit and the own capital, while the public support is mostly important from the beginning of the Covid-19. Moreover, after the Covid-19, although the number of observations is quite small, the reported deterioration in turnover is becoming relatively a relevant factor, in line with the results in the previous section.

**Table 1 Explaining discouragement among firms in the euro area (marginal effects)**

VARIABLES	(1) all periods	(2) pre-Covid 19	(3) Covid 19	(4) Post-Covid 19
SMEs	0.0196*** (0.003)	0.0215*** (0.003)	0.0129** (0.005)	0.0175*** (0.007)
young	0.0099*** (0.003)	0.0114*** (0.004)	-0.0077 (0.008)	0.0118 (0.009)
Equity	-0.0035 (0.005)	-0.0052 (0.006)	-0.0178 (0.020)	0.0178 (0.013)
Retained profits	-0.0077*** (0.003)	-0.0083*** (0.003)	-0.0041 (0.006)	-0.0081 (0.005)
Other loans	0.0102*** (0.003)	0.0113*** (0.003)	0.0025 (0.008)	0.0094* (0.005)
Decreased access to public support	0.0049** (0.002)	0.0020 (0.003)	0.0098* (0.006)	0.0138** (0.007)
Decreased willingness banks	0.0282*** (0.003)	0.0299*** (0.003)	0.0244*** (0.007)	0.0200*** (0.005)
Decreased credit history	0.0068*** (0.003)	0.0097*** (0.003)	0.0017 (0.006)	-0.0036 (0.006)
Decreased own capital	0.0111*** (0.002)	0.0135*** (0.003)	-0.0105* (0.006)	0.0190*** (0.007)
Decreased interest rates	-0.0234*** (0.003)	-0.0256*** (0.003)	-0.0173** (0.007)	-0.0219 (0.019)
Decreased turnover	0.0076*** (0.003)	0.0069** (0.003)	0.0065 (0.005)	0.0115** (0.006)
Observations	52,537	39,967	7,798	4,644

Pseudo R-squared	0.110	0.112	0.0854	0.201
Country FEs	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes

Note: the pre-Covid period refers to the period March 2009- until March 2020, the Covid period between April 2020 and March 2022 and post-Covid from April 2022 to September 2023. Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 6. Financing conditions

The European Central Bank regularly assesses the overall financing conditions of euro area firms by using some indicators derived from factor analysis. The main idea is to detect common features across several survey questions related to the changes in the price and non-price terms and conditions (T&C) of bank financing, conditional to the financial position of firms and supply conditions of bank loans. In this section we start by describing the set of variables used in the factor analysis and then we analyze the resulting principal components. It should be noticed that, differently from the previous charts in the article, we report in this section the net percentages as the difference between responses indicating a deterioration and those indicating an improvement of a specific variable, so that positive figures signal an overall deterioration of firms' perceptions.

Figure 10 singles out the first four variables of interest for the factor analysis. In SAFE firms are asked about changes in bank interest rates and in other borrowing costs such other costs of bank financing (including charges, fees and commissions). They also report changes in non- price T&C which are mostly related to collateral requirements and other factors (such as required guarantees, information requirements, procedures, time required for loan approval, and loan covenants). Since 2014, firms -irrespective of size class - signaled an easing of price T&C conditions, in particular of bank interest rates. This is the period characterized by several monetary policy stimulus measures in response to the weak economic conditions and with the aim of restoring the transmission mechanism of monetary policy.<sup>7</sup> These measures worked through several different channels, with some of the measures proving particularly useful in mitigating banking sector problems, restoring bank lending dynamics and sustaining financing conditions in general. Starting from the onset of the pandemic, firms reported some deterioration in those price T&C conditions. As described above, the sharpest deterioration since

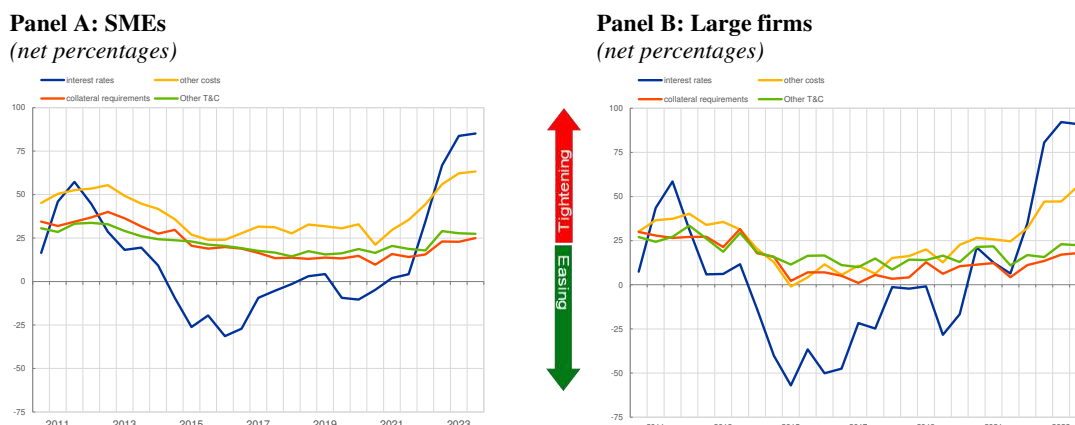
<sup>7</sup> Among unconventional monetary policies introduced in this period are: 1) the Outright Monetary Transactions (OMT) programme, launched in the summer of 2012; 2) the lowering of interest rates to negative territory in the summer of 2014; 3) the corporate sector purchase programme (CSPP), first announced in March 2016. It was launched in June 2016 to allow for large direct purchases of eligible (i.e. investment grade) bonds issued by companies based in the euro area. The programme was aimed at reducing debt-financing costs for large firms which could issue such bonds as an alternative financing source to bank loans, thereby freeing up more loan supply for smaller firms; 4) several rounds of targeted long term refinancing operations (TLTROs) launched to further foster corporate lending. The first series of TLTROs (TLTRO I) was announced in June 2014 and implemented in September 2014. The second series (TLTRO II) was announced in March 2016 and implemented in June 2016. Finally, a third series of TLTROs (TLTRO III) was announced in March 2019 and implemented starting from September 2019.



summer 2022 reflects the tightening of monetary policy. Concerning other borrowing costs and non-price T&C, both large and smaller firms reported a tightening since the start of the pandemic, though this was the case throughout the last decade.

Figure 11 reports the developments of the other four variables used for the factor analysis. These include changes in profits, to reflect the financial position of the firms, and changes in the capital position and credit history. The last variable -banks' attitude- is something specific of the survey. Firms are regularly asked about the willingness of banks to provide credit. This variable reflects the perception of firms on changes in the supply of bank loans. Looking at the most recent developments, the geopolitical events are mostly reflected in the stagnation of the economic activity – here subsumed by the deterioration of profits -, while the tightening of financing conditions is mirrored by the perceived deterioration of in the willingness of banks to provide credit.

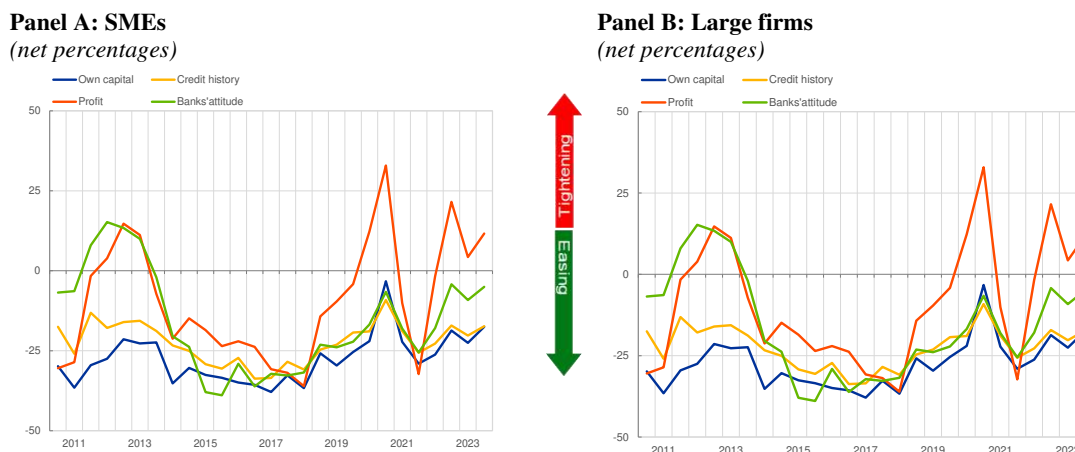
**Figure 10: Changes in price and non-price terms and conditions of bank loans**



Sources: ECB and European Commission SAFE.

Notes: The net percentages are defined as the difference between the percentage of enterprises reporting that something has decreased and the percentage reporting that it has increased. SMEs are enterprises with less than 250 employees.

**Figure 11: Changes in financial conditions affecting the availability of external financing**



Sources: ECB and European Commission SAFE.

Notes: The net percentages are defined as the difference between the percentage of enterprises reporting that something has decreased and the percentage reporting that it has increased. SMEs are enterprises with less than 250 employees.

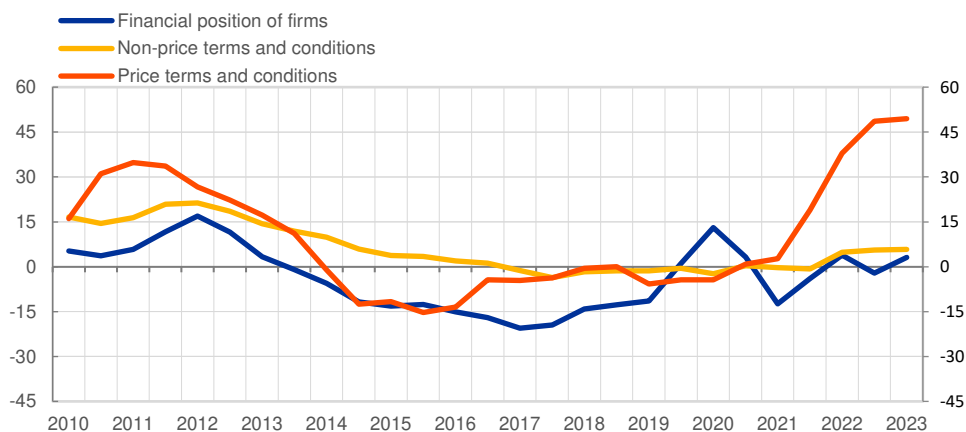
Starting from the individual responses of the abovementioned questions during the period 2009 -2023, the factor analysis detects three *principal components*, which can be interpreted as relating to (i) the financial position of firms, (ii) non-price terms and conditions, and (iii) price terms and conditions.<sup>8</sup> These are presented in Figure 12 where a positive value for a principal component signals a tightening in financing conditions. Overall, the three indicators suggest there have been several important phases in firms’ perceptions of their financing conditions, which closely align with the monetary policy measures taken by the ECB over time. As for the single variables, the three indicators suggest that there has been a general easing of financing conditions over the last decade, which is consistent with the accommodative monetary policy stance in place during the period and with the

<sup>8</sup> For a detailed description of the indicator, see Ferrando, a. and Gori, S. (2021).

measures taken to restore the transmission mechanism since the global financial crisis, as described above. However, during the Covid-19 pandemic the three principal components offered diverging assessments of financing conditions, given the specific nature of the pandemic-induced economic crisis.

The *financial position* indicator of financing conditions emphasizes mostly the role played by changes in firms' balance sheet quality (profits, own capital and creditworthiness) in determining their access to external finance. This is the indicator that mostly reflected the impact of the changes in the economic activity due to the pandemic as well as to the geopolitical tensions. The second component focuses mainly on factors related to changes in collateral requirements and other guarantees (*non-price terms and conditions*). This indicator has been more stable over time, with a trend which is declining overall up to the new hiking cycle. The third component mostly reflects changes in interest rates and other costs of financing (*price terms and conditions*). As this is the component that best reflects the transmission of the monetary policy tightening to firms' financing costs, it is the one that deteriorated most in the last two years, such that in the latest survey round about 50% of firms reported worse financing conditions.

**Figure 12: Firms' perceived financing conditions**  
(net percentages)



Sources: ECB and European Commission SAFE.

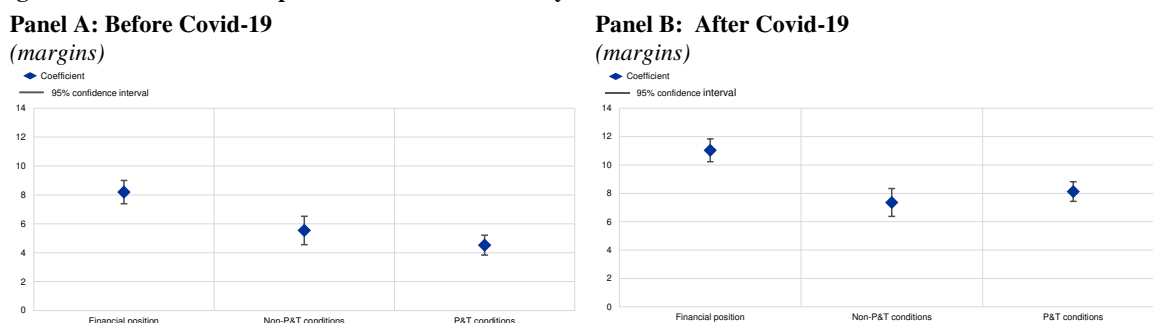
Notes: Positive values indicate a tightening in financing conditions, as measured by the principal components. The individual scores for each principal component are weighted by size class, economic activity and country to reflect the economic structure of the underlying population of firms. The individual scores are standardised so they have a range of between -1 and 1 and are multiplied by 100 to obtain weighted balances in percentages.

From a policy perspective, these synthetic indicators play a relevant role as tools to detect how changes in financing conditions impact expectations in the future availability of bank loans. In the SAFE survey, firms are asked to assess the past availability of bank loans (as discussed in Section 4) but also to express their expectations for the future availability in the six months after the fieldwork is carried out. The replies to this

question have been shown by Ferrando et al. (2022) to have an impact on firms' real decision over and above firms' actual access to finance. Thus, it is also important to understand how changes in financing conditions affect expectations.

Following Ferrando and Gori (2021), we used a logit model to link the expected deterioration in the future availability of bank loans to the three principal components, a set of dummies controlling for macroeconomic developments separately for each country and time, and a set of firm characteristics (sector and size). Figure 13 displays the likelihood of a firm to report a deterioration in the future availability of bank loans because of changes in the three principal components of financing conditions. The panel on the left report the marginal effects for the period before the pandemic and that on the right for the period after the beginning of the pandemic (excluding the survey round around the announcement of the pandemic). All the reported marginal effects are positive and statistically significant. A comparison between the two panels shows that after the onset of the Covid-19 pandemic, firms have become increasingly concerned that the future availability of bank loans may be reduced due to the overall deterioration of the financing conditions. Furthermore, the importance of the component related to changes in bank interest rates and other costs of financing in predicting the future availability of bank loans has increased the most by comparing the two periods. A worsening of this component, which is directly linked to the assessments made by firms of banks' behavior, by one standard deviation now increases the probability of a deterioration in the future availability of bank loans by 8.1%. This figure was 4.5% until September 2019. Nevertheless, the expected availability of finance is still most strongly influenced by the financial position of firms, with average marginal effects of 8.2% before Covid-19 and 11% since the onset of the pandemic. For the component related to non-price terms and conditions, the corresponding rise since the onset of the pandemic is 1.8 percentage points to a level of 7.4%.

**Figure 13: Deterioration in perceived future availability of bank loans**

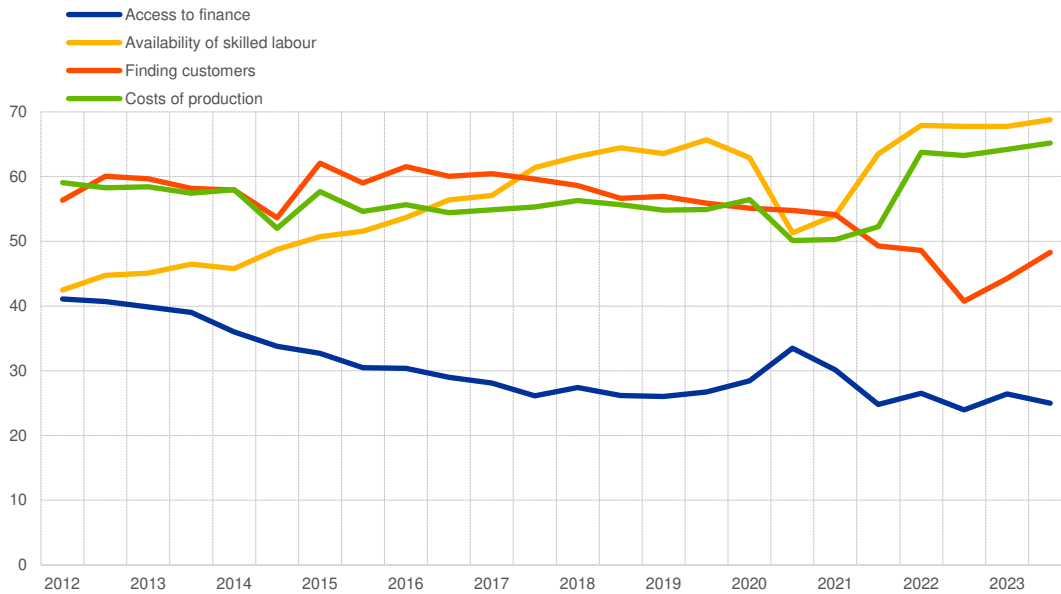


Sources: ECB and European Commission SAFE.

Notes: Average marginal effects of the increase by one standard deviation in the principal components on a deterioration in the future availability of bank loans based on logit regressions. The before Covid-19 period covers all waves until September 2019, whereas the after Covid-19 period covers the period April 2020 until September 2023.

However, despite the recent increases in the cost of borrowing, euro area firms were still not particularly concerned about access to finance (Figure 14). In the survey round up to September 2023, a relatively low share of firms (around 25%) reported access to finance as a major concern for their business (defined as a score of at least seven on a scale of one to ten). By contrast, euro area enterprises remain more concerned about other factors, like the availability of skilled labour and the rise in production costs. In the same survey round, the availability of skilled labour remained the most widely reported major concern for at least 69% of firms. This was in line with the signals of a robust labour market, with labour shortages seen as limiting production. High production costs also remained a major concern (indicated by 65% of firms). However, the net percentages of firms reporting these two concerns seem to have stabilized at high levels in the last two years.

**Figure 14 Major concerns faced by euro area enterprises**  
(percentages)



Sources: ECB and European Commission SAFE.

Notes: A “major problem” is defined as a problem scoring at least 7 on a scale of 1 to 10. The figures refer to the period October 2011 to September 2023.

## 7. The impact of financing conditions on real decisions of firms and business activity

The pivotal role played by the corporate sector to influence the performance of the real economy through its contribution to aggregate demand highlights the relevance of analysing the replies of firms in the SAFE on their access to finance. In this respect, the SAFE allows us to quantify how real decisions of firms in terms of types of investment and employment are affected by some of the factors we described in the previous sections.

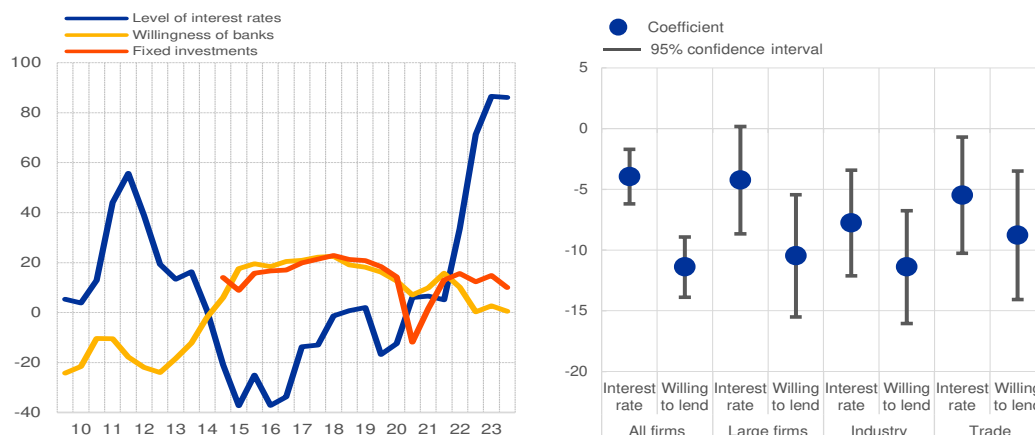
In this section we focus on three specific analyses. The first one is about the pass-through of banks’ interest rates and willingness to lend on firms’ fixed investment; the second one is on the relationship firms’ vulnerability and real outcomes. The third analysis focuses on firms’ financing gaps and expectations about the availability of bank loans and current and future real GDP growth.

### a. Impact of banks’ interest rates and banks’ attitude to lend on fixed investment

We start first to look at the net percentages of changes in firms’ investment in fixed assets as reported by firms in the survey compared to changes in financing conditions and lenders’ attitude (Figure 15, left hand side panel). Visually we might detect a negative association between investment and bank interest rates and a positive one with the willingness of banks to provide credit. A regression analysis, conditional to time, firm size and industry fixed effects, confirms that an increase in the level of interest rates and a deterioration in banks’ willingness to lend decreases firms’ fixed investment (Figure 15, right hand side panel). The impact of an increase in interest rates is found to be negative and statistically significant for all firms, in particular large ones, as well as for those

in the industry and trade sectors. Banks' willingness to lend, seen as the perceptions of firms on the overall attitude of banks to provide them credit, has a stronger negative impact on fixed investment, compared to the impact of interest rates.

**Figure 15: Relationship between fixed investment and banks' interest rates and willingness to lend**  
(net percentages and percentage points)



Sources: ECB and European Commission SAFE.

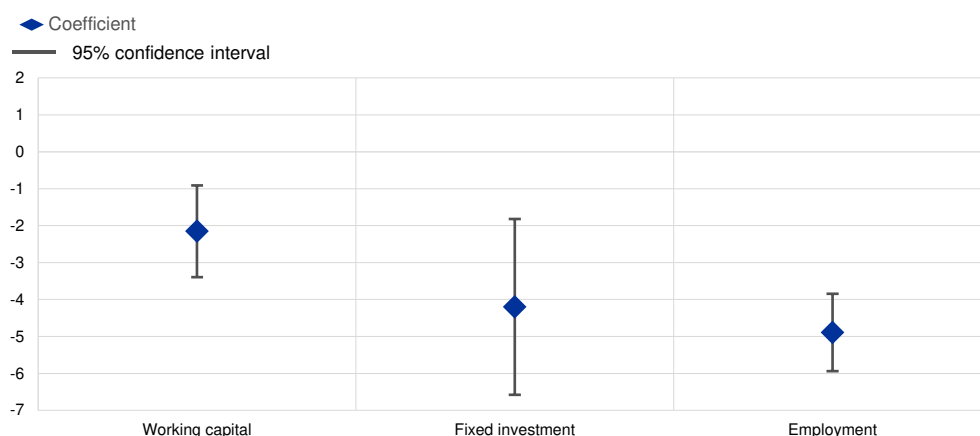
Notes: The left-hand side chart shows net percentages of changes in fixed investment, interest rates and willingness of banks to provide credit. The right-hand side chart plots regression coefficients showing the impact of an increase in the level of interest rates and a deterioration in banks' willingness to lend on the increase in the purpose of using financing for fixed investment (investments in property, plant or equipment). Regressions contain firm fixed effects, and depending on the sample used, country, time, firm size and industry fixed effects. The whiskers represent 95% confidence intervals.

#### b. Firms' financial vulnerability and real outcomes

In section 3 we noticed that the decline in firms' turnover and the rise in interest expenses have increased their relative importance as determinants of financial vulnerability. By looking at the sample of surveyed firms in SAFE with balance sheet information during the period 2010-2021, simple regressions controlling for firm fundamentals and a set of structural fixed effects show that being vulnerable as a firm according to the SAFE indicator is associated with holding lower working capital. This confirms the short-term distress of vulnerable firms. Moreover, vulnerability is also associated with both lower future fixed investment and employment. Relative to non-vulnerable firms, vulnerable firms have on average a 4 pp lower investment rate and a 5 pp lower growth in employment. The results indicate that changes in the fragility conditions as reported via firms' own perceptions do have an impact on their real economic outcomes.

**Figure 16: Corporate vulnerability in SAFE and firm outcomes**

(percentage points)



Sources: ECB, European Commission SAFE and Bvd Orbis.

Notes: The regressions show the impact of firm vulnerability on working capital, fixed investment and employment. Working capital is defined as difference in current assets and liabilities over total assets investment as changes in fixed asset over total fixed assets, employment as changes in the number of employees over total number of employees. Regressions include firm controls and country, wave, industry and firm size fixed effects. Whiskers represent 95% confidence intervals. The sample covers SAFE firms with financial statements for the period 2010-2021.

### c. Financing gaps and expectations about the availability of bank loans are related to current and future real GDP growth

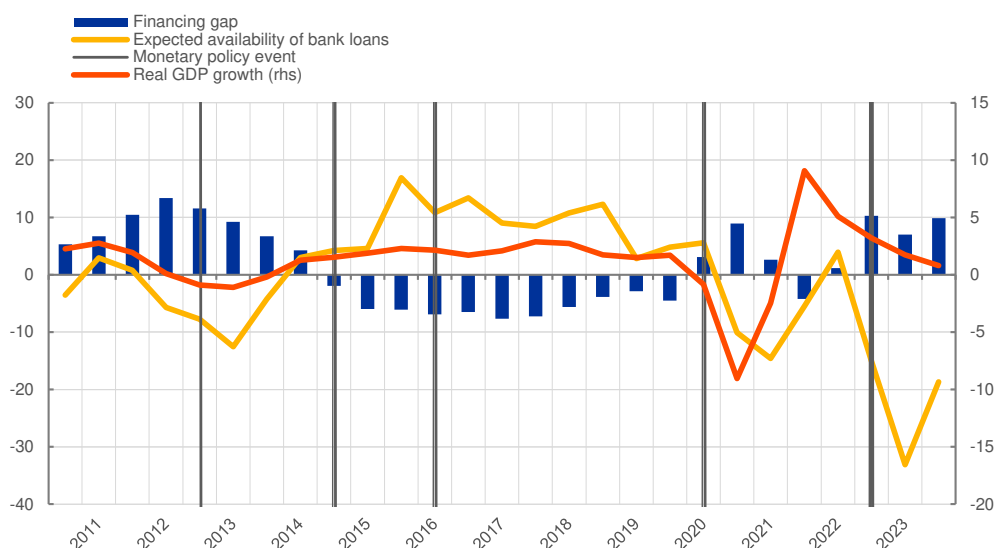
An expansion of euro area activity (i.e. positive real GDP growth rates) has usually coincided with declining financing gaps for firms, as well as greater optimism on the part of firms about the future availability of bank loans as depicted in Figure 17. The unconditional developments should be further analyzed by controlling for possible endogeneity issues. A simple econometric approach to estimate the average evolution of euro area GDP growth following changes in financing conditions is to use local projections.<sup>9</sup> In the estimation, we consider as survey-based measures of financing conditions the net changes in firms' financing gap (introduced in Section 4) and firms' expectations of future availability of bank loans. To avoid possible endogeneity, the estimation is conditional to current and lagged GDP growth. Although the estimates cannot be considered causal effects, they provide an indication of average future developments after a given change in the SAFE measures.

### Figure 17: Changes in the financing gap, expected availability of bank loans and financing obstacles as reported by euro area enterprises and development of euro area real GDP

(weighted net balances of external financing gap, net percentage changes in the expected availability of finance, annualised percentage changes)

<sup>9</sup> See Durante et al. (2022).



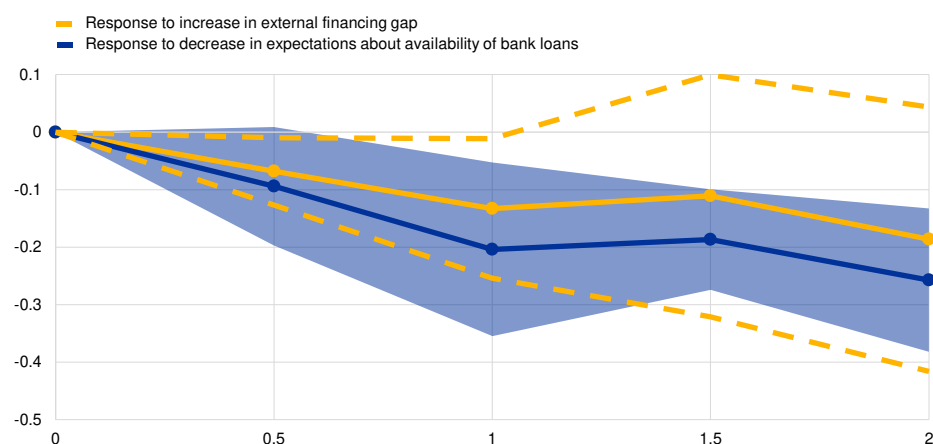


Sources: ECB, European Commission SAFE and Eurostat.

Notes: The financing gap indicator combines both financing needs and the availability of bank loans at firm level. For each of the five financing instruments, the indicator of the perceived change in the financing gap takes a value of 1 (-1) if the need increases (decreases) and availability decreases (increases). If enterprises perceive only a one-sided increase (decrease) in the financing gap, the variable is assigned a value of 0.5 (-0.5). A positive value for the indicator points to an increase in the financing gap. Values are multiplied by 100 to obtain weighted net balances in percentages. The first vertical grey line denotes the announcement of the Outright Monetary Transactions; the second vertical grey line denotes the start of the first series of targeted longer-term refinancing operations (TLTRO I) and the negative interest rate policy; the third vertical grey line denotes the start of TLTRO II and the corporate sector purchase programme; the fourth one denotes the start of the pandemic emergency purchase programme and TLTRO III; and the last vertical grey vertical line denotes the rise of the three key ECB interest rates by 50 basis points and approval of the Transmission Protection Instrument (TPI) in July 2022.

Figure 18 reports the impulse response functions. After a 1 percentage point increase in the financing gap indicator or a decrease in the balance of expectations about the future availability of bank loans, real GDP in the euro area declines on average by about 0.2% more in the subsequent year relative to no change in these financing indicators, with some modest further effect during the subsequent year. It is important to note that the estimated effects use the informational content contained in SAFE above and beyond currently observable developments in the business cycle and they are quite persistent, especially when considering changes in firms' expectations about the availability of finance. This suggests that forward-looking variables, a unique feature of the SAFE, contain useful information for understanding the future development of the euro area economy.

**Figure 18: Average evolution of euro area real GDP after a deterioration in financing conditions or in the expected availability of bank loans, relative to no deterioration**  
(horizontal axis: years after shock, vertical axis: cumulated growth in percent relative to period before the shock)



Sources: ECB, European Commission SAFE.

Notes: Average evolution of euro area real GDP growth in cumulated terms after changes in firms' financing gaps and the net percentage of firms reporting an expected increase in the availability of bank loans. The local projections (Jorda, 2005) include current and past GDP growth as control variables. The shaded and dotted areas are 95% confidence bands based on Newey-West.

## 8. Conclusions

In this paper, we analyze how the economic situation, vulnerability and financial position of firms and their financing conditions have changed during several crisis episodes, from the sovereign debt crisis to the Covid-19 pandemic and the more recent energy cost crisis.

SAFE survey evidence confirms that during the Covid-19, the turnover and profits of firms decreased sharply, having a dampening impact on firms' employment and investment. Since 2022, firms witnessed a significant rise in other costs related to materials and energy, negatively affecting their profitability. In addition, increasing interest expenses due to the hike monetary policy cycle represent a further drag on profitability.

As a result of firms' income and debt situation and the rise in their expenditures, their financial vulnerability peaked during the Covid-19 crisis and, once again, more recently. We find that firms' decrease in turnover and increase in interest expenses are important in affecting the likelihood of firms to become vulnerable, with additional consequence for the real decisions in terms of investment and employment.

During the Covid-19 pandemic, firms' financing needs related to bank loans and credit lines have sharply increased. Bank-related products and subsidized loans remained the most important financing source for SMEs, with the relevance of the latter largely expanding during the pandemic. In line with the monetary policy tightening, in recent survey rounds firms reported more often declining availability of bank loans and credit lines.

Around the Covid-19 period, firms were signaling some deterioration in their access to finance as it is the case more recently due to the pass-through of increasing policy rates to the overall corporate financing conditions.

Among financially constrained firms, discouraged borrowers are the largest fraction. We show that these are more often small and young firms, with some deterioration in their creditworthiness and own capital.

Since the beginning of the pandemic, firms signaled some deterioration in loan price terms and conditions, which has been exacerbated along the recent tightening of monetary policy. An indicator combining firms' replies to all questions related to loan terms and conditions and firm's financial situation suggests there have been several easing and tightening phases in firms' perceptions of their overall financing conditions, which closely align with the monetary policy measures taken by the ECB over the last 10 years.

Overall, the use of survey-based information as the SAFE survey has been proved to be useful in assessing the link between real decisions of firms (in terms of investment and employment), macroeconomic developments and firms' perceptions of changes of financing conditions:

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