B Low firm productivity: the role of finance and the implications for financial stability

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Many factors – economic, financial and structural – shape firm productivity. This special feature zooms in on the role played by finance and the allocation of capital across firms. Aggregate productivity, access to credit and financial stability are closely interlinked. Inefficient allocation of capital can reduce the productive capacity of the economy, leading to subdued income growth and lower financial resilience for all sectors. While euro area firms rely mostly on bank lending to satisfy their funding needs, banks do not generally have a strong track record in distinguishing between more and less-productive firms, as their expertise lies in the assessment of credit risk. They tend to lack the skills needed to evaluate early-stage technologies and hesitate to finance risky innovations that involve intangible assets or other assets that are hard to collateralise. Financial markets and equity investors may be better suited to financing novel but risky projects. A more diversified external funding structure, including further progress on the capital markets union, could help boost the productivity of euro area firms, to the benefit of financial stability.

1 Aggregate productivity matters for financial stability

Access to external funding helps firms grow their business and become more productive. Productivity is an indicator of economic performance that measures the amount of output created for a given set of inputs, typically labour, capital, raw materials, and energy. As such, productivity developments are the key determinant of potential output growth in the economy and are the principal source of improvements in living standards. Productivity differences across firms can partly explain why some firms are able to grow and gain market share while others fail and are forced to exit the market.[114] Access to finance can play an important role, as the effect of productivity-enhancing investments usually depends on whether firms can secure sufficient external funding, including through bank loans. It follows that the way funding is allocated can also affect which firms enter and which firms exit the market.[115]

This special feature analyses the role of finance in driving firm productivity dynamics in the euro area and the implications for financial stability. Productivity, access to credit and financial stability are closely linked. The inefficient allocation of credit across firms or a lack of external financing for particularly

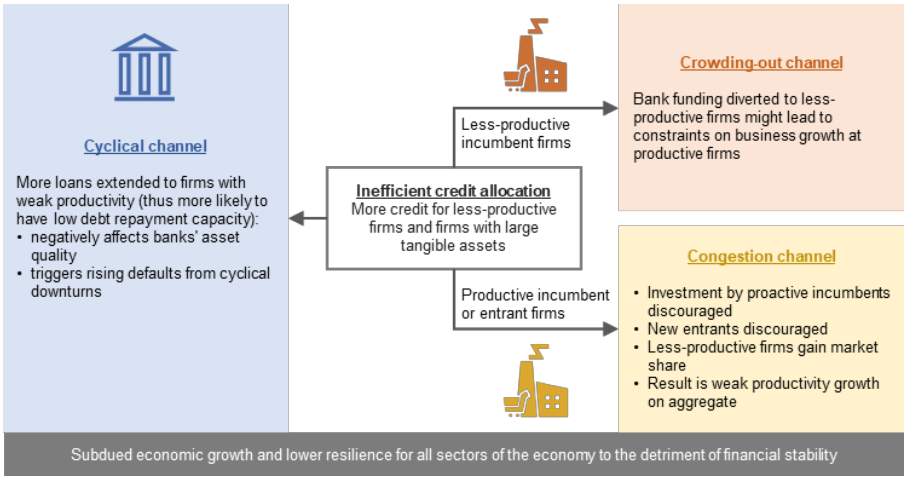
[114] See the box entitled "Firm productivity dynamism in the euro area", *Economic Bulletin*, Issue 1, ECB, 2022.

[115] Access to finance is one of several factors that matter for productivity. Other factors include (i) the level of human capital and the accumulation of skills by workers; (ii) the efficiency of capital allocation in the production process; (iii) the design, adoption, and diffusion of new and highly innovative technologies; and (iv) regulations related to doing business. For policy recommendations related to productivity growth, see, for example, Draghi, M., "The future of European competitiveness", European Commission, September 2024.

innovative and productive companies affects the productive capacity of the economy as well as financial stability (**Figure B.1**).[116] There is a *direct, cyclical* channel related to bank intermediation. If bank loans flow towards less-productive firms, bank asset quality and profitability are more likely to suffer in any downturn. Financial stability can also be affected indirectly. For example, capital being a scarce resource, more-productive firms may find it challenging to expand their business if bank funding is diverted to other companies (a *crowding-out* channel). This is a concern in bank-centric financial systems like the euro area where access to market-based funding might be difficult, especially for smaller and younger firms.[117] Moreover, the resulting higher market share enjoyed by weaker firms can reduce profits for would-be productive competitors, discouraging entry into the market and investments (a *congestion* channel). This can suppress economic growth over the medium to long run. Ultimately, financial stability is likely to suffer from a banking system which has weaker asset quality and high debt levels as well as, overall, less-productive firms, coupled with subdued economic growth and therefore lower incomes for all sectors of the economy. Against this background, this special feature analyses the allocation of bank credit across sectors and discusses the role of equity finance. It then zooms in on the flow of bank funding to firms within the same industry, distinguishing between more-productive and less-productive companies.

Figure B.1

Transmission channels between credit allocation, productivity and financial stability



Source: ECB staff.

[116] The link between capital allocation, firms' balance sheets and aggregate productivity is well-documented. See, for example, Gopinath, G., Kalemli-Özcan, S., Karabarbounis, L. and Villegas-Sanchez, C., "Capital allocation and productivity in South Europe", *The Quarterly Journal of Economics*, Vol. 132(4), 2017, pp. 1915-1967; Ferrando, A. and Ruggieri, A., "Financial constraints and productivity: evidence from euro area companies", *International Journal of Finance & Economics*, Vol. 23(3), 2018, pp. 257-282; Duval, R., Hong G.-H. and Timmer, Y., "Financial Frictions and the Great Productivity Slowdown", *The Review of Financial Studies*, Vol. 33(2), 2020, pp. 475-503.

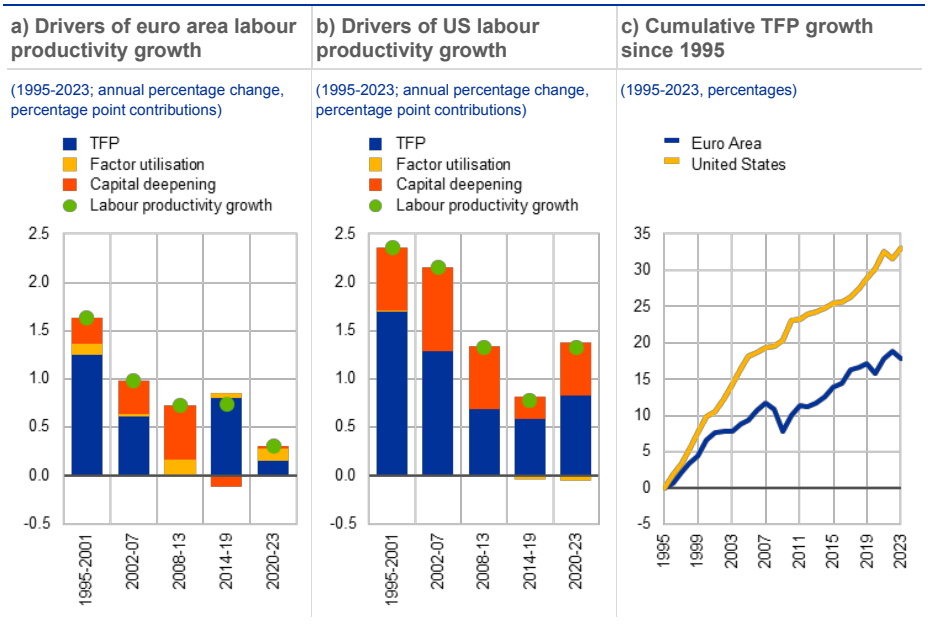
[117] See "Non-bank financial intermediation in the euro area: implications for monetary policy transmission and key vulnerabilities", *Occasional Paper Series*, No 270, ECB, 2021.

2 Euro area productivity growth has been declining for over 30 years

The aggregate productivity growth gap between the euro area and the United States has been widening since the mid-1990s. The main indicator of production efficiency in an economy is total factor productivity (TFP), which measures how much the average firm can produce for a given combination of inputs. As such, TFP captures the level of efficiency (or technology) employed by firms in the production process. It also captures unobserved characteristics that influence efficiency, such as management quality, digitalisation, and human capital accumulation. Focusing on the last 30 years, the average annual growth rate of labour productivity (real GDP per hour worked) in the euro area declined from 1.6% between 1995 and 2001 to 0.3% between 2019 and 2023 (**Chart B.1,** panel a). The main drivers of this were a capital-to-labour ratio that had stagnated since the sovereign debt crisis and a declining contribution from TFP growth. Although the US economy also experienced a productivity slowdown over the same period (**Chart B.1,** panel b), average labour productivity growth was significantly lower in the euro area. Moreover, between 1995 and 2023, TFP increased by just 18% in the euro area but by 33% in the United States (**Chart B.1,** panel c). The widening of the TFP gap versus the United States, together with less support from capital deepening, resulted in the euro area gradually becoming less and less competitive than the United States.

Chart B.1

Slowing TFP growth has contributed to declining labour productivity growth in the euro area and to a productivity growth gap versus the United States



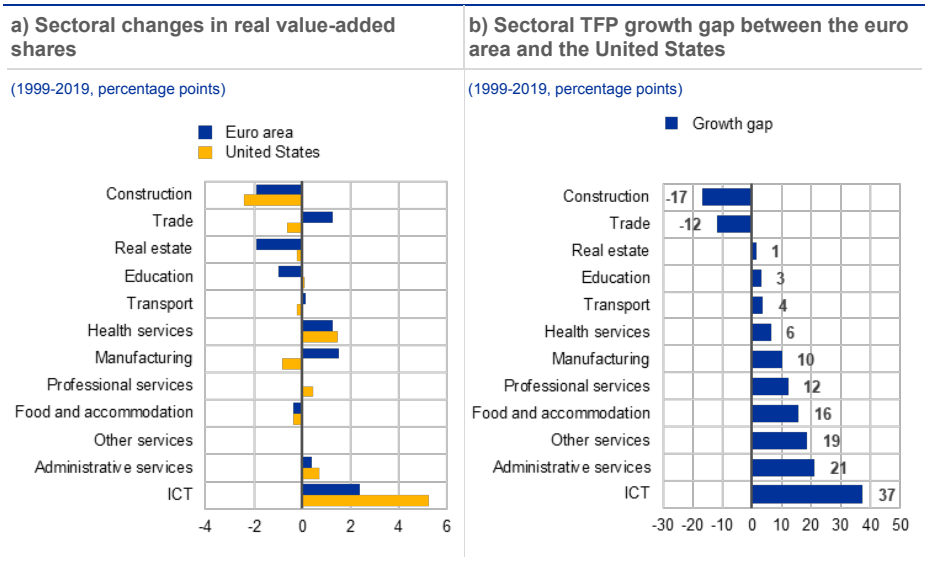
Sources: European Commission (AMECO) and ECB calculations.
Notes: Labour productivity is defined as real GDP per hour worked. Capital deepening refers to the growth of the net capital stock per employee, while factor utilisation is the difference between the growth rate of capital utilisation and average hours worked. Contributions from these two factors are multiplied by capital share. The averaging periods correspond to business cycle and financial cycle phases.

Lower growth in the euro area than in the United States for technology-intensive and innovative sectors is one driver of the widening

productivity gap. The technology-intensive ICT sector is the sector that has made the most significant contribution to the widening TFP growth gap between the euro area and the United States.[118] Between 1999 and 2019, the ICT sector increased its weight by 5.2 percentage points in the US economy but by just 2.4 percentage points in the euro area economy (**Chart B.2,** panel a). At the same time, TFP in the ICT sector grew by 80% in the United States and by 43% in the euro area, widening the TFP growth gap in the sector by 37 percentage points over this period (**Chart B.2,** panel b). The relative weakness of the ICT sector in the euro area can also affect innovation in adjacent highly-innovative sectors that benefit from state-of-the-art digital technologies, such as pharmaceuticals or defence.[119] This increases the risk of the euro area lagging behind in sectors of strategic importance.[120] The relatively broad-based sluggish productivity growth in the euro area across sectors – trade and construction being the only notable exceptions – has prompted a search for potential explanations, including the role of access to finance.

Chart B.2

The widening TFP growth gap between the euro area and the United States has largely been driven by the ICT sector



Sources: European Commission (KLEMS) and ECB calculations.
Notes: Panel a: the sectoral changes in real value-added shares compare the relative size of a given sector of activity in 2019 (latest data available) with its relative size in 1999. Sectors that increase their value-added shares increased their relative size in the economy. Panel b: the TFP growth gap between the euro area and the United States is measured by calculating cumulative TFP growth per sector between 1999 and 2019 for both geographical areas and then subtracting the euro area growth rate from the US growth rate. A positive (negative) TFP growth gap in a given sector reveals that TFP in that sector increased faster (slower) in the United States than in the euro area. Sectors are ordered in both charts by their TFP growth gap between 1999 and 2019, from smallest to largest.

118 Recent decades have offered evidence of the increasing role of intangible investments relative to tangible investments. For an overview of the literature on intangible investments and sources of economic growth, see Corrado, C. and Hulten, C., "How Do You Measure a "Technological Revolution?", *American Economic Review*, Vol. 100, No 2, 2010, pp. 99-104.

119 See, for example, "The impact of digitalisation on labour productivity growth", Monthly Report, Deutsche Bundesbank, 2023, pp.43-66.

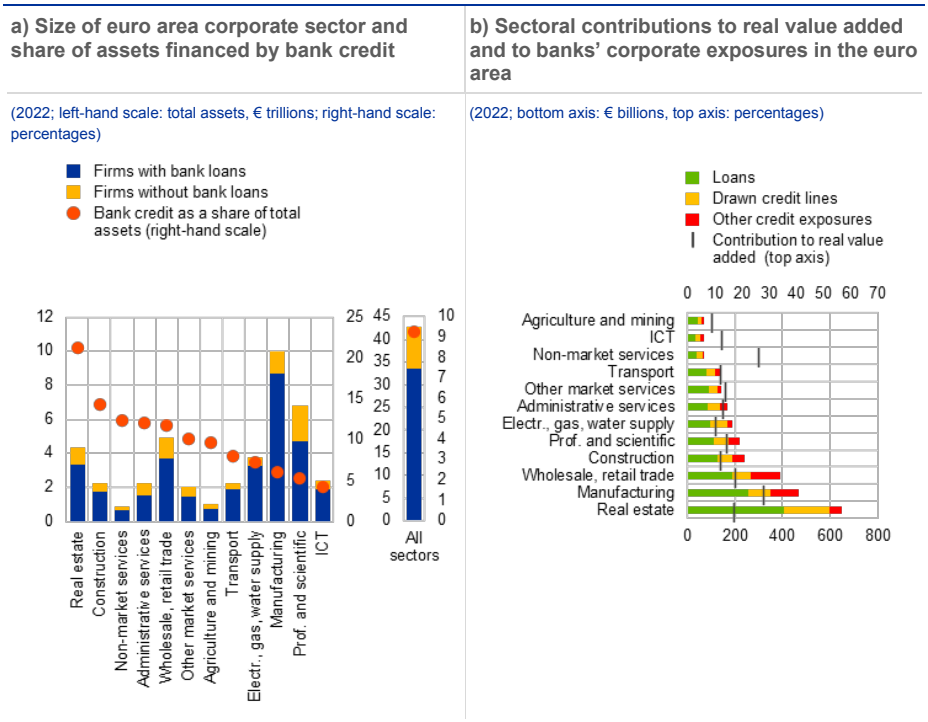
120 See, for example, Draghi, M., op. cit.

3 Euro area firms are strongly bank dependent

Most euro area firms rely mainly on bank intermediation as an external source of financing. At the end of 2022, in terms of total non-financial corporation (NFC) sector assets, only around 20% of firms operated without any form of bank funding (**Chart B.3**, panel a). These firms probably use only internal funds because, in contrast to the United States, it is rare for euro area firms to fund themselves exclusively via financial markets.[121] Roughly 22% of euro area firms with more than 20 employees tap the bond market, besides obtaining bank loans. Even for large, listed firms with access to debt markets, bank loans are the main source of credit and represented, on average, 58% of total external funding at the end of 2022.

Chart B.3

Bank lending to real estate firms vastly exceeds their share in gross value added



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, ECB (AnaCredit), European Commission (KLEMS) and ECB calculations.
Notes: "ICT" stands for information and communications technology; "Prof. and scientific" stands for professional, scientific and technical activities; "Administrative services" stands for administrative and support services. "Other market services" includes accommodation and food services, arts, entertainment and recreation, other service activities and activities of extraterritorial organisations and bodies; "Non-market services" includes human health and social work activities, education and public administration, and defence. "Financial services" sector is excluded. Panel a: bank credit includes credit lines, loans, trade receivables and overdrafts reported in AnaCredit. A firm is defined as having access to bank lending if it has at least one outstanding credit exposure in AnaCredit or Orbis.

A significant share of bank lending in the euro area is directed towards the real estate sector, which contributes only marginally to TFP growth. The real estate sector, the wholesale and retail trade and the construction sector have a much larger share of the banking sector's aggregate corporate loan portfolio than is warranted by

[121] In our sample, just 304 of the five million euro area firms active between 2015 and 2022 relied on bonds as their only external source of funding. For the capital structure of euro area firms, see Cappiello, L. et al., "Non-bank financial intermediation in the euro area: implications for monetary policy transmission and key vulnerabilities", *Occasional Paper Series*, No 270, ECB, December 2021.

their contribution to gross value added (**Chart B.3**, panel b). This may reflect their high external financing needs given their longer production cycles (e.g. for the investment-heavy construction of new buildings). It may also be because sectors whose tangible assets are generally accepted as collateral have better access to credit. Nevertheless, the large, disproportionate exposure stands out, particularly in the case of the real estate sector.

Even within sectors, euro area banks lend to less-productive firms. Following an estimation of firm-level TFP, the productivity levels of firms which do not rely on bank loans were compared with those of firms which do.[122] The dots in **Chart B.4,** panel a) represent granular two-digit NACE (NACE2) sectors located in each euro area country. The graph shows that firms with bank funding are generally less productive than competitors which do not rely on bank loans as a source of external funding. To some extent this could reflect differential access to bank funding between firms which rely on tangible assets versus those which rely on intangible assets. Indeed, the differences in estimated TFP levels between firms which use bank loans and those which do not are larger in sectors such as ICT or professional, scientific and technical services compared with manufacturing or construction. These differences in average productivity levels do not seem to reflect the impact of a few large firms: for most sectors and countries, both the bottom 20% and the top 20% of the TFP-level distributions are lower for firms with access to bank lending than for firms without bank loans within the same NACE2 sector (**Chart B.4,** panel b).

A more diversified external funding structure could be one reason for the productivity gap between the euro area and the United States. Equity markets may be better able to finance innovative but potentially risky projects.[123] First, equity holders benefit fully from improvements in firm productivity while the upside for creditors is capped at the level of the outstanding principal amount plus the applicable interest rate. Equity investors may therefore have a greater incentive to screen for particularly innovative and productive firms. Second, the relevant time horizon for banks may be too short since it is linked to the typical loan maturity, while equity holders also benefit from improvements in firm performance over the long run. Third, banks may be hesitant to finance innovations that involve intangible assets or assets that are firm-specific and hard to collateralise.[124] Finally, unlike venture capital firms, banks may lack the skills to evaluate early-stage technologies or, unlike private equity firms, they may lack the ability to intervene directly and improve the operational efficiency of existing firms.[125]

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[122] Firm-level TFP is estimated at the country-NACE2 sector level using the approach adopted by Levinsohn, J. and Petrin, A., "Estimating Production Functions Using Inputs to Control for Unobservables", *Review of Economic Studies*, Vol. 70(2), 2003, pp. 317-341, using data from Orbis for Belgium, Germany, Spain, France, Italy and Portugal. Since the estimation method does not account for intangible assets, it might overestimate TFP for firms with high levels of intangible assets.

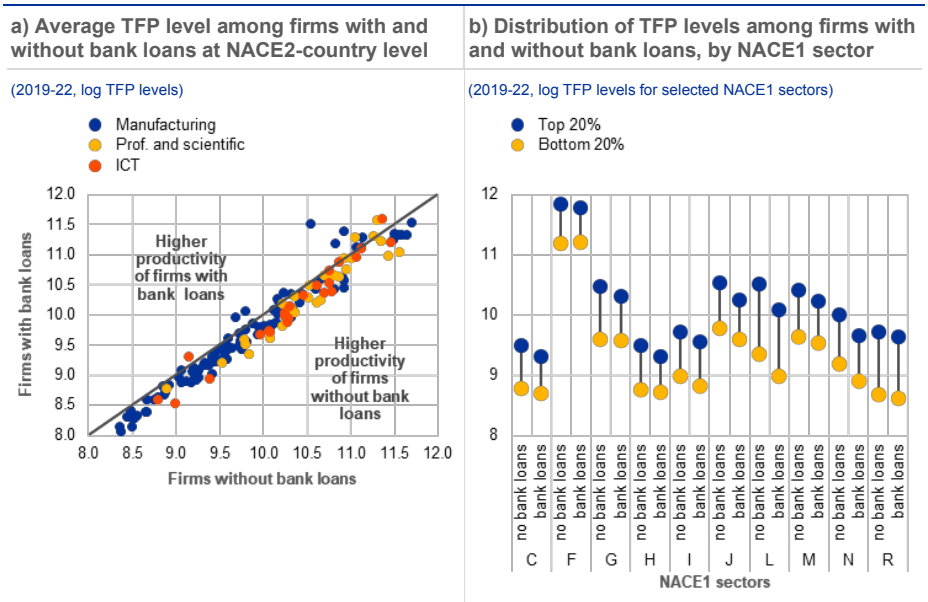
[123] For instance, green investment projects are more likely to be supported by the equity market. See Andersson, M. et al., "Massive investment needs to meet EU green and digital targets", *Financial Integration and Structure in the Euro Area*, June 2024, and De Haas, R. and Popov, A., "Finance and carbon emissions", *Working Paper Series*, No 2318, ECB, September 2019.

[124] See Carpenter, R. and Petersen, B., "Is the Growth of Small Firms Constrained by Internal Finance?", *The Review of Economics and Statistics,* Vol. 84, No 2, May 2002, pp. 298-309.

[125] See Ueda, M., "Banks versus Venture Capital: Project Evaluation, Screening, and Expropriation", *The Journal of Finance*, Vol. 59, Issue 2, April 2004, pp. 601-621.

Chart B.4

Firms with bank loans show lower average productivity than their competitors without bank loans



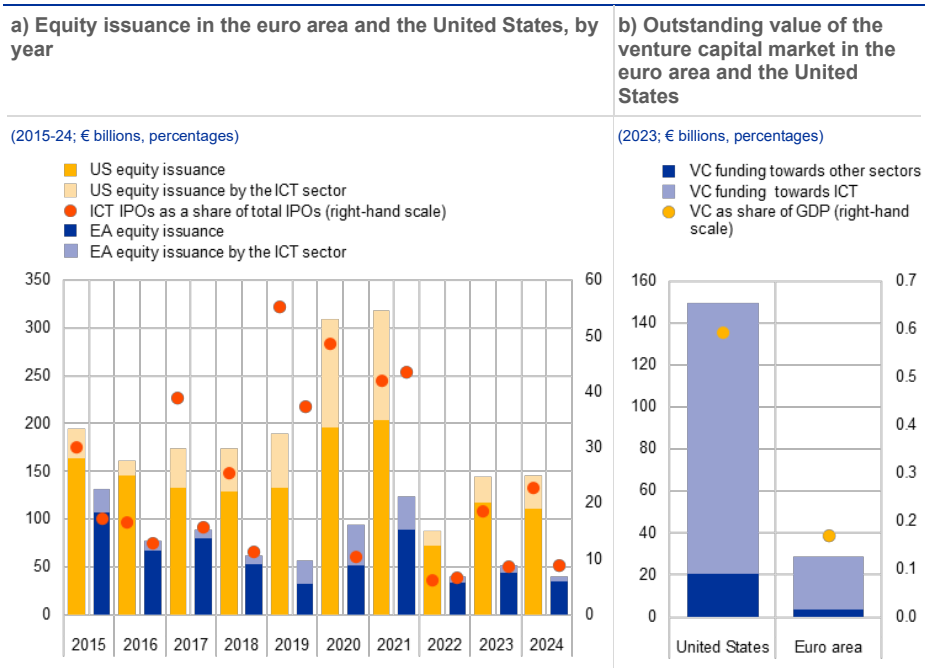
Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, ECB (AnaCredit) and ECB calculations
Notes: Countries covered: Belgium, Germany, Spain, France, Italy and Portugal. Panel a: the sample is restricted to firms belonging to the three NACE1 sectors that are most relevant for current aggregate productivity developments. The findings are also robust when looking at (i) firms with no loans and firms which received bank loans during the same year but had no bank loans in the year before, (ii) firms with fewer than 50 employees and firms with more than 50 employees separately, and (iii) firms younger than seven years only. The dots represent separate NACE2 sector-country observations within Manufacturing (C), Professional, scientific and technical activities (M), and Information and communication (J) NACE1 sectors. The x-axis (y-axis) shows the average log TFP level among firms without (with) bank loans, weighted by firms' total assets. Panel b: the yellow (blue) dots represent the bottom (top) 20 percentiles of the log TFP level distribution among firms with and without bank loans at year-NACE2 sector-country level, aggregated at NACE1 sector level. TFP levels are not comparable across sectors. NACE1 sectors: C: Manufacturing, F: Construction, G: Wholesale and retail trade, H: Transporting and storage, I: Accommodation and food, J: Information and communication, L: Real estate, M: Professional, scientific and technical activities, N: Administrative and support services, R: Arts, entertainment and recreation.

US firms can tap a developed equity market which channels resources towards firms with long-term growth potential, while euro area companies find it more difficult to access equity finance. As of June 2024, the market capitalisation of euro area corporates amounted to €7.8 trillion, representing 53% of GDP (this percentage is three times as high in the United States). In addition to higher equity issuance (**Chart B.5,** panel a), the US equity market is also characterised by a larger share of issuance by more-productive and riskier sectors such as ICT.[126] The US private equity market is also more mature, with a net asset value of €3.33 trillion as of June 2023 (versus €0.43 trillion for the euro area). Its venture capital segment, which usually allocates funding to startups with the potential for substantial and rapid growth, also appears more advanced than that of the euro area (**Chart B.5,** panel b).

[126] During the tech rally of 2020-21, the share of resources directed towards tech firms via equity issuance was 34% in the United States and 27% in the euro area, and 11% and 5% respectively for IPOs. See also the box entitled "Examining the causes and consequences of the recent listing gap between the United States and Europe", *Financial Integration and Structure in the Euro Area*, ECB, June 2024.

Chart B.5

US listed and private equity markets are more developed than those of the euro area



Sources: Dealogic, PitchBook Data, Inc., S&P Global Market Intelligence and ECB calculations.
Notes: EA stands for euro area. Panel a: deal value of equity issuances. The share of IPOs in the ICT sector is computed as the deal value of IPOs by ICT firms divided by the deal value of IPOs for all sectors. For 2024, the chart shows data as of 19 September 2024. Panel b: VC stands for venture capital; ICT stands for the "Information and communication" sector using NAICS classification.

Market debt financing also plays a much smaller role as a source of NFC funding in the euro area. At the end of June 2024, debt securities represented 21% of total NFC sector debt in the euro area, compared with 39% in the United States. Enhanced credit market depth has a positive influence on TFP by improving price discovery, thereby facilitating more efficient investments. In addition, it can alleviate financial constraints, particularly during economic downturns. It can also reduce the cost of debt financing by lowering intermediary expenses and distributing risk more effectively among investors.[127] In line with this reasoning, an analysis of the firm-level TFP of large euro area and US listed firms has shown that firms within the top 30% of the TFP level distribution have higher market debt ratios than the rest of firms in both regions (**Chart B.6**, panel a). This positive relation holds for the pre-pandemic period and when controlling for firm size and a range of other firm characteristics. However, looking at a broader sample of firms in the euro area (which also includes non-listed companies) shows that this pattern might be driven by companies in the manufacturing sector, while in ICT and for professional activities productivity levels and to the use of bond funding appear to be unrelated (**Chart B.6**, panel b).

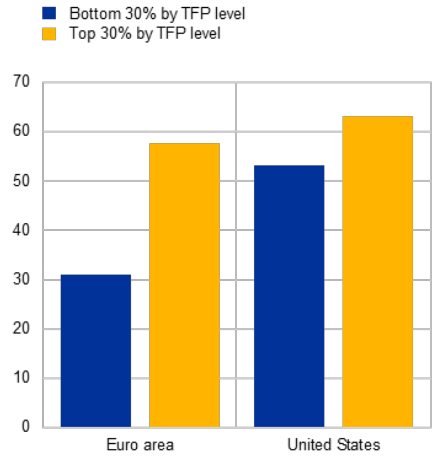
[127] See Bennett, B., Stulz, R. and Wang, Z., "Does the Stock Market Make Firms more Productive?", *Journal of Financial Economics*, Vol.136, Issue 2, May 2020, pp. 281-30; Ferrando, A. and Ruggieri, A., "Financial constraints and productivity: Evidence from euro area companies", *International Journal of Finance & Economics*, Vol. 23, Issue 3, February 2018, pp. 257-282; and Bats, J. and Houben, A., "Bank-based versus market-based financing: Implications for systemic risk", *Journal of Banking & Finance*, Vol. 114, May 2020.

Chart B.6

Firms with a greater reliance on market debt funding tend to be more productive, but the pattern varies across sectors and firm sizes

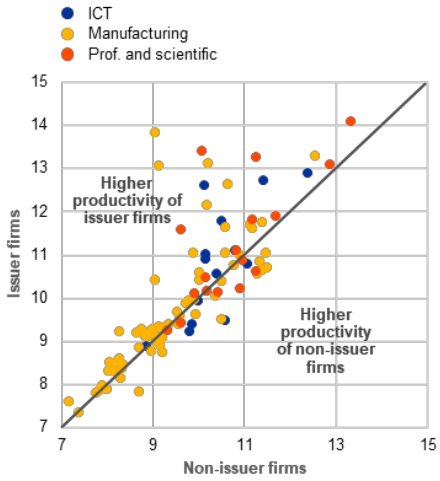
a) Market debt ratio of low and high-productivity firms in the euro area and the United States

(2022, percentage points)



b) Weighted average TFP level for firms with and without market-based funding at NACE2-country level

(2019-22, log TFP levels)



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, Dealogic, S&P Global Market Intelligence and ECB calculations.
Notes: Panel a: the y-axis represents the average share of market debt in firms' total debt, weighted by firm assets. The TFP categories indicate firms in the bottom and top 30 percentiles of the (log) TFP level distribution across firms, calculated at the NACE1 sector-year level. Due to the lack of information on material costs for US firms, we use an OLS regression framework to estimate TFP.* Panel b: the dots represent separate NACE2 sector-country observations within the NACE1 sectors "Information and communication", "Manufacturing" and "Professional, scientific and technical activities". The y-axis shows average log TFP level for firms with market debt, weighted by those firms' total assets. The x-axis shows average log TFP level for firms with no market debt, weighted by those firms' total assets.
*) See Ahmad, S., Oliver, S. and Peters, C., "Using firm-level data to compare productivities across countries and sectors: possibilities and challenges", *Economics Working Paper Series,* U.S. International Trade Commission, July 2018.

4 The pandemic exacerbated bank lending to less-productive firms

Given how important bank lending is to euro area firms, the role of firm productivity in lending decisions and its impact on bank balance sheets warrant closer analysis. The remaining part of this special feature looks at the bank characteristics that are associated with lending to low-productivity firms. It then explores whether this pattern is driven by the supply of funding from banks or by differences in the external financing needs of firms. Finally, it investigates the role of government guarantees in directing lending towards less-productive firms during the pandemic. The analysis focuses solely on the euro area banks and firms.

Lending to low-TFP firms is associated with notably weaker bank asset quality but stronger capital and liquidity buffers. Banks with larger credit exposures to low-TFP firms show worse asset quality, measured using both backward-looking metrics such as the NPL ratio and forward-looking metrics such as probabilities of default on performing exposures (**Chart B.7**). Such banks also have somewhat lower profitability. The patterns are consistent with the *direct, cyclical* channel, through which productivity affects financial stability. By contrast, the regulatory capital ratios of

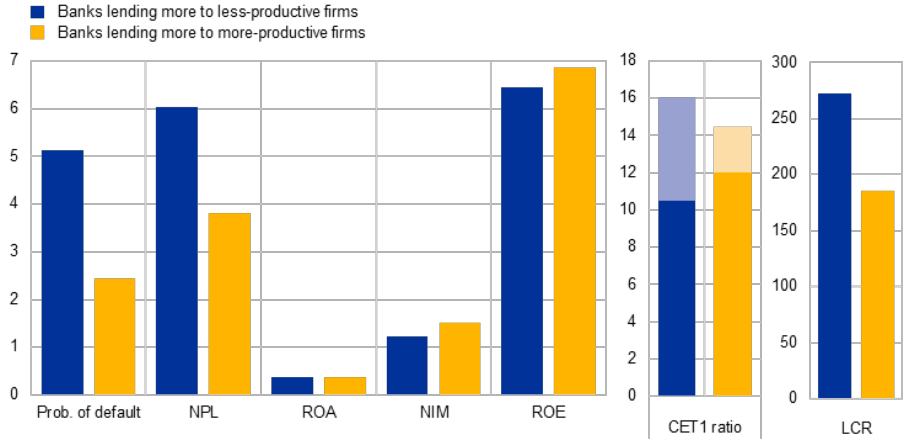
banks which lend more to low-TFP firms tend to be somewhat higher and their liquidity buffers significantly higher. Several factors could explain these higher buffers. For example, banks with a customer base consisting of less-productive firms may hold a larger portfolio of liquid securities because of weaker lending opportunities. In addition, lending to low-TFP firms is more prone to unexpected losses, meaning that banks which lend predominantly to such firms may wish to hold higher capital or liquidity buffers to manage credit risk in their loan books.

Chart B.7

Banks lending relatively more to less-productive firms have worse asset quality than banks lending more to more-productive firms

Bank balance-sheet characteristics and lending to low-productivity firms

(2019-22, percentages)



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, ECB (AnaCredit, RIAD, supervisory data) and ECB calculations.
Notes: Blue (yellow) bars show the averages of bank balance-sheet metrics weighted by individual banks' share of total loans outstanding for less-productive (more-productive) firms. Less-productive and more-productive firms are defined as the bottom 30th and top 30th percentiles respectively of firms' TFP level at year-NACE2 sector-country level. For the CET1 ratio, the bold bars correspond to the weighted average regulatory capital requirements. NPL stands for non-performing loans; ROA stands for return on assets; NIM stands for net interest margin; ROE stands for return on equity; CET1 stands for Common Equity Tier 1; LCR stands for liquidity coverage ratio.

Making use of granular loan-level data, this analysis explores whether bank credit in the euro area is tilted towards less-productive firms. In the econometric framework used, a set of bank-firm level regressions explains the supply of bank credit to individual firms, depending on their productivity levels. Bank credit is measured by new loans from bank *j* to firm *i*, scaled by total firm assets.[128] The main explanatory variables feature a firm-specific indicator of a low TFP level plus a range of bank characteristics and their interactions. Fixed effects at the level of country-industry-firm size-time are included to control for loan demand. Within this framework, a positive and statistically significant coefficient on the low-TFP indicator would imply that, all else equal, less-productive firms receive more bank credit than other firms.

[128] The results are broadly robust for two alternative measures of bank credit: (i) growth in outstanding loans, and (ii) new credit exposures scaled by total firm assets. Outstanding loans include new loans *and* loan repayments. New credit includes loans, credit lines and other exposures. Using new loans as the dependent variable, rather than the growth in outstanding loans, makes it possible to estimate credit supply to low-TFP firms in terms of both intensive and extensive margins, by considering firms accessing bank credit for the first time.

The results suggest that during the pandemic, bank lending tilted towards less-productive firms and the tilt was quantitatively significant. There is no strong evidence that the allocation of credit by banks was biased towards less-productive firms before and after the pandemic (the coefficient on the low-TFP indicator is positive but not significant in columns (1)-(2) of **Chart B.8,** panel a), consistent with banks focusing on the assessment of credit risk, rather than identifying high-productivity firms. However, the opposite holds for the pandemic period. During this period, new loans were higher for less-productive firms – by around 0.3% of total firm assets – than for more-productive competitors (positive and significant coefficient on the low-TFP indicator in column (3)). This effect is confirmed when measuring firm productivity based on levels observed in 2019 (column (4)). In other words, the allocation of credit to low-TFP firms during the pandemic seems to reflect credit allocation to genuinely less-productive firms rather than a cyclical decline in productivity during the period of pandemic shutdowns. Importantly, banks with low non-performing loan levels and which specialise in corporate lending were less likely to lend to low-TFP firms during that period. Higher capital and liquidity ratios also seem to have limited lending to low-TFP firms (significant coefficients on the interaction between the low-TFP indicator and bank variables in column (3)).

Chart B.8

Regressions of loan growth on bank characteristics and the impact of government guarantees

a) Regressions of new term loans on selected firm and bank characteristics

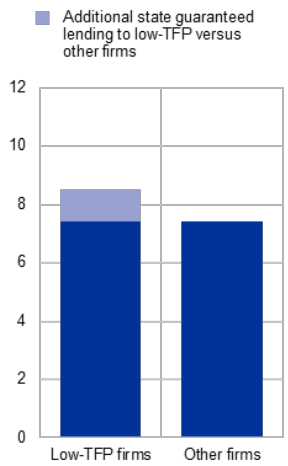
(2019-23, percentage of total assets and significance levels)

	New term loans (percentage of total assets)			
Variable	**(1)**	**(2)**	**(3)**	**(4)±**
Period	**2019-23**	**2019 and 2022-23**	**2020-21**	**2020-21**
Low-TFP firm	0.113	0.008	0.273***	0.333***
Low-TFP firm interaction with:				
CET1 capital (% of RWA)	-0.009	-0.019	-0.056***	-0.058***
NPL ratio (% of loans)	0.026	0.016	0.078***	0.066***
LCR (%)	-0.001	-0.0007	-0.001***	-0.001***
NFC loans (% of bank assets)	0.027	0.053	-0.026***	-0.021***
ROE	0.006	0.023	0.018***	0.019***

±) Column (4) uses 2019 productivity to identify low-productivity firms.

b) Impact of government guarantees on new credit to firms during the pandemic

(2020, percentage of total assets)



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, ECB (AnaCredit, RIAD, supervisory data) and ECB calculations.
Notes: "Low-TFP firm" is a dummy equal to 1 if a firm's log TFP level is below the 30th percentile of firms' TFP distribution at year-NACE2 sector-country level, and equal to 0 for other firms. Estimations are based on an unbalanced sample of euro area firms between 2019 and 2023. The dependent variable is new term loans as a share of firms' total assets. The specifications (1), (2) and (3) differ in the sample covered, while (4) uses the 2019 TFP level to identify low-productivity firms during pandemic years. Controls include (i) the share of bank *j* in firm *i* for total outstanding loans; (ii) bank characteristics: the CET1 ratio, LCR, corporate loans as a share of total bank assets, ROE, the logarithm of total bank assets, the NPL ratio; and (iii) firm characteristics: the share of tangible fixed assets in total assets, a logarithm of total firm assets and country-NACE2 sector-firm size-year fixed effects. All controls are lagged, de-meaned and winsorised at the 1st and 99th percentiles. Stars next to coefficients denote statistical significance levels: * - p<0.1, ** - p<0.05, *** - p<0.01. Panel b: results are based on regressions of new term loans in 2020 on the low-TFP indicator, its interaction with the government guarantee dummy and a range of firm and bank characteristics.

State guarantees were essential in helping viable firms to overcome temporary liquidity issues during the pandemic, with less-productive firms benefiting relatively more than the rest of firms from the guaranteed credit. Government loan guarantees introduced to encourage new bank lending during the pandemic had a positive effect on credit flows to firms. This was essential to prevent bankruptcy in the case of otherwise healthy firms facing temporary liquidity difficulties during the period of pandemic shutdowns. Yet, while largely directed towards the most affected firms, the guarantees also seem to have encouraged more lending to less-productive firms than to other enterprises. The amount of new loans received by a typical less-productive firm in 2020 increased by 8.5% of total assets if the loan was backed by a government guarantee. By contrast, for otherwise similar but more-productive competitors, the additional new lending backed by state guarantees was only 7.4% (**Chart B.8**, panel b). These findings are consistent with the past literature on state credit guarantees that indicates a certain degree of moral hazard on the part of banks, who may have less incentive to screen borrowers because the underlying risks are partly borne by the government.[129]

5 Conclusions

Over the long run, persistently weak productivity can undermine economic growth and the resilience of all sectors in the economy. Financial instability tends to be associated with the acute stress that is visible in high volatility, sharp reversals of sentiment and outright financial distress. However, structural weaknesses are equally relevant, as they gradually erode resilience. Persistently weak productivity is one such weakness and can undermine financial stability over the long run. This special feature analyses the role of access to finance, with a focus on bank lending as one of the factors driving aggregate productivity dynamics. It discusses the implications for financial stability.

Overall, the supply of bank credit has tilted more towards less-productive firms in recent years. The main reason for this is that the real estate sector has received a disproportionate share of bank credit despite its limited contribution to TFP growth. In addition, the allocation of bank loans within sectors tilted towards less-productive firms during the pandemic, while before and since the pandemic bank lending and firm productivity were/have been unrelated.

These findings beg the question as to whether more-productive firms have been to some degree crowded out, to the detriment of economic growth and resilience. This concern is relevant given the bank-centric nature of the euro area's financial system. While the continued flow of bank lending during the period of pandemic shutdowns prevented fundamentally sound firms from becoming insolvent, this special feature points to potential side effects.[130] The direct effect on bank asset quality of lending to less-productive companies has likely been mitigated by

[129] See Gropp, R., Guettler, A. and Saadi, V., "Public bank guarantees and allocative efficiency", *Journal of Monetary Economics*, Vol. 116, 2020, pp. 53-69.

[130] See also Lalinsky, T., Meriküll, J. and Lopez-Garcia, P., "Productivity-enhancing reallocation during the Covid-19 pandemic", *Working Paper Series*, No 2947, ECB, June 2024.

government guarantees at the expense of higher risks for sovereigns and a stronger bank-sovereign nexus. In addition, the tilt towards less-productive firms could have an indirect effect on productivity if the survival of less-productive firms suppresses the profitability of more-productive competitors, discouraging market entry and investment.

An external funding structure that is more diversified could help boost the productivity of euro area firms, to the benefit of financial stability. Equity investors may be more suited to funding inherently riskier but more-productive projects. They have greater incentives to identify frontier firms, as they reap the full benefits if such firms perform better. Some of them have superior skills when it comes to evaluating early-stage technologies while others are able to intervene directly and improve the operational efficiency of firms. Overall, additional progress towards the capital markets union – as part of a comprehensive policy agenda – could help improve growth potential of the euro area economy and support its resilience to adverse shocks.

Acknowledgements

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