Keeping the momentum: how finance can continue to support growth in EMEs

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Abstract

This paper examines how finance can support economic growth in emerging market economies (EMEs). Historically, finance has contributed to rising income levels, yet its future impact is less certain. Evidence indicates that as credit and income levels increase, the positive impact of finance on growth tends to weaken. Additionally, unchecked credit expansion can lead to financial busts, resulting in prolonged periods of sub-par economic performance. At the same time, advances in digital technologies offer new opportunities for enhancing financial intermediation. Policy decisions will be key in three main areas: implementing structural reforms to improve market-based finance access; harnessing digital technologies to enhance financial efficiency and inclusion; and maintaining macro-financial stability to ensure sustainable growth.

JEL classification: E44, G00, O40.

Keywords: emerging markets, financial inclusion, capital markets, economic growth, productivity, resource allocation, financial innovation, digital technologies.

Introduction

Financial development has played a fundamental role in boosting income levels in emerging market economies (EMEs) and will continue to do so in the future. But the path forward might not be as smooth as in the recent past. Research indicates that the effect of finance on growth tends to weaken as credit and income levels rise and may even turn negative. Moreover, credit can flow to unproductive uses and grow at an unsustainable pace even in countries where it is relatively low, as proven by past financial crises that occurred at much lower debt levels than today. On the positive side, new digital technologies, including artificial intelligence, promise to improve the efficiency of financial services and broaden access.

This suggests that the impact of finance on future economic growth will depend on at least three factors, with policy playing a crucial role in each.

First, many EMEs have scope for expanding and widening access to market-based finance through structural reforms that enhance the protection of creditors and

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shareholders, competition and financial literacy. Equity finance, in particular, may help channel funds towards the most innovative firms and new sources of growth.

Second, new digital technologies can improve how well various forms of finance serve the real economy, including by broadening financial inclusion and reducing informality. To support financial innovation, many EMEs are already investing in digital infrastructure and adapting regulation to foster competition and protect consumers.

Last but not least, preserving macro-financial stability remains crucial regardless of a country's degree of financial development. Establishing whether a credit expansion constitutes financial deepening or an unsustainable boom is hard in real time. Yet, the challenge is more manageable if EMEs take steps to strengthen existing macro-financial stability frameworks (MFSFs).

This note begins by describing the evolution of EMEs' financial systems over the past two decades. It then asks whether finance can still support growth, relying on evidence from aggregate-, sectoral- and firm-level data. Finally, it delves into the factors that will shape their future development.

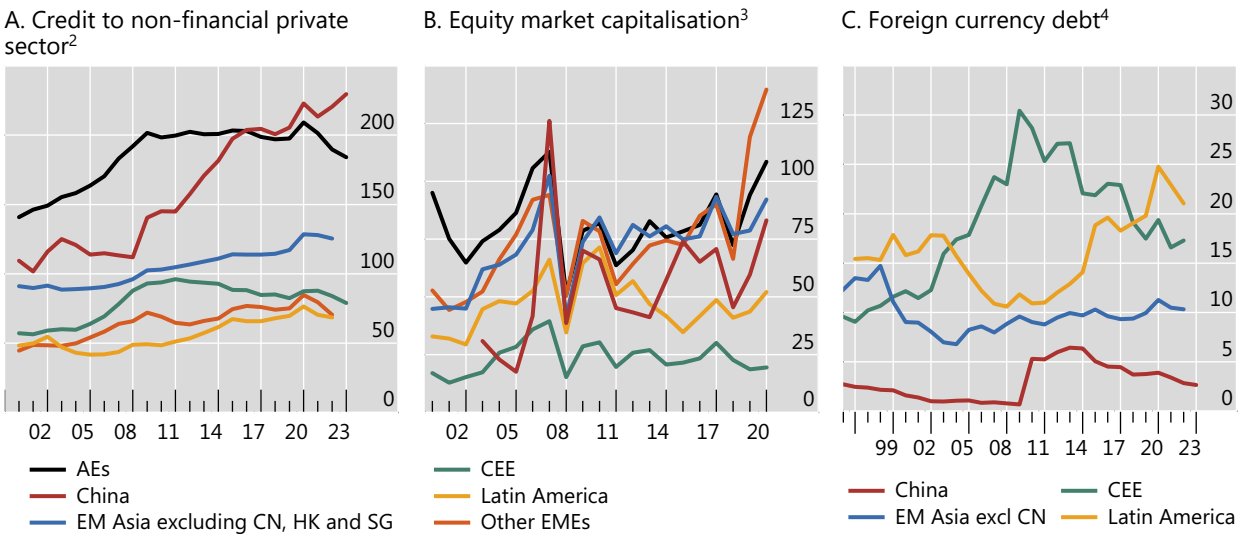
Changes in EME finance in recent decades

The early 2000s ushered in a period of remarkable stability and growth for most EMEs. In line with global trends, inflation rates and real interest rates fell to historical lows, at least until the recent post-Covid-19 inflation flare-up. In addition, most EMEs did not experience any episodes of major financial stress despite major global shocks such as the Great Financial Crisis (GFC) and the Covid-19 pandemic (Annex A, Graph A.1). EMEs have benefited not only from more favourable global conditions but also from greater central bank autonomy and the strengthening of their banking sectors after the crises of the 1980s and 1990s. Several EMEs also benefited from the further opening-up of their economies to international trade and finance.

The newly acquired stability and lower interest rates provided fertile ground for the expansion of EME financial systems. Private non-financial sector credit (PNFC) in relation to gross domestic product (GDP) has steadily trended up for most of the period and has been especially fast in emerging Asia (Graph 1.A). This expansion persisted through the GFC, except in Central and Eastern Europe (CEE), where a downturn followed. Despite the increase, PNFC tends to be lower in EMEs, with the exception of China, than in advanced economies (AEs). Equity finance has also expanded, but this expansion largely took place before the GFC (Graph 1.B). Since then, it has been volatile and has not followed the upward trend of private credit. That said, the measurement is subject to some subtlety, including due to the tendency of larger EME firms to list on AE stock markets.

EME financial systems have undergone major changes[1]

As a percentage of GDP — Graph 1



EM Asia excluding CN, HK and SG = ID, IN, KR, MY, PH, TH and VN; Latin America = AR, BR, CL, CO, MX and PE; CEE = CZ, HU and PL; Other EMEs = AE, DZ, IL, SA, TR and ZA; AEs = AT, AU, BE, CA, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, JP, LU, NL, NO, NZ, PT, SE and US.

[1] Simple average across countries in the region. For 2023, data with latest available quarter. [2] For AE, DZ, PE, PH and VN it corresponds to total private debt (loans and debt securities). [3] For GR data starts in 2001, HU 2002, CO 2005, AE 2007, VN 2008 and SA 2009. Data ending in 2003 for SE; 2004 for DK and FI; 2014 for GB and IT; 2017 for NL; 2018 for BE, DZ, FR, IE and PT; and 2019 for AR and NO. For DZ value from 2018 repeated in 2019-20. [4] Cross-border and local bank loans extended by LBS-reporting banks to EME non-bank borrowers and international debt securities issued by non-banks residing in each region. Non-banks comprise non-bank financial entities, non-financial corporations, governments, households and international organisations. Data are not available for AR, HK, MY, VN and SG.

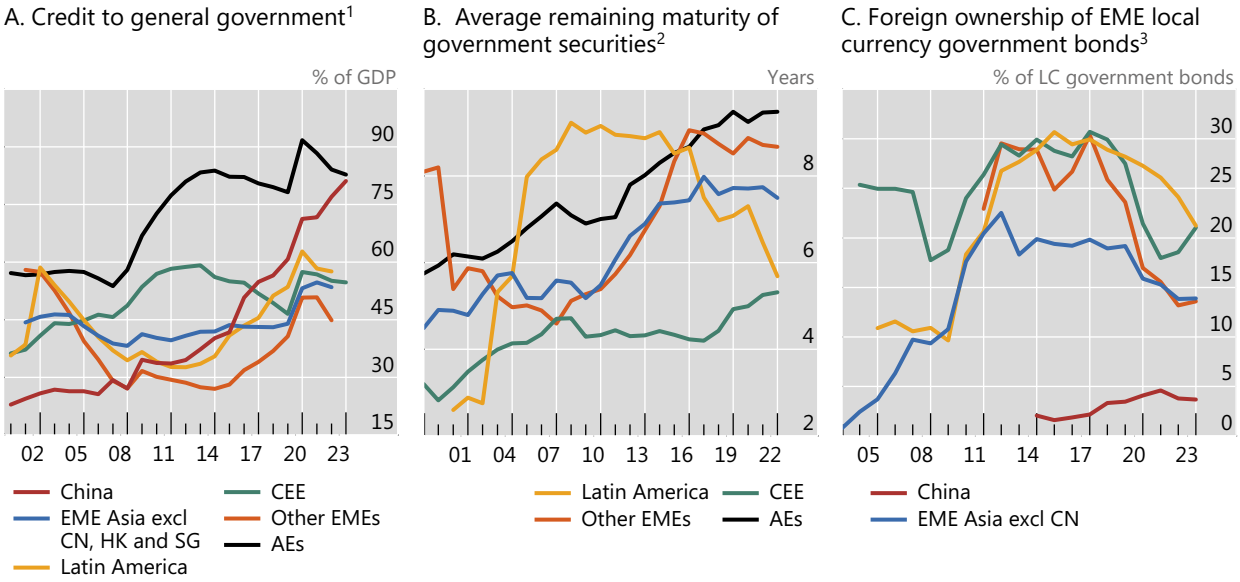
Sources: Mbaye et al (2018); World Bank; national data; BIS consolidating banking statistics, locational banking statistics by residence and international debt securities statistics.

Beyond becoming larger, financial systems have evolved in other dimensions. Broader measures of financial development indicate improvements in households' and firms' access to financial services, as well as in firms' access to bank credit and market-based finance (Annex A, Graph A.2). Financial institutions have also become more efficient, as measured by indicators such as the ratio of overhead costs to total assets.

The role of non-bank financial institutions (NBFIs) in financial systems has grown. Some EMEs (including Brazil, Colombia, Korea and South Africa) have seen a notable increase in the share of NBFIs in total financial system assets (Annex A, Graph A.3). This includes institutional investors such as pension funds and insurers (Annex A, Graph A.4). That said, for most EMEs considered here, banks have retained a predominant share in total financial system assets (eg Czechia, Hong Kong SAR, Hungary, Indonesia, Mexico, Poland, Singapore and Turkey).

Credit to government rises and sovereign bond markets evolve

Graph 2



[1] Simple average across seven economies in EME Asia excluding CH, HK and SG; six in Latin America; three in CEE; six other EMEs; and 22 AEs. For Peru, central government debt. For 2023, data corresponds to latest available quarter. [2] Simple average maturity of central government debt securities issued across countries in the region upon data availability. Eight economies in EM Asia excluding China, six in Latin America, three in CEE, three other EMEs and 12 AEs. [3] Simple average across countries in the regions, subject to data availability. Figures for five economies in EM Asia excluding China, four in Latin America, three in CEE and two other EMEs.

Sources: Mbaye et al (2018); IIF; IMF; national data.

Expanding finance has also coincided with a significant shift in how EMEs access international finance. Foreign direct investment inflows into EMEs have slowed since the GFC, while portfolio flows have gained ground. More flows have originated from non-bank foreign investors, especially post-GFC. Regarding EME local currency government bonds, mutual funds account for the largest share of US investors' bond holdings post-GFC, while US pension funds and insurance companies have much smaller shares (Bertaut et al (2023)). After an initial decline prior to the GFC, foreign currency debt has risen in Latin America (Graph 1.C), largely driven by corporate debt (Annex A, Graph A.5).

Credit to the government is substantially larger today than in the early 2000s (Graph 2.A). Unlike for PNFC, most of the growth occurred after the GFC. Prior to that, several regions experienced significant reductions in public debt ratios. China saw the largest post-GFC increase in government debt, followed by Latin America and other EMEs. For Latin American EMEs and other commodity-exporting countries, the surge coincided with the end of the expansion phase of the commodity supercycle; for emerging Asia (excluding China), the surge coincided with the pandemic.

The structure of government debt has also changed. Governments were able to replace foreign with local currency debt. Consistent with greater inflation stability, and helped by low short- and long-term rates globally, average maturities of sovereign debt have generally increased (Graph 2.B). A notable exception is Latin America where maturities have declined since the mid-2010s. Foreign participation in local currency government bond markets rose until 2015 but has declined since (Graph 2.C).

These broad trends mask significant differences across countries. In particular, emerging Asia tends to have larger financial systems (relative to GDP) than Latin America and central and eastern Europe, more akin to the typical advanced economy (Annex A, Graph A.6).

The impact of finance on growth: always good?

There is no doubt that financial development contributes to long-term economic growth. As highlighted by a voluminous theoretical literature, the financial system improves the allocation of resources by screening projects, exerting governance on the use of allocated resources, facilitating the management of risk, mobilising savings and easing the exchange of goods and services (see Levine (2021) for a definition and review).

Measuring how well these functions are performed is not straightforward. The empirical literature has typically used the size of the financial system (eg credit-to-GDP ratio and stock market capitalisation), occasionally complementing it with variables capturing access, efficiency and liquidity (eg Sahay et al (2015)). Even though these are imperfect proxies, the conclusion from multiple sources of data and different methodologies is that finance has a significant causal impact on growth (see Popov (2018) for a review).

A still open question, however, is how the performance of financial systems changes over time and why. Indeed, some studies have recently found that the contribution of finance tends to diminish as the financial system expands and income levels rise (eg Demirgüc-Kunt et al (2013)).

There might be several reasons. Some are structural in nature. For instance, the type of informational frictions faced by economic agents may change as the economy develops. In particular, bank finance may be less suited for economies that need to finance innovation (see below). Furthermore, additional finance may not necessarily flow to the most productive uses or firms. This may reflect changing consumption preferences as income levels rise. But it may also reflect distortions caused by credit policies, fiscal policy and weak institutions.

There might also be non-structural reasons closely related to financial cycles.[2] Financial booms tend to be associated with excessive optimism and lead to overinvestment as well as the weakening of incentives for rigorous screening and monitoring of investment projects. Additionally, debt burdens can eventually reduce investment and consumption as the initial credit impulse fades. The consequence of this misallocation of resources could be a long-lasting negative impact on growth, especially if the financial boom ends in a deep and prolonged recession or, worse, a full-blown financial crisis.[3]

[2] Financial cycles tend to be much longer than ordinary business cycles (eg Drehmann et al (2012)), making it hard to assess whether an ongoing financial expansion and associated growth are sustainable.

[3] Financial crises can have a long-lasting impact on growth through scarring effects, unlike more mild recessions (see Aikman et al (2022)).

Has the marginal contribution of finance diminished? Is finance, in particular credit, approaching the point where it detracts from growth, at least temporarily?[4] These questions have gained prominence recently due to the slowdown of growth in several EMEs. While not the main cause, the factors highlighted above may have contributed to it. The rest of the section examines the latest evidence.

The growth impact of private credit follows an inverted U-shaped curve

Aggregate data point to an inverted U-relationship between private non-financial credit and average GDP per capita growth (Graph 3.A).[5] This finding is robust to controlling for other factors, including catching-up effects, trade openness, inflation, government size and the incidence of financial crises (Annex B).[6] At low levels, more credit is associated with higher growth. But, as credit increases, the contribution tends to decline, and beyond a certain point, it turns negative, detracting from growth.

Currently, most EMEs are still in the region where further deepening of private credit would help boost growth. The estimates suggest that if Latin America reached the credit depth of emerging Asia, growth could be around 0.5 percentage points higher, all else equal. By contrast, emerging Asia appears to be at the estimated turning point, where further financial deepening through credit may start to be a drag on growth. That said, even in countries where further financial deepening is a positive for growth, unsustainable credit booms could still undermine resilience and growth.

The existence of an inflection point is also corroborated by cross-country survey evidence. The share of firms reporting that access to finance is a major constraint declines as private non-financial credit increases (Graph 3.B). Yet the relationship flattens as credit approaches 100% of GDP. It seems that additional finance tends to go to firms that are already flush with credit rather than to the final 10% of firms that are credit constrained. The survey evidence also suggests more scope for positive credit deepening in several EMEs, including in Latin America, but less scope in emerging Asia.

The next subsections delve deeper into some of the mechanisms (and respective evidence) behind the estimated inflection points shown in Graph 3.

[4] Between 2016 and 2023, average annual GDP per capita growth of EMEs has exceeded that in AEs by only 1 percentage point, a 50% reduction relative to the 2000–15 average. For several EMEs, growth convergence has stalled (Annex A, Graph A.7).

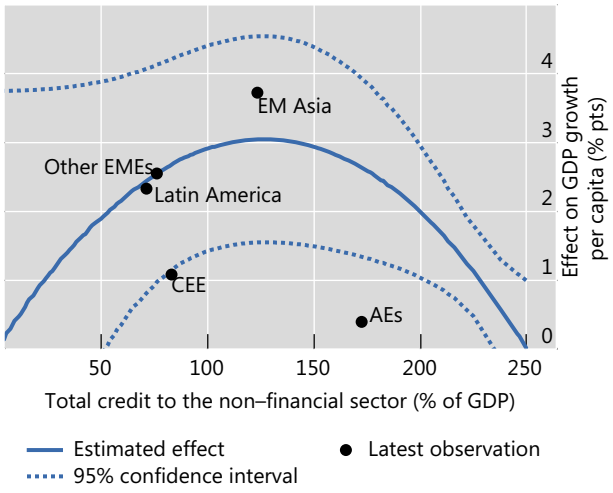
[5] See also Cecchetti and Kharroubi (2012) and Gambacorta et al (2014). Consistent with this, Cecchetti et al (2011) find evidence of turning points for private non-financial corporate debt, yet not for household debt. However, the existence of non-linearities and potential explanations have been challenged in the literature (see Popov (2018) for a review).

[6] While crises have a large negative impact on long-term growth, accounting for crisis occurrence does not remove the downward-sloping section from the relationship between credit and growth (Annex B).

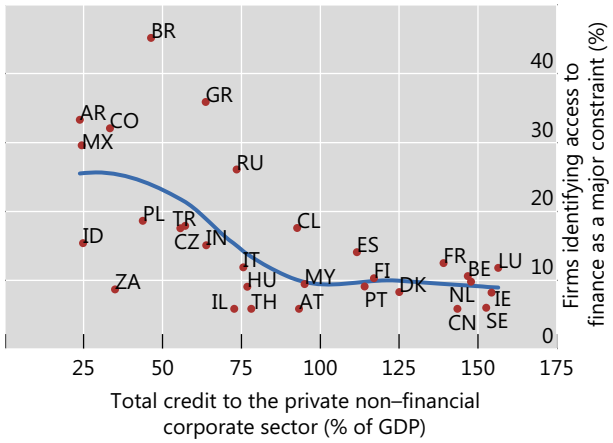
The two-sided nature of private credit

Graph 3

A. Inverted U-shape between credit and growth[1]



B. More credit eases credit constraints only up to a point[2]



Estimated effect
95% confidence interval
Latest observation

[1] Blue line shows the estimated fitted relationship between total credit to the non-financial sector and GDP per capita growth based on a panel regression, regressing non-overlapping five-year averages GDP growth per capita on the five-year averages of the ratio of credit to the private non-financial sector to GDP and its square, the ratio of equity market capitalisation to GDP and its square, trade openness (sum of imports and exports to GDP), government consumption to GDP and GDP deflator inflation. The lagged level of real GDP per capita is also included. See Annex B for details. Points show simple averages by region of 2019 credit to GDP on the x-axis and fitted values for latest available data on the y-axis. [2] Points show 2009–21 averages. Fitted line = locally estimated scatterplot smoothing regression.

Sources: IMF; Penn World Tables; World Bank; BIS.

Higher debt service ratios predict slower future growth

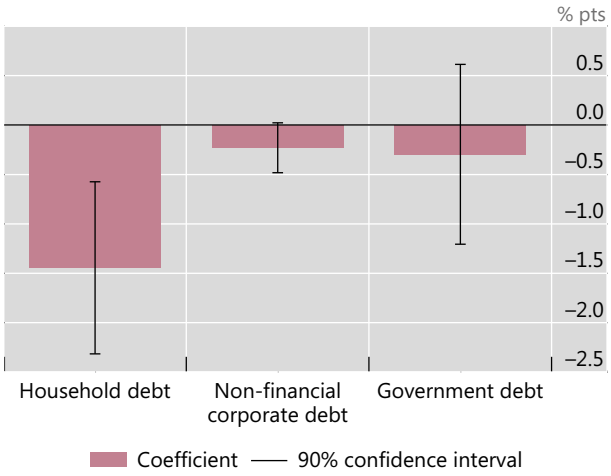
The burden of servicing existing debt can have a persistent negative effect on aggregate demand, investment, productivity and ultimately growth. As credit expands, it brings forward consumption and investment. Yet, once the flow of new credit peters out, its positive effects can be eventually outweighed by the negative impact of interest payments and principal amortisation.[7] Additionally, higher debt service payments may lead to rising defaults and more cautious behaviour by non-defaulting agents. In extreme cases, firms may cease to invest entirely, as they expect any additional returns to cover only the extra debt service payments (debt overhang). Reduced investment (including on research and development and new technology) might, in turn, lower production efficiency.

[7] In principle, the extra interest income earned by lenders or savers could lead to offsetting effects on demand. However, the marginal propensity to consume of creditors is generally lower than that of debtors. Furthermore, interest payments on external debt leak abroad.

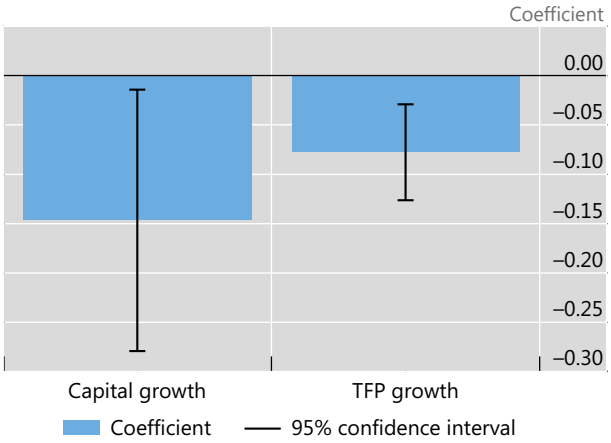
Private debt burdens dampen growth

Graph 4

A. Higher household debt predicts lower GDP growth in the medium run[1]



B. Higher private sector debt service ratios weaken capital deepening and TFP growth[2]



[1] Impact of one standard deviation increase over three years in household, non-financial corporate and central government debt, respectively, on real GDP growth during the subsequent three years. See Annex C for details. [2] Long-run impact of one percentage point increase in debt service of private non-financial sector debt. Based on a panel regression of capital deepening or TFP's contribution to GDP growth on its lag, average debt service costs over the past three years, the log size of equity market capitalisation to GDP, private sector credit to GDP and the square, government consumption to GDP, GDP deflator inflation, lagged GDP growth and country fixed effects.

Sources: Conference Board; Penn World Tables; World Bank; BIS.

The effects described here are consistent with recent analyses of credit boom-bust cycles in the household sector. Panel data analysis covering a number of decades finds that an expansion in household debt (Graph 4.A and Annex C; see also Lombardi et al (2017), Mian et al (2017)) or a large increase in household debt service ratios (Drehmann and Juselius (2012), Drehmann et al (2023)) systematically predicts lower GDP growth over the following years.[8] In addition, BIS analysis finds that private sector debt service ratios (including households and corporates) tend to lower not only capital accumulation but also total factor productivity (TFP) growth in the long run (Graph 4.B).

Credit allocation weakening productivity growth

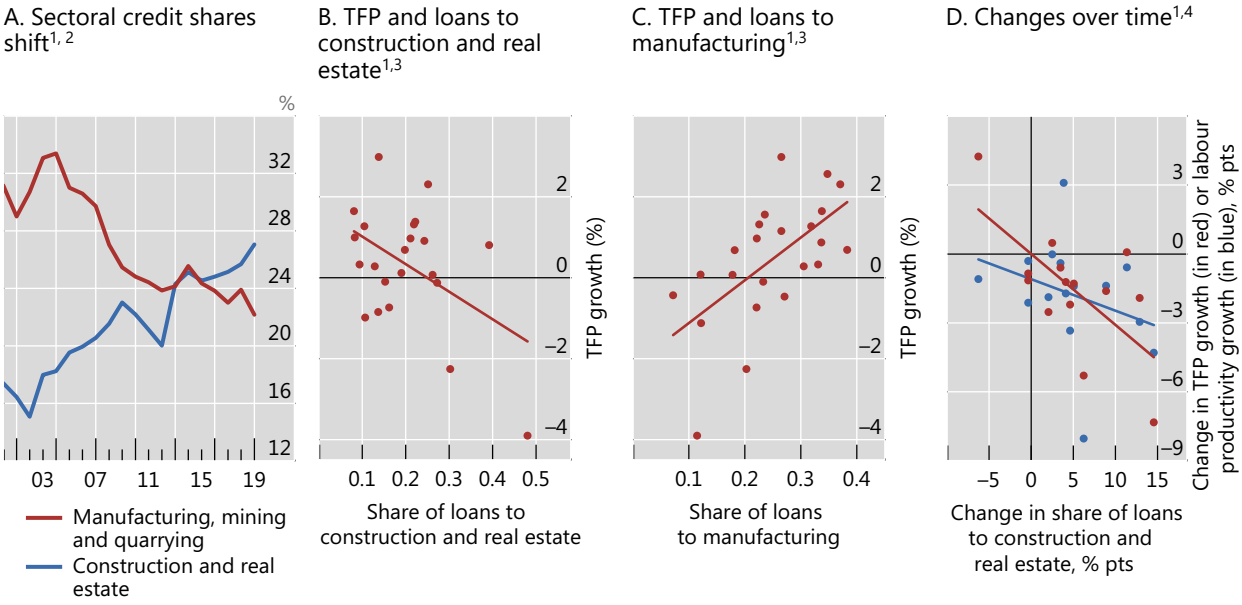
Credit expansions may reduce growth if they transfer resources to less productive sectors and firms.

Over the past two decades, corporate credit in EMEs has shifted towards funding construction and real estate projects at the expense of manufacturing and other industries (Graph 5.A). This shift closely mirrors the expansion of household credit,

[8] The effects are economically large: in Lombardi et al (2017) a 1 percentage point increase in the household debt-to-GDP ratio tends to lower growth in the long run by 0.1 percentage points. In Drehmann et al (2023), a unit increase in debt service reduces cumulative output growth by 0.7 pp after 4 years and continues to exert a negative influence up to 7 years. In Mian et al (2017), the effects are found to be statistically insignificant for non-financial corporate debt and government debt. The latter results are consistent with Graph 4.A and Annex C.

which typically boosts demand for housing as well as demand for non-tradables over tradables.[9]

Shift in credit to real estate coincides with drop in EME productivity growth Graph 5



[1] Share of loans refers to share of corporate credit. [2] Median sectoral credit shares, based on a balanced panel of 13 EMEs. [3] Averages over the period 2000–18 for 25 EMEs, depending on data availability. [4] Changes between 2000–7 and 2008–18.

Sources: Müller and Verner (2023); World Bank. .

The reallocation to real estate credit can reduce growth because productivity gains are generally smaller in these sectors. As illustrated in Graphs 5.B and 5.C, productivity growth tends to be lower in countries with a greater share of construction and real estate loans, and higher in countries with a greater share of loans to the manufacturing sector. Indeed, the larger the expansion in credit to construction and real estate, the bigger the drop in labour productivity growth and TFP growth (Graph 5.D). Greater use of collateral in household lending is generally associated with larger shares of lending to construction and real estate (Annex A, Graph A.8). In the BIS survey, some concern that housing may be crowding out other lending has indeed been expressed by EME central banks where housing accounts for a large share of total credit.

The observed shift towards non-tradables should – at least partly – reflect the process of economic development, as demand for non-tradables naturally increases with per capita income.[10] Furthermore, where housing markets are less developed,

[9] Indeed, a similar trend in credit allocation obtains if one considers the share of credit to households, construction, and real estate relative to total credit to households and corporates (assuming that most household credit reflects mortgages, this yields a broader measure of credit to the housing sector).

[10] Governments may also be keen on promoting home ownership. See, for example, the note from Saudi Arabia.

credit allocation to this sector might potentially have positive effects over time, stemming from the buildup of housing equity.[11]

That said, credit booms in these sectors are associated with weaker subsequent growth in the medium term (Müller and Verner (2023); see also the note from Czechia). To some extent, this likely reflects overinvestment in construction and services and underinvestment in manufacturing, which have adverse effects on aggregate productivity growth that can persist long after the boom subsides.[12] More broadly, credit reallocations during booms and their impact on productivity have been well documented for both AEs and EMEs.[13] They tend to be amplified by capital flows and can be particularly strong for commodity exporters in periods of higher commodity prices.[14]

One signal that credit booms or sectoral credit reallocations may at least partly reflect resource misallocation is the increase in the dispersion of productivity across firms (see Annex D). Examining this dispersion within sectors helps avoid conflating misallocation with shifts in demand towards lower productivity sectors. Estimates indicate that this measure has risen (Graph 6.A). Strikingly, the increase in dispersion in EMEs has exceeded that in AEs.[15]

Statistical analysis indicates that the sectoral reallocation of credit over the past 20 years may be associated with the rise in within-sector productivity dispersion. Estimates show that sectors with stronger credit growth experienced larger increases in within-sector productivity dispersion (Graph 6.B). In addition, countries with a large dispersion in credit growth across sectors – ie experiencing strong sectoral reallocations – also saw a general rise in within-sector productivity dispersion. By contrast, the strength of credit expansions at a country level does not seem to have a significant impact. Overall, this evidence suggests that when one sector experiences particularly strong credit growth, financial intermediaries may become less discerning in screening potential borrowers in that sector and that there can be spillovers to other sectors' allocations.

[11] For example, entrepreneurs' housing equity can help ease credit constraints for smaller and younger firms (eg Banerjee and Blickle (2021)).

[12] The reallocation of credit to the real estate sector can also weigh on long-term growth through its contribution to financial crises (eg Müller and Verner (2023), Ivashina et al (2024)).

[13] See eg Kharroubi et al (2023) for evidence on OECD countries. Cette et al (2016) argue that similar reallocation in Italy and Spain resulted from cheaper credit following the establishment of the euro area.

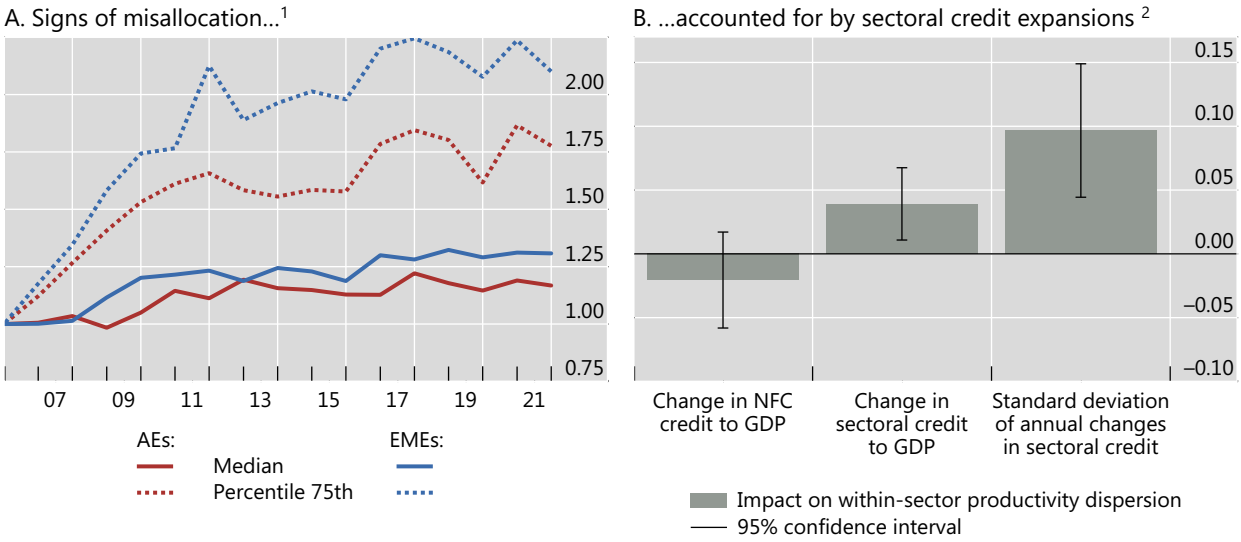
[14] Economic agents fail to internalize the positive spillovers of technological improvements in the tradeable sector, slowing the adoption or import of new technology (eg Benigno and Fornaro (2014) and Alberola and Benigno (2017)). For empirical evidence on the importance of capital inflows, see eg Benigno et al (2015).

[15] Another manifestation of worsening capital allocation is the presence of zombie firms. These are less productive than other firms, and their presence lowers investment and employment in the more productive firms (see Banerjee and Hofmann (2018, 2022)). Albuquerque and Iyer (2023) find that the share of zombie firms in EMEs has risen since the GFC.

Credit expansions contribute to less efficient resource allocation in EMEs

Standard deviations

Graph 6



[1] Dispersion of firm-level productivity within a sector. Based on a sample of 629247 firm-year productivity observations in 15 sectors across 55 countries. See Annex D for details. [2] Estimated effect of credit on within-sector productivity dispersion. Impact of a two standard deviation increase in the variable shown on the x-axis, in standard deviations of sectoral productivity dispersion. Variables on the x-axis corresponds to annual changes as a share of GDP. See Annex D for details.

Sources: Müller and Verner (2023); IMF; Capital IQ; national data; BIS.

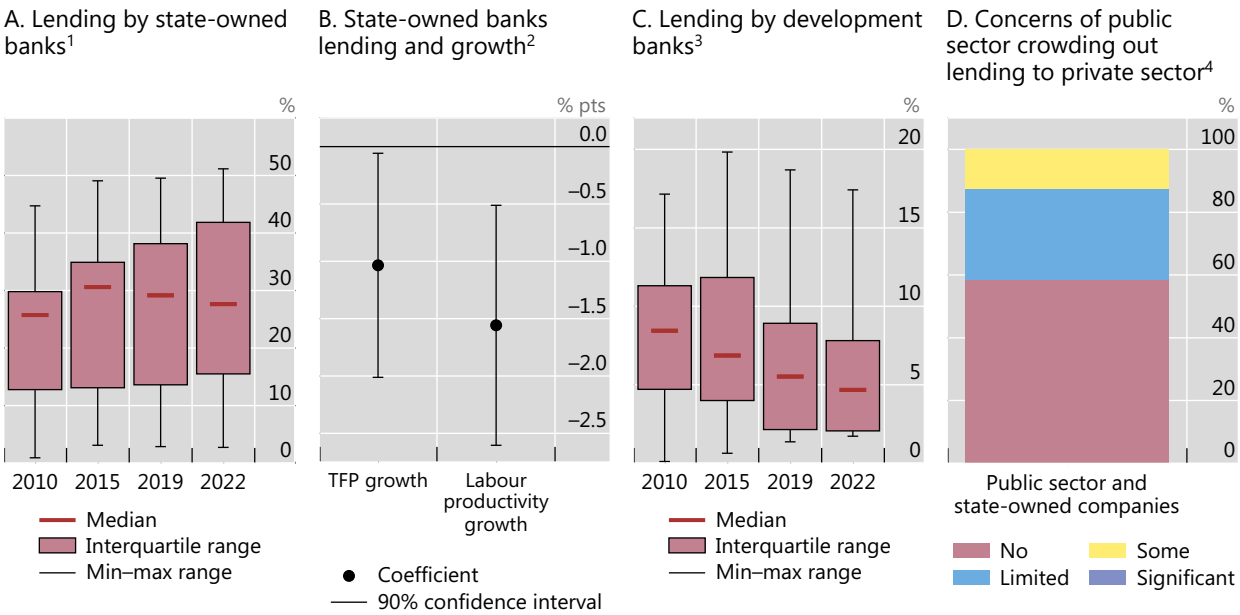
Publicly owned banks do not seem to improve credit allocation

Credit allocation can also be influenced directly by governments through ownership of commercial banks and through the activities of development banks.

Public ownership may facilitate the financing of public projects and, more generally, address market failures in the provision of credit to particular sectors or firms (see the note from Türkiye). Credit supply of public banks also tends to be less procyclical than that of privately owned banks. That said, publicly owned banks may also stray from their objective of correcting market failures and be influenced by political interests and rent-seeking behaviour. While earlier literature tended to emphasise the positive "development" or "social" view of public banks, a number of later papers emphasise the more negative "political" one (see, for example, La Porta et al (2002) and Levy Yeyati et al (2007) for a discussion). The note from Algeria mentions that the country's largest state-owned bank has been privatised with a view to improving governance and access to finance for the private sector.

Importance of state-owned banks varies; development banks' role fades

Graph 7



[1] As percentage of credit to the NFPS. Statistics for state-owned banks (excluding development banks) for nine EMEs. For CN and PH it corresponds to state-owned and development banks. [2] Effect on TFP and labour productivity growth of an increase in the share of state-owned bank lending in total bank lending, by one standard deviation. Based on a panel regression for nine economies and five-year averages, with country fixed effects. [3] Statistics for development banks of eight EMEs, as percentage of credit to the NFPS. [4] As a percentage of central banks responses. It refers to concerns of credit to the public sector and state-owned enterprises by commercial banks crowding out lending to the private sector.

Sources: World Bank; national data; BIS survey responses; BIS.

Credit supplied by state-owned banks varies strongly among EMEs (Graph 7.A). The relative importance of these banks has also risen slightly post-GFC (Graph 7.A), including in Argentina, Hungary, Indonesia and Türkiye (on the contrary, Brazil has seen a decline since the mid-2010s).[16]

This type of credit's influence on growth is unclear though. Average TFP and especially labour productivity growth tends to be lower in EMEs when state-owned banks provide a larger share of credit (Graph 7.B). Moreover, recent panel data analysis finds no robust correlations between state ownership and economic growth, even when controlling for possible reverse causation (Panizza (2023)).

Development banks generally have a narrower mandate than state-owned banks. They may offer subsidised credit and target specific sectors and often focus on long-term financing, especially of infrastructure projects. For example, in Colombia, the main goal of the country's three development banks is to promote development in agriculture, infrastructure and overall corporate sector growth. In Czechia, they focus on supporting firms' international expansion. And in Malaysia, they are increasingly focused on underserved segments such as small farmers and microenterprises. However, for the median EME, the share of lending by development banks has declined somewhat since the early 2010s (Graph 7.C).

[16] As the note from the United Arab Emirates discusses, these institutions often played a key role in lending during the pandemic.

A related dimension concerns the allocation of credit to public sector non-financial firms. In several EMEs, large state-owned firms often operate in key industries. Yet, they tend to be less profitable than their private sector counterparts (see, for example, IMF (2020)). In EMEs, the share of domestic debt securities issued by state-owned firms is often significantly higher than in AEs (Annex A, Graph A.9). However, the BIS survey finds only limited concerns about lending to the public sector and state-owned firms crowding out lending to the private sector (Graph 7.D). In particular, no central bank has "significant" concerns about such crowding out.

A further increase in public debt may crowd out private credit

Governments may also affect the overall availability of credit to the private sector indirectly, through the impact of fiscal policy on public debt.

Like private credit, public debt can be two-sided. At sufficiently low levels, the expansion of public debt can crowd in private credit and investment. Indeed, a larger market for debt securities enhances liquidity, which is key for the development of private financial intermediation and for allowing firms and individuals to better manage risk associated with long-term investment projects. Furthermore, the government accounts for a significant share of total investment in many EMEs. Debt-financed spending on essential infrastructure as well as on health and education is often an essential complement to private sector initiatives.

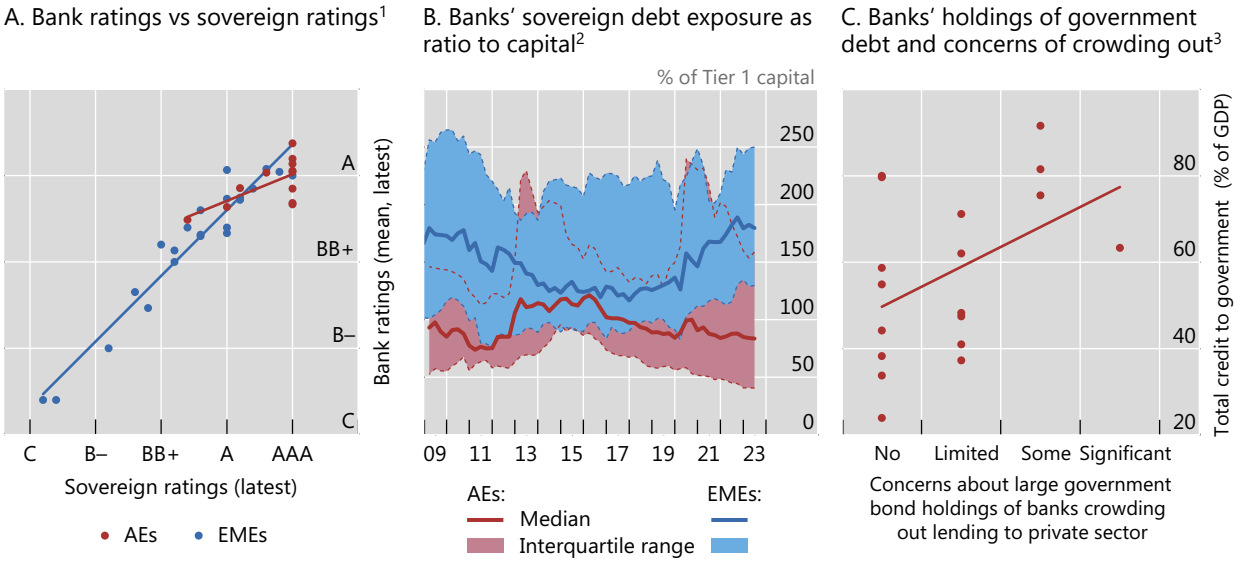
However, public debt may also crowd out private credit. Sovereign risk generally rises with debt levels, leading investors to demand higher interest rates.[17] In turn, this leads to higher funding costs for financial intermediaries and the broader economy, thereby reducing the volume of private credit. Higher public debt may also reduce the room for countercyclical fiscal policy, thus implying more volatile and uncertain macroeconomic conditions for private agents.[18] Crowding out can also occur through financial repression. Even though it may help contain public borrowing costs and reduce concerns about sustainability, it has been a typical source of capital misallocation and lower growth (eg Roubini and Sala-i-Martin (1992, 1995); Levine (2005)).

[17] See also the note from South Africa.

[18] Macroeconomic instability in response to higher sovereign risk in EMEs is normally exacerbated by fluctuations in the exchange rate. See eg Banerjee et al (2023).

Tight link between banks and sovereigns but limited concern about crowding out

Graph 8



[1] Mean bank ratings across 21 AEs and 22 EMEs. For stand alone, Fitch Viability; for all in, Fitch LT Issuer Default Rating. Data as of end-February 2024. [2] The sample consists of nine AEs and 18 EMEs, where data are available. Other depository corporations net claims on central government and their claims on state and local government by residence, as percentage of banks' Tier 1 capital. The reporting depository corporations comprise all solo entities resident in the country, including those that are foreign-owned subsidiaries or branches of foreign entities. Branches and subsidiaries abroad of domestically owned entities are not included. [3] Excluding SG. For total credit to government it corresponds to latest available figures.

Sources: IMF; Fitch; S&P Global; national data; BIS survey responses.

Multiple studies show a robust negative relationship between public debt-to-GDP ratios and subsequent average GDP growth in both AEs and EMEs as well as the existence of threshold effects.[19] There is also significant evidence that the crowding out of private spending is exacerbated by how exposed financial institutions are to public debt, as illustrated by the close link between sovereign and bank ratings (Graph 8.A).[20] Such exposure has been on the rise in EMEs since the mid-2010s (Graph 8.B). Unsurprisingly, concerns about crowding out of private investment are larger for central banks in economies with higher shares of public debt (Graph 8.C). In the segmented credit market of China, the sharp increase in local public debt has been shown to have crowded out investment at the most dynamic private manufacturing companies while not affecting state-owned enterprises (Huang et al (2020)).

Avoiding financial crises is key to supporting long-run growth

One important reason why debt can be excessive is that it can increase the probability and intensity of financial crises, especially if the market conditions that have enabled

[19] While the evidence is generally consistent with the existence of turning points, estimating these precisely has proven technically challenging. These are very much likely to be country specific. See, for example, the survey in Fatás et al (2020).

[20] The channels are described in detail in Borio et al (2023), along with a review of the empirical evidence. The adverse interaction of financial and fiscal risks (or so-called "doom loops") is a feature of both AEs and EMEs. In EMEs they can be exacerbated by sharp movements in the exchange rate.

credit expansion (eg low global interest rates, strong global growth or optimism about future technological innovation) were to turn. So far, with a few exceptions, major EMEs have not experienced financial crises since the early 2000s (Annex A, Graph A.1). But questions arise about whether the era of very low global interest rates may be ending (eg Benigno et al (2024)).

Should a crisis occur, the negative impact on GDP growth is likely sizeable and long-lasting. The accompanying recessions are deeper and longer-lasting than normal recessions. Not only the most inefficient firms but also those with high productivity are typically forced out of the market, including a disproportionate number of young firms. It may take time to repair firm-finance links and retrain unemployed workers. Public investment might be depressed for a long time until fiscal positions improve. As a result, financial crises are likely to permanently reduce output levels (eg Cerra and Saxena (2008)) and temporarily halt convergence of EMEs to richer economies (Reinhart and Reinhart (2015)).

The persistence of any growth effects additionally depends on the structure of financial intermediation. Bank finance, which is mostly conducted on banks' own balance sheets with high leverage and maturity mismatch, can make bank-based systems more vulnerable to shocks compared with market-based finance, which passes any losses onto borrowers. Consistent with these vulnerabilities, bank-based financial systems tend to exhibit higher systemic risk (Bats and Houben (2020)) and experience deeper and more prolonged financial crises (Gambacorta et al (2014)). In these circumstances, market financing can work as a "spare tire", substituting for bank credit and thus contributing to a reduction in systemic risk (Greenspan (1999), Levine et al (2016)).

What could boost the long-run growth impact of finance?

At least three factors might shape future financial development in EMEs: the further expansion of market-based finance; new digital technologies; and macro-financial stability. How these factors will play out and ultimately affect long-term growth will depend crucially on policy intervention. This section turns to each in turn.

The development of market-based finance

Many EMEs can benefit greatly from further development of market-based finance. Recent studies suggest that, at more advanced stages of financial development, market-based finance can yield greater productivity gains than bank-based finance (eg Demirgüç-Kunt et al (2013), Gambacorta et al (2014), Hsu et al (2014)).[21] As economies develop, market-based finance is often better at financing larger and more complex investment projects. The variety of financial claims and greater potential for investors to diversify risk in capital markets boost their appetite for financing high-risk, high-productivity investments. In addition, the information

[21] These findings are largely based on equity finance, but evidence from AEs suggests that bond finance has an independent influence on growth (Fink et al (2003) and Pradhan et al (2016)), contradicting earlier evidence (eg Levine (2002)). Unfortunately, data limitations on bond markets, especially for EMEs, prevent reaching a definitive conclusion.

aggregation activity of capital markets helps facilitate efficient resource allocation for innovative investment opportunities.

Risk sharing possibilities in corporate bond markets could also help EME firms meet larger financing needs, including for the green transition or infrastructure.[22] Country notes describe how specialised bonds for green finance are already helping to meet these financing needs by attracting sizeable ESG (environmental, social and governance) capital flows (see also Mojon (2023)). This finance could further stimulate new drivers of growth and may itself help to deepen domestic currency corporate bond markets (see note from Mexico).

Equity markets, in particular, are good at promoting innovation-based growth. Going public can help reduce financial constraints by providing new and cheaper capital to fund investments (Kim and Weisbach (2008), Brav (2009)). Although the overall contribution of equity capital towards firms' day-to-day financing is small compared with credit, equity markets provide an important exit option and source of liquidity for entrepreneurs and early-stage investors.[23] Stock options also help firms with high growth potential attract knowledge-based employees.[24]

Statistical analysis finds an inverted U-shaped relationship between equity market size and per capita GDP growth (Graph 9.A and Annex B). However, unlike for private credit (Graph 3.A), EMEs are still very far from the estimated turning point, suggesting that further deepening of equity markets might be associated with stronger growth than any addition to credit.

That said, major leaps in market-based finance are likely to require the strengthening of relevant institutions (CGFS (2019)). The arm's length nature of market-based finance relies heavily on a supportive legal and regulatory environment, including greater judicial protection of property rights, more efficient litigation processes and greater respect and support for enforcing contracts (see eg La Porta et al (2008)). Their importance for efficient intermediation is confirmed by central banks (Annex A, Graph A.10).

Unfortunately, indicators of property rights and impartiality of EME legal systems have barely moved in two decades, leaving a significant gap with AEs (Annex A, Graph A.11). In some EMEs, improving securities market regulation could help deepen equity markets, given the strong correlation between the perceived strength of securities market regulation and market size (Graph 9.B). Regarding debt markets, inefficient insolvency regimes continue to hold back the size of corporate bond markets in some EMEs (Graph 9.C). In countries where insolvency regimes are efficient, such as Korea, Malaysia and Singapore, non-financial firms have significantly larger amounts of bonds outstanding compared with countries with lower recovery rates. Developing complementary markets, such as for hedging, can also support the resilience of debt markets when faced with shocks (Doornik et al (2024)).

[22] See the note from Hungary on the development of a covered bond market for mortgages.

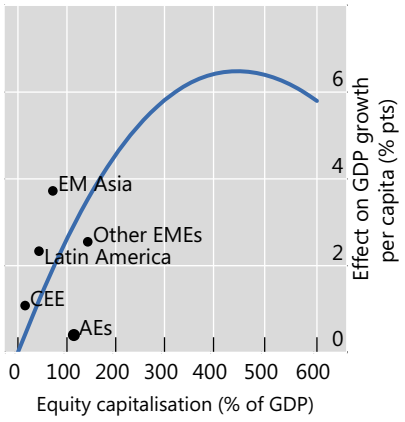
[23] For example, research finds that successful IPOs allow entrepreneurial human capital to be reallocated to new firms, leading to greater overall startup activity (Babina et al (2017)).

[24] Consistent with this, the literature on middle-income traps suggests that the development of equity markets can not only reduce the cost of finance but also improve the incentives to invest in skills (Agénor (2017)). Equity finance might also reduce the probability and intensity of financial crises compared with debt.

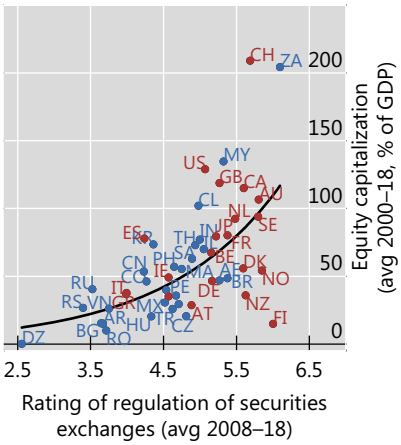
Scope for capital market development

Graph 9

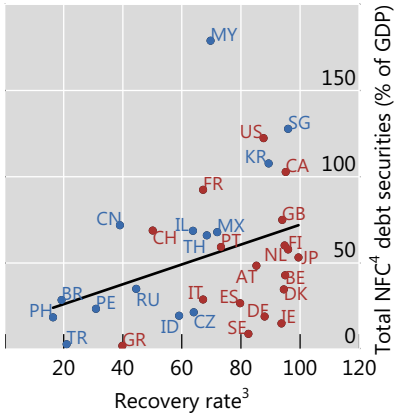
A. Size of equity markets and growth[1]



B. Strength of securities regulation and equity market size[2]



C. Bond market size and recovery rate[2]



[1] Based on a panel regression, regressing non-overlapping five-year averages of GDP growth per capita on the five-year averages of the ratio of credit to the private non-financial sector to GDP and its square, the ratio of equity market capitalisation to GDP and its square, trade openness (sum of imports and exports to GDP), government consumption to GDP and GDP deflator inflation. The lag level of real GDP per capita is also included. See Annex B for details. Points show simple averages by region of 2019 equity market capitalisation to GDP on the x-axis and fitted values for the latest available data on the y-axis. [2] Higher scores on horizontal axis indices indicate better ratings. [3] Recovery rate in cents of the dollar from the World Bank Doing Business database. Based on 2010–20 averages. [4] NFC = non-financial corporate. Based on 2010–20 averages.

Sources: IMF; Penn World Tables; World Bank; World Economic Forum, *The Global Competitiveness Index 2018 database*; BIS.

The lack of institutional strength may explain some failures of past efforts to expand market-based finance. Pyramid schemes in eastern Europe in the early 1990s, when equity markets were at their infancy, are probably the starkest illustration. But the country notes also mention more recent cases where financial scandals in selling capital market instruments to individuals jeopardised trust and hindered market development.

Improvements in legal and regulatory frameworks alone may not suffice. Efforts to mobilise savings towards market-based finance by developing the institutional investor base may also be needed (CGFS (2019)). In this regard, in some countries pandemic-related pension fund withdrawals have set back the deepening of the investor base (Annex A, Graphs A.3 and A.4; see the note from Chile). As mentioned in several country notes, obstacles for further development include high fees, fund distribution controlled by banks, retail investors with short horizons and low household wealth leading to a preference for bank deposits. Overcoming them will require additional policy efforts for fostering competition, financial literacy and consumer protection (see the note from Poland).

New digital technologies

Technological progress has substantially reduced the cost of gathering, storing, processing and distributing information, and it will continue to do so in the future, especially as a result of advances in artificial intelligence and quantum computing (eg

Goldfarb and Tucker (2019)). In the financial industry, this trend has initiated several profound changes.

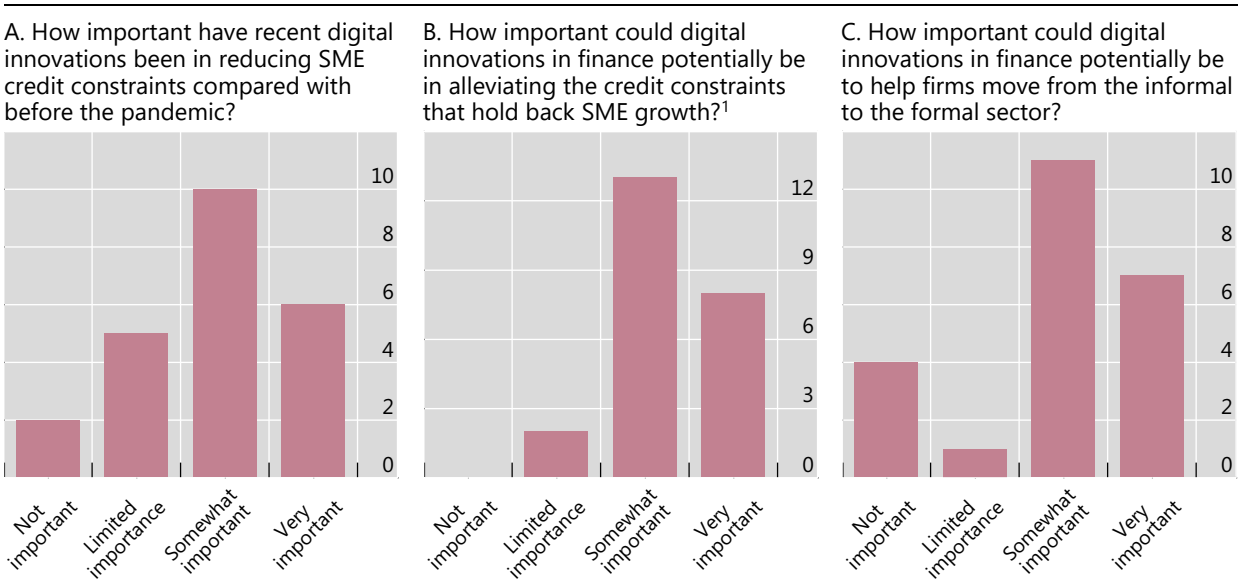
First, it has led to the establishment of new, cheaper and more convenient forms of payments. Mobile technology, in particular, allows users to store money and make payments through mobile phones, without relying on physical bank branches. This benefits especially poorer, rural populations and previously financially excluded households and firms (eg Alfonso et al (2020), Frost et al (2021), Demirgüç-Kunt et al (2022)).

Second, digital platforms (big techs) have started offering financial services alongside their main services, normally matching buyers and sellers of non-financial products (eg Alibaba, Amazon, Mercado Libre). These platforms enjoy significant economies of scale and scope. The more users they have, the bigger the benefits for others to join the platform. At the same time, they are able to gather and analyse vast amounts of data from users' activities to provide more personalised financial offerings (see eg BIS (2019)).

Third, new digital technologies can in principle improve credit risk assessment and reduce the need for collateral. E-commerce platforms, existing banks and more specialised fintech firms have started using these technologies to analyse data from online applications, digital payments and other sources. A potential benefit is that even unbanked individuals and informal firms can be screened based on their online activities (eg mobile payments, e-commerce and social media) (Frost et al (2019), Beck et al (2022)).

Central banks' views on digital innovation in finance

Number of central banks — Graph 10



[1] SME = Small and medium-sized enterprises.

Source: BIS survey responses.

These changes, and especially their implications for financial inclusion, are highlighted in several central bank notes and the BIS survey. For instance, the notes

from Hong Kong SAR and Thailand discuss how "alternative data" from utility bills, mobile phone bill records and spending behaviours on e-commerce platforms enable banks to better screen borrowers. In Thailand, such information has already helped firms and households access the formal financial system. Several notes describe how fintech firms have used new credit risk models to increase the sophistication and speed of providing credit.[25] In China and Thailand, fintech has helped micro and small enterprises gain access to credit. In the BIS survey, central banks mention that recent digital innovations have already helped to reduce small and medium-sized enterprise (SME) credit constraints compared with before the pandemic, and there is scope for further gains (Graphs 10.A and 10.B).[26]

That said, the adoption of technology is not without challenges. In Hong Kong SAR, pilot studies with new technology and data helped improve measures of SMEs' short-term credit risk. Yet, for longer-term predictions, some models did not perform better than a coin toss, even when allowing for retraining with additional data. In Korea, peer-to-peer loans are skewed towards household mortgages, while credit to firms has yet to benefit significantly. In Colombia, banks do not have systematically large exposures to high-growth firms. This suggests that even with technological advances, difficulties in identifying the best performers might persist.

The ongoing digital transformation will bring major benefits in terms of greater inclusion and lower informality, with large positive spillovers on aggregate growth. Better access to credit should strengthen resilience and capital deepening.[27] Moreover, the expected reduction in informality (Graph 10.C) should encourage firms to grow and achieve optimal scale (Aguilar et al (2024)). That said, not everyone agrees on the quantitative relevance of these effects. For example, Rodrik and Stiglitz (2024) argue that the bulk of informal enterprises are unlikely to ever become productive. In their view, the best option is to encourage the expansion of existing formal firms and increase productivity among the more dynamic informal firms.

The realisation of these benefits very much depends on policy intervention. The private sector generally has a stronger capacity for innovating and tailoring new technologies to meet the demands of end users. Yet, their incentives are not always aligned with social goals. Economies of scale and scope may lead – and in some economies have already led – to a small number of large financial providers, with adverse implications for financial stability, competition and, ultimately, further innovation. Traditional bank incumbents may also prevent the emergence of new more technologically advanced competitors. Additional risks concern the misuse of sensitive personal information and underinvestment in cyber security.

To protect the safety of payments and competitive practices, central banks and other public agencies have already taken several initiatives.

[25] As mentioned in some notes, fintech firms are already competing with incumbent banks or are at the forefront of managing customer relationships.

[26] Strides in financial inclusion are also taking place through the reorganisation of traditional business lines, as described in the country notes. For example, in the Philippines, money service businesses that intermediate remittances have partnered with banks, while pawn brokers have specialised in providing credit to SMEs. In Peru, microfinance, which initially filled the gap for lending to agriculture when state-backed lending declined, has since diversified into micro- and small-firm lending.

[27] See also Mehrotra and Yetman (2015) for evidence on how greater financial inclusion helps consumption smoothing.

First, several EMEs have established fast payment systems (FPS), which permit almost instant settlement of retail payments 24/7. They are normally based on open public infrastructure to ensure a level playing field among payment service providers (PSPs) and, to avoid boycott, are sometimes complemented by the legal requirement for large financial institutions to participate. They have also been designed to maximise ease of use (with multiple use cases). Because of the great convenience and low or no fees for users, several FPS have already been widely adopted (eg Pix in Brazil, the Unified Payments Interface (UPI) in India and PromptPay in Thailand; see also the note from Argentina).[28]

Second, many EMEs have imposed common standards to improve interoperability among different PSPs as an alternative or complement to public platforms. Common standards are also key to open banking. This is the sharing through application programming interfaces (APIs) of data by banks and non-banks with third parties (including individuals' and firms' personal and financial information, with their consent). In turn, these third parties can leverage the data to offer more specialised financial services (see, for example, notes from Israel, Philippines, Thailand and Saudi Arabia).[29] Common standards also facilitate the creation and maintenance of credit registries. As highlighted in some country notes, central banks have set up credit registries to help reduce information asymmetries.

Third, several EMEs are taking steps to adapt their financial stability, antitrust and privacy frameworks. For example, to address the increasingly blurred boundaries between banks, fintechs and big techs, China has brought all financial activities under financial supervision. Several country notes (eg Israel, Philippines, Thailand) stress the need to have a regulatory framework that facilitates not only the entry but also the monitoring and supervision of new players, including virtual banks and fintechs.

Macro-financial stability

Historically, financial development has been hindered by macro-financial instability. In particular, high and variable inflation and frequent defaults tend to coincide with a smaller financial sector, worse bank performance and lower average growth (see eg Choi et al (1996), Boyd et al (2001), Boyd and Champ (2006, 2009), Rousseau and Wachtel (2002)). As noted earlier, macro-financial stability has greatly improved since the early 2000s in most EMEs, allowing their financial systems to develop rapidly. This period was not without challenges though. EMEs had to the face large swings in capital flows and exchange rates and, more recently, a sharp tightening in global interest rates. Even in the face of these new challenges, they have proved remarkably resilient.

Undoubtedly, the improved performance of EMEs owes a lot to historically low global interest rates and the growth impetus of globalisation. Yet, better policy has also contributed. First, EMEs tightened banking regulation and supervision in the wake of crises in the 1980s and 1990s, which allowed many to go through the GFC

[28] Central bank digital currencies (CBDCs) can play a similar function as a common platform on which private providers can build customer-tailored services. So far, CBDCs are operational only in a handful of countries: The Bahamas, Eastern Caribbean, Jamaica and Nigeria (Alfonso et al (2022)).

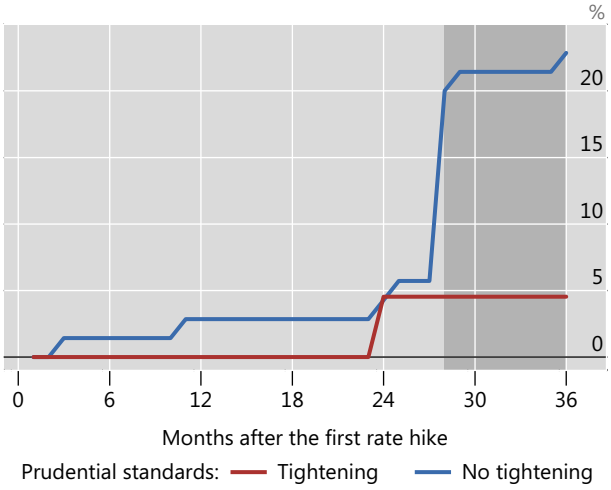
[29] India has established the legal framework for a class of regulated data fiduciaries, called account aggregators, which enable customer data to be shared within the regulated financial system with the customer's knowledge and consent.

unscathed. Second, central banks were granted greater autonomy as of the late 1990s and subsequently abandoned fixed exchange rates for inflation targeting as their nominal anchor. Third, they have kept improving their policy frameworks to deal with large swings in capital flows and exchange rates, increasing the use of foreign exchange (FX) intervention and macroprudential measures alongside interest rate policy (eg BIS (2022); see also the note from Indonesia).

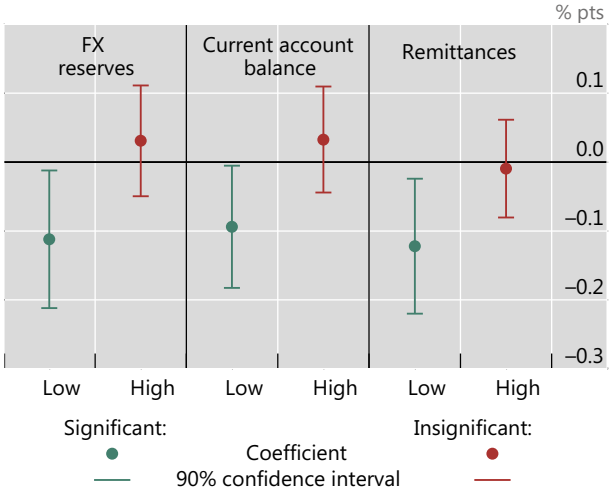
Stronger MFSFs make economies more resilient

Graph 11

A. Lower probability of financial stress during MP tightening[1]



B. Better fundamentals make EMDE growth less sensitive to the G7 financial cycle[2]



[1] Financial stress measured as the incidence of a banking crisis. Red line (blue line) shows the probability of financial stress during monetary policy tightening where prudential standards were also tightened (were not tightened) during the two years before the first policy rate hike. Based on 92 monetary tightening episodes. Shaded areas indicate that the difference in the probability of financial stress between prudential tightening and non-tightening is statistically significant at the 10% level. [2] The graph shows the coefficient on the sensitivity to the G7 financial cycle in a growth regression, for emerging market and developing economies with different levels of macro-financial buffers. See Annex E for details.

Sources: Boissay et al (2023); World Bank; BIS.

The effectiveness of macroprudential policy and accumulation of international reserves is well documented in the literature (as reviewed, for example, in BIS (2018)). Recent analyses provide additional support. For example, as shown in Graph 11.A, economies that had implemented macroprudential measures had a lower probability of financial distress during monetary tightening episodes compared with economies that had not implemented them beforehand (Boissay et al (2023)). The accumulation of larger FX reserves – along with other improvements in macroeconomic fundamentals – significantly reduces the sensitivity of long-term growth in emerging and developing economies to swings in the G7 financial cycle (Graph 11.B) (see also Banerjee and Mian (2023)).[30] Similarly, a more active use of macroprudential policy tends to be associated with a lower volatility of long-run growth, working partly

[30] The literature tends to consider two different notions of financial cycles. In terms of components, the domestic variant includes credit and property prices, whereas the global one includes financial asset prices and capital flows (see Aldasoro et al (2023)). The exercise in Graph 11.B uses an aggregation of the domestic financial cycles in G7 economies.

through the reduced incidence of low growth outcomes ("growth at risk") (Boar et al (2017) and Galán (2020)).

Going forward, EME policymakers might find it more challenging to maintain macro-financial stability, for at least three reasons. First, the external landscape is likely to be less benign. Due to geopolitical fragmentation and climate change, supply shocks may increase in frequency, intensity and persistence (see the note from Vietnam). Greater investment needs and higher debt may eventually put an end to the era of very low global interest rates (Benigno et al (2024)). Second, new players are entering the financial ecosystem. In particular, the share of NBFIs in total financial sector assets has already expanded rapidly in several EMEs (Annex A, Graph A.3). Technology is also shifting business away from traditional banking. Nonetheless, most macroprudential tools operate largely through banks. Finally, fiscal risks might become more prominent as population ageing and climate change put more pressures on fiscal resources. MFSFs need to be ready to meet these challenges.[31]

[31] For a discussion of how the fiscal policy pillar of MFSFs can be strengthened, see Borio et al (2023). For how EME banking systems could adapt to climate-related risks, see Mojon (2023).

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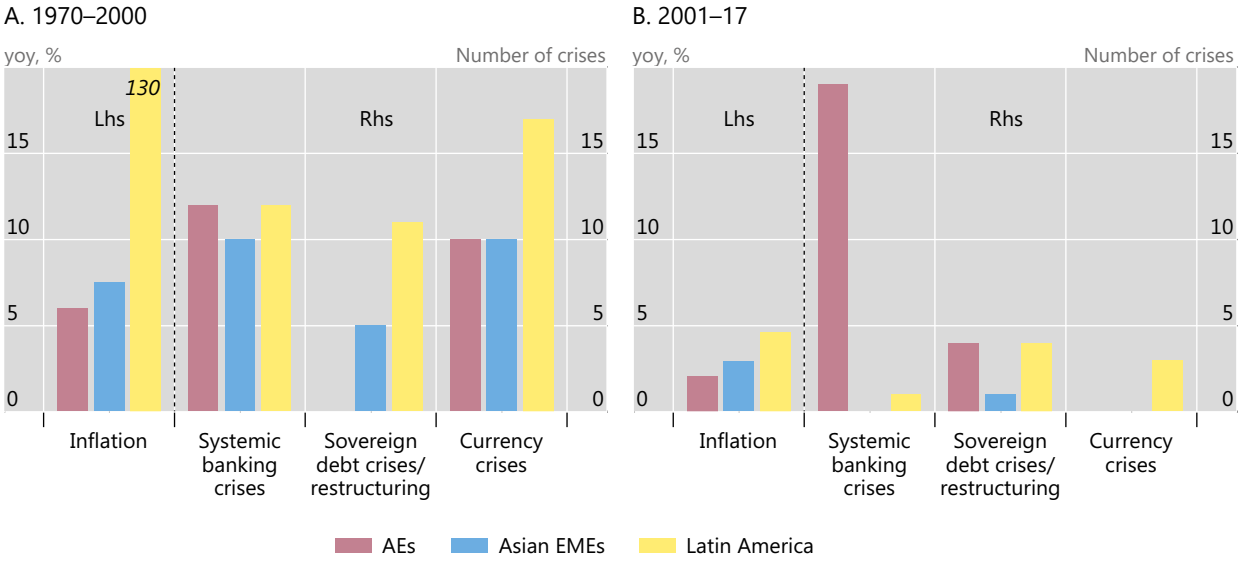
Annex A: Additional Graphs

Inflation and crises[1]

Graph A.1



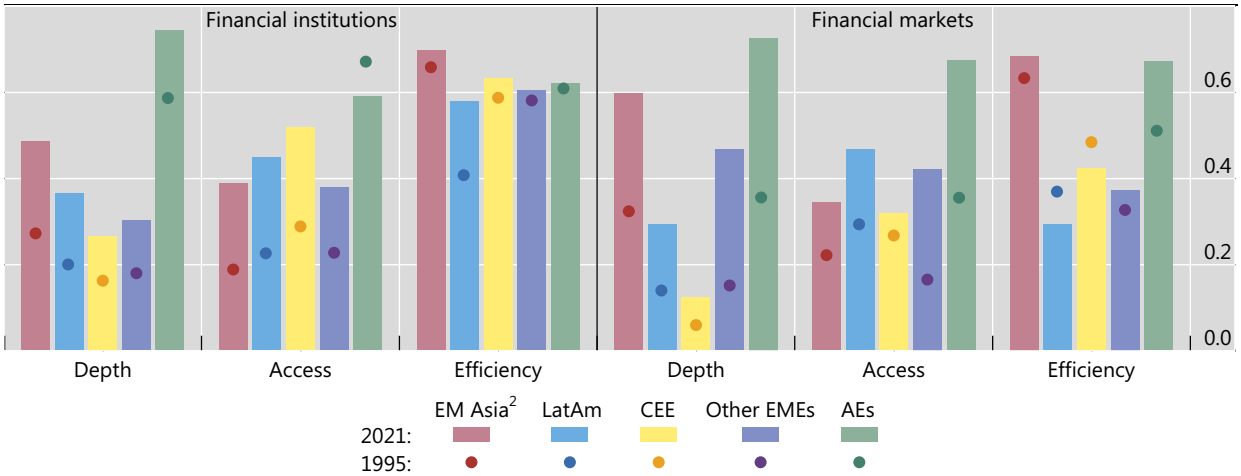
AEs = AU, CA, CH, DK, EA, GB, JP, NZ, NZ, SE and US; Asian EMEs = CN, HK, ID, IN, KR, MY, PH, SG, TH and VN; Latin America = AR, BR, CL, CO, MX and PE.

[1] Median annual inflation across countries within each region, simple average of medians for each period.

Sources: Laeven and Valencia (2020); national data; BIS.

Broader measures of financial development[1]

Index — Graph A.2



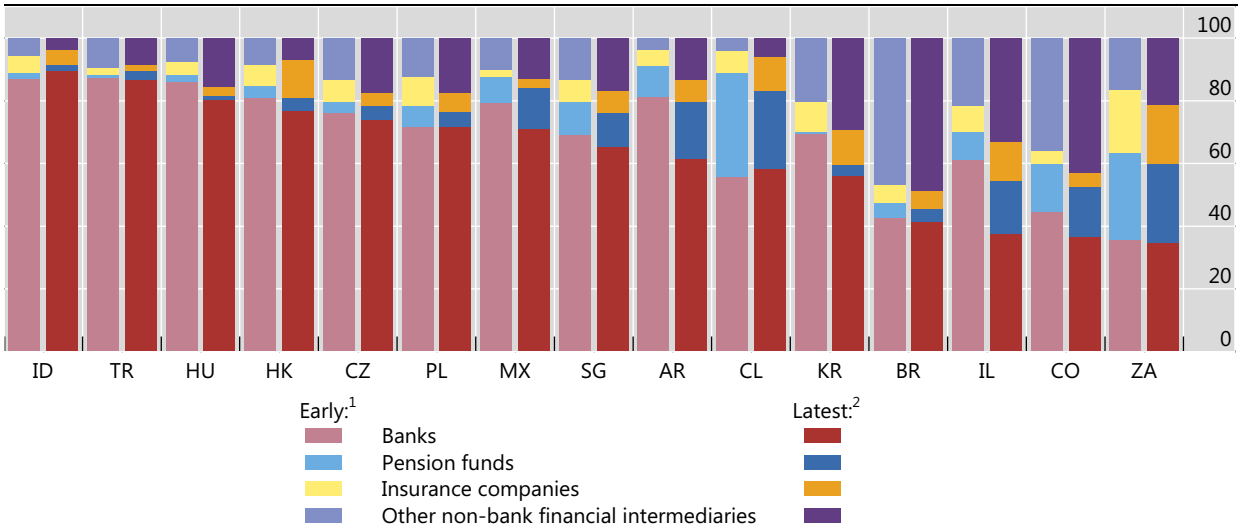
EM Asia= CN, ID, IN, KR, MY, PH, TH and VN; Latin America = AR, BR, CL, CO, MX and PE; CEE = CZ, HU and PL; Other EMEs = AE, DZ, IL, SA, TR and ZA; AEs = AT, AU, BE, CA, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, JP, LU, NL, NO, NZ, PT, SE and US.

[1] Data used to compile the subcomponents of the aggregate index: financial institutions' depth: private-sector credit to GDP; pension fund assets to GDP; mutual fund assets to GDP; insurance premiums, life and non-life to GDP. Financial institutions' access: bank branches per 100,000 adults; ATMs per 100,000 adults. Financial institutions' efficiency: net interest margin; lending-deposits spread; non-interest income to total income; overhead costs to total assets; return on assets; return on equity. Financial markets' depth: stock market capitalization to GDP; stocks traded to GDP; international debt securities of government to GDP; total debt securities of financial corporations to GDP; total debt securities of non-financial corporations to GDP. Financial markets' access: percent of market capitalization outside of top 10 largest companies; total number of issuers of debt (domestic and external, non-financial and financial corporations). Financial markets' efficiency: stock market turnover ratio (stocks traded to capitalization). See K Svirydzenka (2016). [2] Excluding HK and SG.

Source: IMF, *Financial Development Index Database*.

Several EMEs financial systems continue to be dominated by banks

As percentage of total financial system assets — Graph A.3



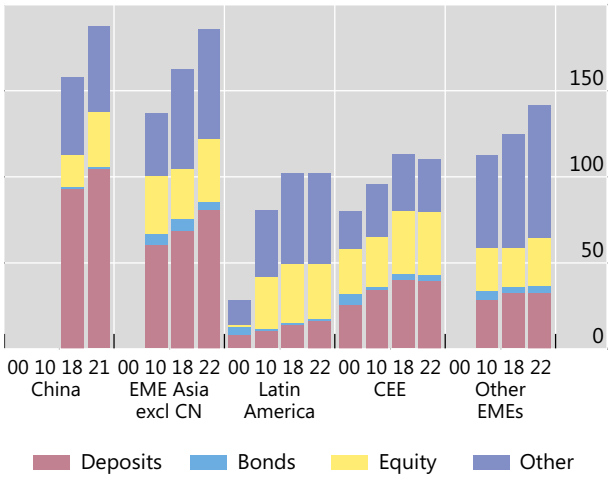
[1] For AR, CL and HU, figures for 2000; for IL, 2001; for PL, 2003; for CZ, 2004; for CO and HK, 2007, for KR, 2008; for MX, TR and ZA, 2010; for BR, ID and SG, 2018. [2] Figures for 2022 but, for IL 2021 and for CZ, June 2023.

Source: BIS survey responses.

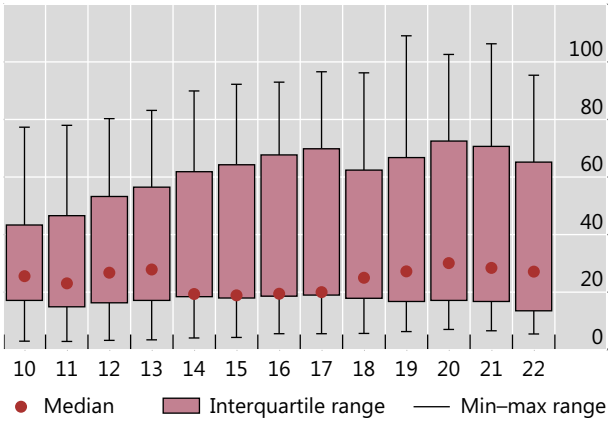
Allocation of domestic savings

As a percentage of GDP — Graph A.4

A. Households' assets[1]



B. Pension funds and insurance company assets[2]

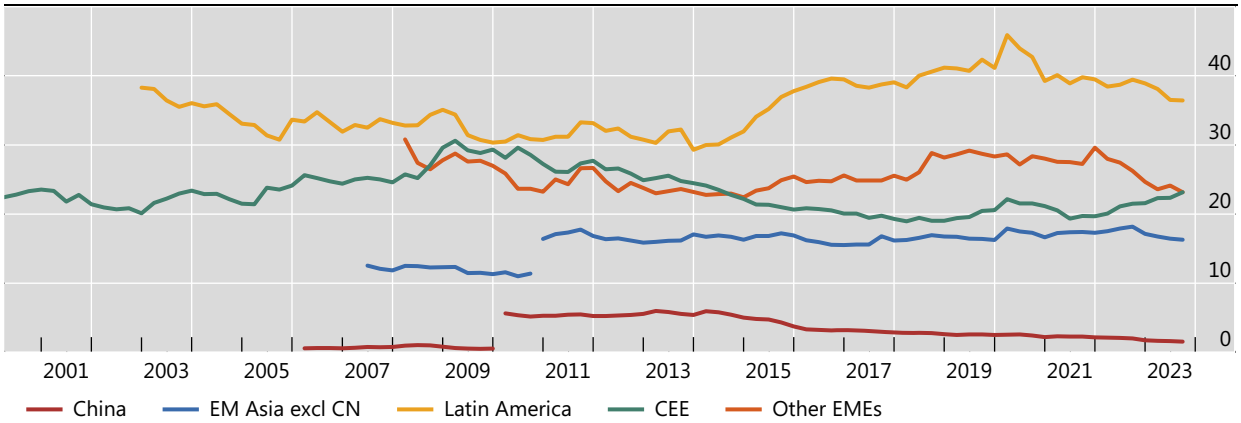


[1] Sum across countries in the region. EME Asia excl CN = KR and MY; Latin America = CL, CO and MX; CEE = CZ, HU and PL; Other EMEs = IL, TR and ZA. For Latin America data for 2000 corresponds only to CO. For IL, data for 2022 corresponds to 2021. [2] Statistics across 10 EMEs upon data availability.

Sources: national data; BIS survey responses.

Foreign currency debt of non-financial corporates in EMEs[1]

As a percentage of total debt of NFCs — Graph A.5



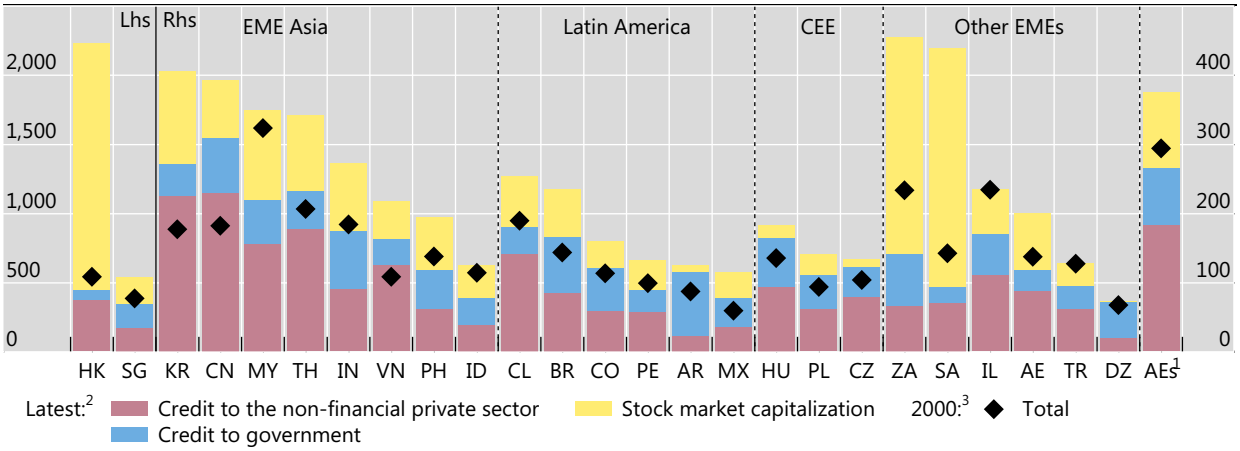
EM Asia excl CN = CN, ID, IN, KR, MY and TH; Latin America = AR, BR, CL, CO and MX; CEE = CZ, HU and PL; Other EMEs = SA, TR and ZA.

[1] Simple average across countries in the region. Total debt of non-financial corporates is based on national financial balance sheet accounts for those countries that compile these data. For others (ID, IN, MY, SA, TH and ZA), the BIS's estimates sum cross-border and domestic bank credit, and do not capture non-bank creditors' holdings of debt securities; for CN, credit from non-banks is also included.

Sources: Dealogic; Euroclear; LSEG; Xtrakter Ltd; national data; BIS locational banking statistics by residence; BIS credit to the non-financial sector statistics; BIS.

Financial structure

As a percentage of GDP — Graph A.6



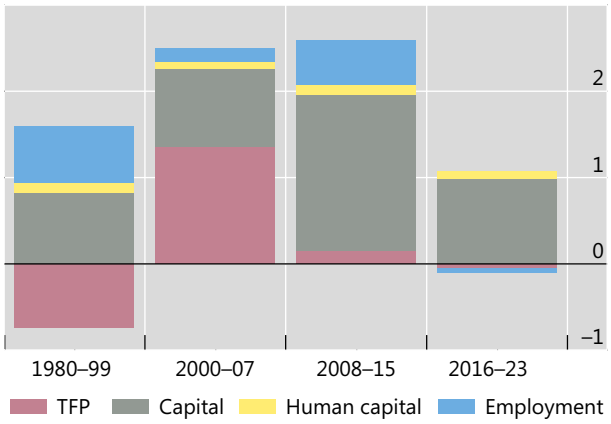
[1] Simple average across 22 AEs upon data availability. [2] For credit to the non-financial private sector and total credit to government at nominal value, latest figure correspond to last available quarter in 2023. For AE, DZ, PH, PE and VN data corresponds to general government debt (central government for PE) and private debt (loans and debt securities) for 2022. For stock market capitalization, data are as of 2020, except for AR, 2019 and for DZ, 2018. [3] Figures for ID and TR as of 2001; for HU, as of 2002; for CN, as of 2003; for CO, as of 2005; for AE as of 2007; for CL and VN, as of 2008; and for SA, as of 2009.

Sources: Mbaye et al (2018); World Bank; national data; BIS.

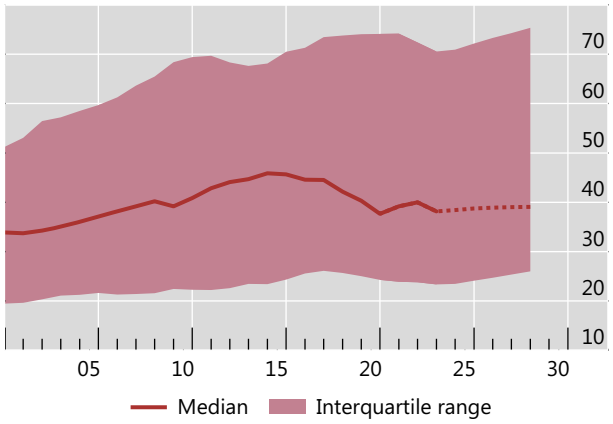
EME growth slows

In per cent — Graph A.7

A. Falling contribution of TFP and labour to growth[1]



B. Levels of GDP per capita relative to AEs[2]



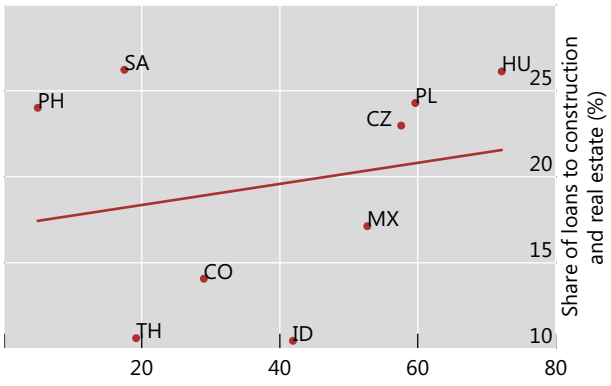
[1] Contributions to EME growth convergence relative to average AE growth. [2] Statistics across 25 EMEs ratios to that of regional aggregate for seven AEs. Based on purchasing power parity 2017 international dollar. Dashed line corresponds to forecasts.

Sources: Conference Board; IMF; World Bank.

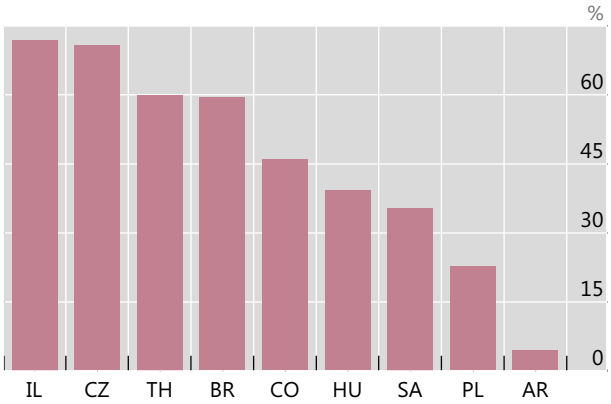
Collateral use in lending

Graph A.8

A. Bank loans to households backed by collateral and loans to construction and real estate[1]



B. Share of bank loans to non-financial corporations backed by collateral



[1] Simple average from 2000-23 upon data availability for both variables.

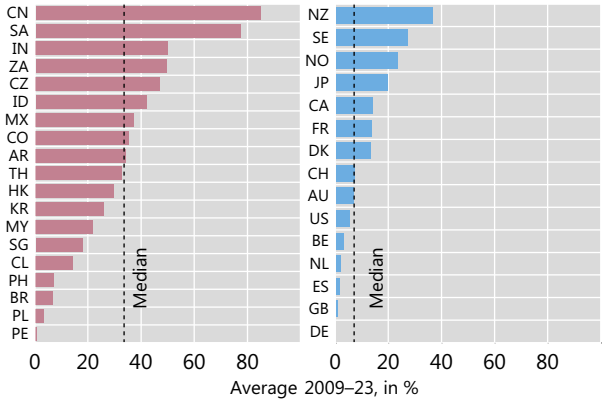
Sources: Müller and Verner (2023); BIS survey responses.

Comparing debt securities markets in EMEs and AEs

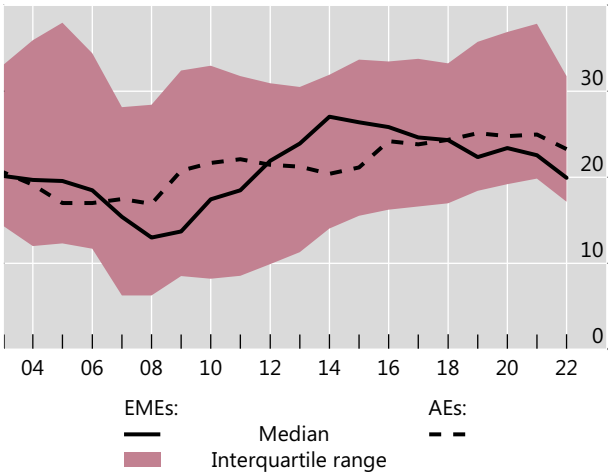
In per cent

Graph A.9

A. Share of bonds outstanding issued by state-owned enterprises[1]



B. EME debt securities relative to bank credit[2]

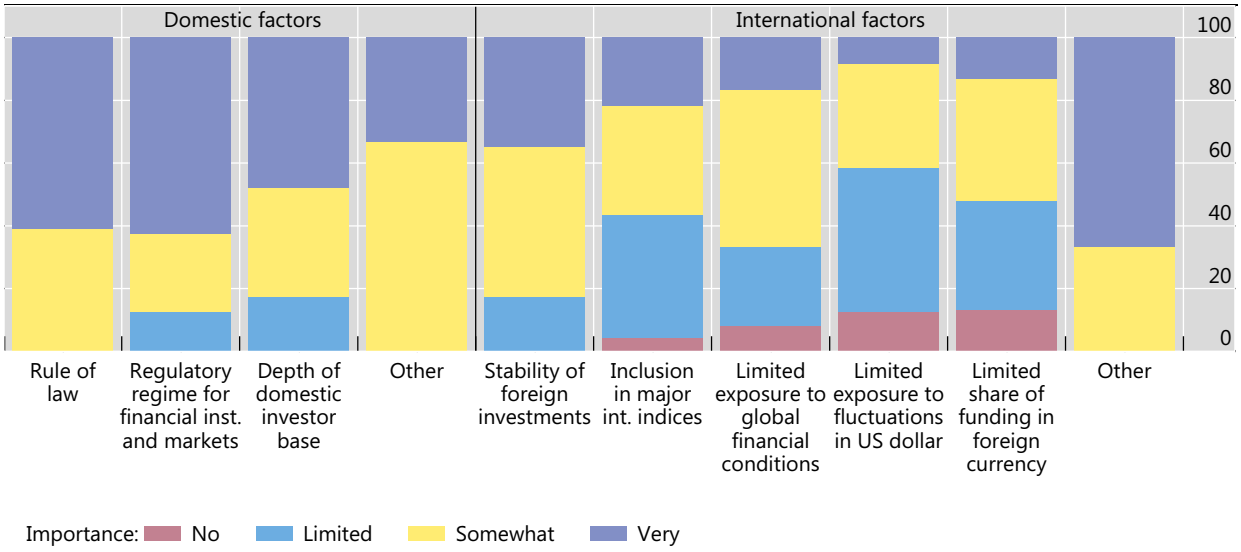


[1] Domestic issuance by nationality. "State-owned" defined as government majority-owned enterprises. [2] Market capitalisation excluding top 10 companies to total market capitalization in per cent.

Sources: World Bank; Dealogic; BIS debt securities statistics.

Factors facilitating the allocation of capital for growth

As percentage of respondents — Graph A.10

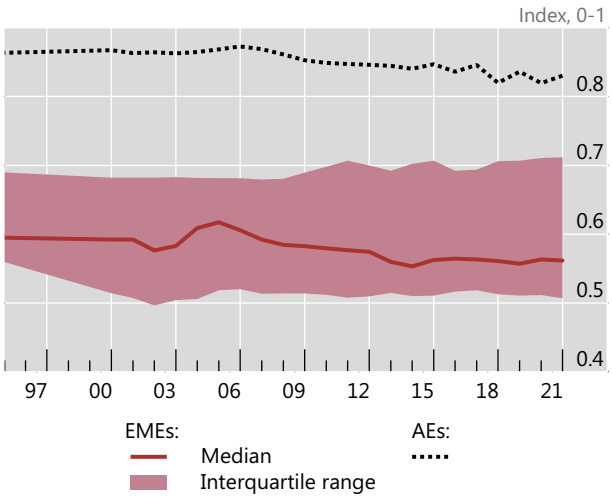


Source: BIS survey responses.

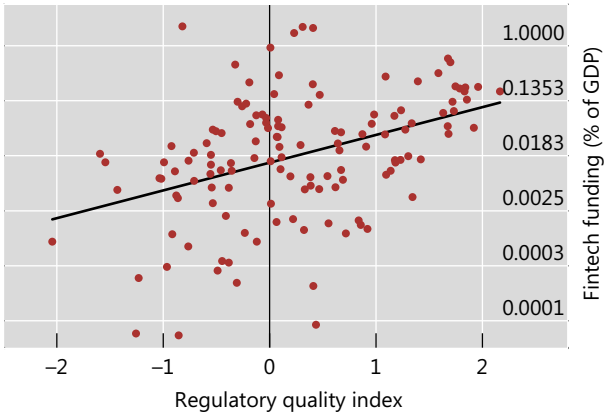
Scope to enhance institutions for growth and finance

Graph A.11

A. Limited change in EME legal systems[1]



B. Fintech funding increases with higher regulatory quality[2]



[1] Legal system and property rights, no gender adjustment. Statistics across 17 AEs and 25 EMEs. [2] Each dot corresponds to a country average over 2010–22 for 132 countries. Fintech funding to GDP is winsorised at the 1st and 99th percentiles. Fintech funding relative to GDP is shown on a logarithmic scale. Regulatory Quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. It gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

Sources: Fraser Institute; IMF; World Bank; PitchBook Data Inc.

Annex B: The inverted U-shaped relationship between finance and growth

Many studies show that financial depth plays a positive role in promoting economic growth (see Levine (2005), (2021) for surveys). Deeper financial systems can be better at allocating capital, monitoring investments, sharing risk and facilitating trade.

However, a number of studies find that at some point financial depth may weigh on growth. These studies specifically find that too much credit can be a drag on growth (eg Arcand et al (2015), Cecchetti and Kharroubi (2012), Mian et al (2021)).

A number of factors could be at play. Too large a financial system may compete for highly skilled works diverting them from more productive sectors. Credit that grows too fast increases the risk of financial crises. Large debt service burdens may weaken demand, which then weighs on growth in the long run.

To assess the relationship between finance and growth, we consider the following specification, which closely follows Cecchetti and Kharroubi (2012):

$$\Delta y_{c,t+5,t} = \alpha + \beta_1 \left(\frac{Credit}{GDP}\right)_{c,t+5,t} + \beta_2 \left(\frac{Credit}{GDP}\right)^2_{c,t+5,t} + \beta_3 \left(\frac{Equity}{GDP}\right)_{c,t+5,t} + \beta_4 \left(\frac{Equity}{GDP}\right)^2_{c,t+5,t} + \gamma X_{c,t+5,t} + \theta M_t + \varepsilon_{c,t}$$

where $\Delta y_{c,t+5,t}$ is the growth rate of GDP per worker between year t and $t + 5$ in country c. Financial depth is measured by two variables: first, total credit to the private non-financial sector (private credit in short) and, second, equity market capitalisation. Both variables are averaged between year t and $t + 5$ in country c and scaled by GDP. The squared terms for credit and equity market size are meant to capture any non-linearities in the relationship with these variables. X is a vector of control variables averaged between year t and $t + 5$ in country c: government consumption to GDP; inflation; and trade openness. M represents control variables at the beginning of the period that capture convergence forces: log level of per capita GDP; and the size of the capital stock or level of TFP. The estimation is based on an unbalanced sample of 59 countries between 1975 and 2020. Each observation is a non-overlapping five-year window.

The estimation results indicate the existence of an inverted U-shaped relationship between private credit to GDP and growth. Consistent with the positive benefits of financial depth, at moderate levels of credit an additional unit of credit is associated with stronger growth in GDP per worker (Table B.1, column (1)). However, the negative coefficient on the square of credit to GDP shows that at some point, more credit starts to detract from growth. The estimates suggest that private credit to the private sector starts to exert a negative effect on growth when it reaches around 130% of GDP.

Greater equity market depth does not appear to be a drag on growth at present. Although equity market size also displays an inverted U-shaped relationship, with a positive coefficient on equity market capitalisation and a negative coefficient on its square in column (2), the turning point is much higher, at just under 500% of GDP. All EMEs, apart from financial centres, have far smaller equity market capitalisations. Column (3) shows that these results do not change when including both credit and equity in the same regression.

The relationship between finance and growth

Table B.1

	GDP-per-worker growth[1]			
	(1)	(2)	(3)	(4)
Credit/GDP[1]	0.0815**		0.0483*	0.0508*
	(0.0251)		(0.0238)	(0.0252)
Credit/GDP squared[1]	-0.0310***		-0.0192**	-0.0193**
	(0.0079)		(0.0077)	(0.0082)
Equity mkt cap/GDP[1]		0.0338***	0.0290***	0.0272***
		(0.0039)	(0.0043)	(0.0048)
Equity mkt cap/GDP squared[1]		-0.0037***	-0.0029***	-0.0028**
		(0.0003)	(0.0003)	(0.0004)
Log real GDP per worker[2]	-0.0208*	-0.0212***	-0.0229**	-0.0236**
	(0.0077)	(0.0060)	(0.0076)	(0.0077)
Government consumption/GDP[1]	-0.0011	-0.0007	-0.0008	-0.0008
	(0.0006)	(0.0005)	(0.0006)	(0.0006)
Inflation[1]	0.0016*	0.0015*	0.0017*	0.0018*
	(0.0009)	(0.0007)	(0.0008)	(0.0008)
Trade openness[1]	0.0261***	0.0244**	0.0233**	0.0237**
	(0.0051)	(0.0073)	(0.0070)	(0.0072)
Financial crisis[3]				-0.0308***
				(0.0087)
R-squared	0.158	0.169	0.181	0.186
Observations	187	187	187	187

[1] Non-overlapping five-year average. [2] Start of period level. [3] At least one financial crisis within the five-year window.

Driscoll-Kraay standard errors in parenthesis. *, **, *** denote significance at the 10%, 5% and 1%, respectively. Similar results obtained with country and country-year fixed effects.

Financial crises detract from growth, but they do not fully explain the U-shaped relationship between credit and growth. Column (4) includes a dummy variable indicating whether there was a crisis within the five-year window. The negative coefficient suggests that a financial crisis reduces annual GDP growth by around 3 percentage points on average. However, the point estimates on credit and equity to GDP and their squares remain broadly unchanged.

Annex C: Credit expansions and medium-run growth

To examine the effect of credit expansions on medium-run growth, a panel regression similar to Mian et al (2017) is estimated:

$$\Delta_3 y_{it+3} = \alpha_i + \beta_{hh}\Delta_3 HH\_debt_{it-1} + \beta_{nfc}\Delta_3 NFC\_debt_{it-1} + \beta_{gov}\Delta_3 Gov\_debt_{it-1} + \gamma X'_{i,t-1} + \varepsilon_{i,t}$$

In the equation above, $\Delta_3 y_{it+3}$ denotes the change in log real GDP from year t to $t + 3$. $\Delta_3 HH\_debt_{it-1}$, $\Delta_3 NFC\_debt_{it-1}$ and $\Delta_3 Gov\_debt_{it-1}$ are the changes in household, non-financial corporate and government debt ratios, respectively, from four years ago to last year.[1] The vector $X'_{i,t-1}$ includes three lags of the dependent variable as additional control variables. α_i are country fixed effects.

The equation is estimated with annual data for 78 AEs and emerging market and developing economies (EMDEs) for an unbalanced panel. The sample runs from 1964 to 2019, depending on data availability. For several EMDEs, the series are much shorter.

The results suggest that household debt expansions are associated with lower real GDP growth in the medium term (Table C.1). In particular, when the debt ratios of all three sectors are included (columns (4) and (5)), only the coefficient on household debt remains statistically significant at conventional levels. While corporate debt is statistically significant when included on its own or together with household debt (columns (2) and (3)), this result is not robust to including additional controls. The coefficient estimate on household debt implies that a one standard deviation increase (6.5 percentage points over three years) in household indebtedness is associated with a 1.4 percentage point decline in real GDP growth over the next three years.

Taken together, these results – especially the role of household debt in dampening medium-run growth – are similar to Mian et al (2017). However, they are obtained here using a larger sample of economies.

Debt expansion and medium-term growth — Table C.1

	(1)	(2)	(3)	(4)	(5)
Δ_3 Household debt (t - 1)	-0.213**		-0.198**	-0.211**	-0.221***
	(0.082)		(0.081)	(0.081)	(0.081)
Δ_3 Corporate debt (t - 1)		-0.035**	-0.016*	-0.011	-0.011
		(0.014)	(0.008)	(0.008)	(0.007)
Δ_3 Government debt (t - 1)				-0.027	-0.019
				(0.030)	(0.036)
Distributed lag in Δy	No	No	No	No	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.237	0.220	0.239	0.225	0.228
Observations	1,859	1,857	1,854	1,723	1,706

Robust standard errors clustered by country and year in parentheses. *, **, *** denote significance at the 10%, 5% and 1%, respectively.

[1] Household and non-financial corporate debt includes both loans and debt securities. Government debt refers to only central government debt due to data availability. For the part of the sample where both series are available, the correlation between central and general government debt is high, at 0.93.

Annex D: Influence of credit on misallocation within sectors

The dispersion of revenue-based total factor productivity across firms is a key measure of resource misallocation (see Hsieh and Klenow (2009)). If this productivity differs between two firms, then transferring one unit of capital or labour from the lower-productivity firm to the higher-productivity firm would increase aggregate output without using additional resources.[2] Dispersion in the level of revenue-based total factor productivity across firms captures misallocation because it shows that there are gains from transferring capital or labour until productivity of the two firms are equalised.

Due to potential differences in sectoral demands, researchers typically use the dispersion of within-sector revenue-based total factor productivity as a cleaner measure of misallocation. This helps to avoid conflating misallocation with shifts in demand towards lower-productivity sectors. While this measure is a useful guide to misallocation, it is not perfect. It fails to capture increases in the size of more productive firms that would increase aggregate productivity of the sector, even if the dispersion of productivity increases. Misallocation will also be mismeasured if firms face different cost and demand conditions (Haltiwanger et al (2018)).

To measure within-sector productivity dispersion, we estimate firm-level revenue-based total factor productivity in a sample of 629,247 firm-year observations in 15 sectors across 55 countries. Due to data availability, firm-level productivity is estimated between 2005 and 2021.

The estimates of firm-level productivity show rising dispersion of within-sector productivity in EMEs. Notably the increase in within-sector dispersion for sectors at the 75th percentile has been larger in EMEs than in AEs since 2005 (Graph 6.A). This suggests that the misallocation of capital and labour may have increased.

Credit may lead to capital and/or labour misallocation. Gopinath et al (2017) find that credit frictions in southern Europe resulted in capital misallocation. This was because, as interest rates declined, larger low-productivity firms were able to borrow and invest, while credit frictions constrained the expansion of small higher-productivity firms.

To test the potential influence of credit on misallocation, we consider the following regression specification:

$$\begin{aligned} Standard\ deviation\ of\ within\ sector\ productivity_{cst} \\ = \beta_1 \Delta \frac{Credit}{GDP}_{ct} + \beta_2 \Delta \frac{Sector\ Credit}{GDP}_{cst} \\ + \beta_3 Standard\ deviation \left(\Delta \frac{Sector\ Credit}{GDP}_{cst} \right)_{ct} \\ + \gamma X_{cst} + \mu_c + \delta_s + \varepsilon_{cst} \end{aligned}$$

where the standard deviation of within-sector productivity in country *c*, sector *s* and year *t* is based on firm-level productivity estimates following Kharroubi et al (2023a). To test the potential influence on credit, we consider three variables. The first is the annual change in credit to the private non-financial sector as a share of GDP in country *c* and year *t*. This captures aggregate credit conditions. The second variable is the annual change in credit to the specific sector as share of GDP. Finally, the third variable is the standard deviation of the annual change in sectoral credit to GDP

[2] As Hsieh and Klenow (2009) show, revenue-based total factor productivity is proportional to the geometric average of the marginal revenue products of capital and labour.

within a country in a given year. This captures the heterogeneity of sectoral credit growth in a country, ie if one or a few sectors are experiencing stronger credit growth than others.

The regression also includes a number of control variables, drawing on Kharroubi et al (2023). The level of the aggregate credit-to-GDP ratio, and the level of sectoral credit to GDP help to distinguish credit expansions from the level of credit relative to output. Government consumption to GDP captures the possibility that, as credit booms increase tax revenues, the size of the government sector – which generally features lower productivity growth – rises. The level of inflation controls for inflation-induced misallocation, given that higher inflation increases the noise that agents receive about relative prices. Trade openness captures productivity changes across sectors that result when those with comparative advantage benefit from trade-driven reallocations. Finally, a dummy variable for financial crises controls for misallocation driven by financial stress.

The results show that credit matters for misallocation (Table D.1). In particular, column (4) shows that sectors with particularly strong credit growth experience misallocation. In addition, greater dispersion of credit growth across sectors within a country is associated with greater capital misallocation. That is, periods when credit growth is particularly rapid in some sectors but less so in others are times when misallocation rises.

Dispersion in credit growth across sectors associated with resource misallocation — Table D.1

	(1)	(2)	(3)	(4)	(5)
Δ Total NFC credit/GDP	0.0971			–0.0852	–0.1178
	(0.1663)			(0.0999)	(0.1214)
Δ Sector credit/GDP		0.9111**		1.205***	1.838***
		(0.3912)		(0.3199)	(0.4972)
Standard deviation of Δ Sector credit/GDP in a country			3.239***	3.260***	2.052
			(1.026)	(1.034)	(1.188)
Additional controls	Yes	Yes	Yes	Yes	Yes
Fixed effects	Country, sector	Country, sector	Country, sector	Country, sector	Country, sector
Sample	All countries	All countries	All countries	All countries	EMEs only
R-squared	0.0033	0.0059	0.0066	0.0068	0.0094
Observations	3,783	3,783	3,783	3,783	2,122

Driscoll-Kraay standard errors in parenthesis. *, **, *** denote significance at the 10%, 5% and 1% respectively. Similar results obtained with country-sector-year as well as only country and no fixed effects.

The economic effect of credit on misallocation is relatively modest (Graph 6.B). For example, a two standard deviation in the dispersion of credit growth across sectors is associated with an increase in within-sector productivity dispersion of around 10%. Overall, the analysis suggests that while credit may influence misallocation, many other factors are also likely to be relevant.

Annex E: Long-run growth in EMDEs and the G7 financial cycle

To evaluate how the sensitivity of domestic GDP growth to the G7 financial cycle (G7FC) affects long-run growth in emerging market and developing economies (EMDEs) (Graph 11.B), an analysis similar to Banerjee and Mian (2023) is undertaken.

In the first step, the sensitivity of domestic growth to the G7FC is estimated. For each of the G7 economies, the domestic financial cycle is obtained as the medium-term cycle in real credit, the credit-to-GDP ratio and real house prices, using a band-pass filter. To obtain a proxy for G7FC, a simple average is taken across the G7 domestic financial cycles. Then the sensitivity of EMDEs' GDP growth to the G7FC is obtained by regressing, for each EMDE, domestic real GDP growth on the G7FC, the latter expressed in first difference form. From this simple bivariate regression, the coefficient on ΔG7FC is taken as a measure of the sensitivity of domestic growth to the G7 financial cycle.

In the second step, the analysis uses the sensitivities to G7FC, obtained from the first step, in a growth regression. The following model is estimated for a cross-section of EMDEs:

$$\Delta y_i^{ave} = \alpha + \beta G7FC_i^{sens} + \gamma X'_i + u_i$$

where Δy_i^{ave} is the average GDP growth per capita over the sample for economy i, and $G7FC_i^{sens}$ is the sensitivity to the G7FC for economy i (as estimated in the first-step regression). X contains as control variables the starting level of GDP per capita, to capture convergence, as well as the average investment-to-GDP ratio. The analysis uses data for 126 EMDEs for 1995–2022 or as available.

Graph 11.B shows the results for EMDEs with different degrees of macro-financial fundamentals. In particular, it shows the coefficient on the sensitivity to the G7FC for different groups of EMDEs: those below/above the EMDE median in terms of FX reserves, the current account balance and remittance inflows, all expressed as average ratios to GDP over the sample.

The results suggest that long-run growth in EMDEs with lower buffers has been somewhat dampened by the vagaries of global finance. In particular, Graph 11.B shows that the sensitivity to the G7FC enters the growth regression in a negative and statistically significant way only for EMDEs with lower buffers (green lines). As an example of the magnitude, in the group of EMDEs with lower FX reserves, a one standard deviation increase in the sensitivity to the G7FC is associated with around 0.5 percentage points lower growth in the long run. As a caveat, the result is only weakly statistically significant. For EMDEs with larger buffers, there is no statistically significant association between sensitivity to the G7FC and long-run growth (red lines in Graph 11.B).