

Bank funding: evolution, stability and the role of foreign offices¹

The Covid-19 pandemic and the war in Ukraine have furthered a sustained retreat from global banking. The funding sources of local banking systems have shifted from cross-border to local and, within cross-border, from inter-office to unrelated sources. An increased share from local sources could improve the stability of funding, but greater cross-border funding from unrelated sources could be detrimental, as it is more sensitive to global shocks than is inter-office funding. The shift in the funding mix reflects salient differences between the funding models of domestic banking offices, which have been gaining in importance, and foreign banking offices – ie subsidiaries and branches with foreign parents. Furthermore, as individual foreign bank affiliates have withdrawn, the effect has been to increase the nationality concentration in local banking systems, which historically has correlated with higher funding volatility.

JEL classification: F34, G15, G21.

The Covid-19 pandemic and the war in Ukraine have given further impetus to a generalised retreat from global banking that began in the aftermath of the Great Financial Crisis (GFC). A retrenchment of foreign bank offices (FBOs) – subsidiaries or branches whose parent is in another country – changes the structure of a local banking system, not least because their funding models differ from those of domestic bank offices (DBOs). In this article, we document changes in the funding sources of local banking systems, trace the effects to the relative evolution of FBOs and DBOs and draw implications for funding stability.

Our analysis uses the BIS international banking statistics. We define a local banking system to comprise all banks located within a given jurisdiction (Graph 1). Thus, such a system includes both FBOs (eg French banks operating in Brazil) and DBOs (eg Brazilian banks operating in Brazil). We group bank funding sources into three broad categories: local funding (from residents), cross-border inter-office funding (from related banks), and other cross-border funding (from unrelated sources, eg banks, non-bank financial entities or non-financial corporates). We cannot include in most of the analysis countries that do not report local positions in the BIS international banking statistics, such as China and the United States.²

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² We also exclude offshore financial centres (OFCs), where positions are largely unconnected with the jurisdiction's funding needs.

Key takeaways

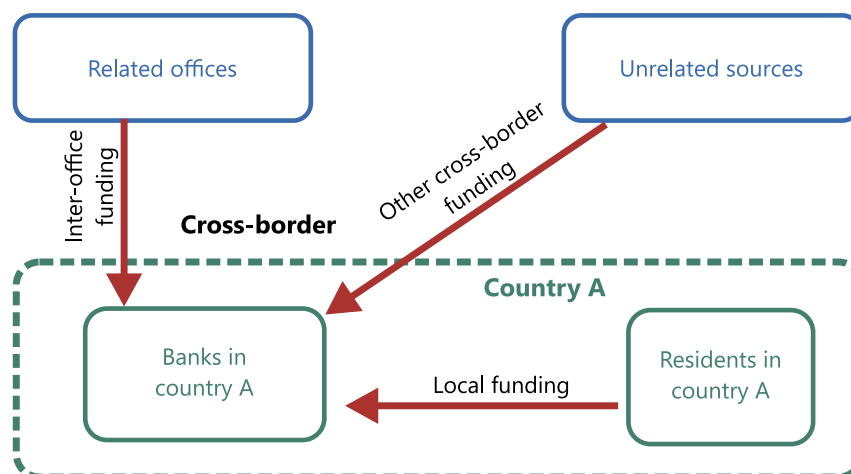
- Bank funding sources have been shifting: from cross-border to local funding, which enhances stability, and, within cross-border funding, from inter-office to unrelated sources, increasing volatility.
- Shifts in the funding mix of local banking systems stem from the declining share of foreign banking offices, which rely more heavily than domestic offices on cross-border and inter-office funding.
- The retreat of foreign banking offices has increased the concentration of nationalities in local banking systems, which is associated with heightened funding volatility.

There are four key findings. First, the mix of local banking systems' funding sources has been shifting in recent years, from cross-border to local and, within cross-border, from inter-office (ie from related banks) to unrelated sources. Second, this shift has implications for funding stability, as local funding is typically more stable, but unrelated cross-border funding is more sensitive to international shocks than is inter-office funding. In particular, we show that inter-office funding was the more resilient part of cross-border funding during the GFC and in the face of fluctuations in global financial conditions. Third, the shift in funding mix over the past five years is driven primarily by a relative retreat of FBOs, which rely more than DBOs do on funding from cross-border sources. This is consistent with a generalised retreat from global banking business models, as banking groups have started operating more out of their home offices rather than via their foreign affiliates. Fourth, the retreat of individual foreign offices drives an increasing concentration of FBO nationalities in local banking systems, which has historically been connected with more volatility in cross-border funding.

This article builds on two strands of international banking research. The first is the literature on the stability of foreign bank funding and lending (eg Claessens and van Horen (2013), McGuire and von Peter (2016)). We contribute to it by highlighting the importance of inter-office flows for cross-border funding stability and studying sensitivities to global shocks across cross-border funding sources. The second is the literature on banks' international business models (eg Cetorelli and Goldberg (2012), CGFS (2010), McCauley et al (2010)). We bring aspects of these studies up to date by

Bank funding sources

Graph 1



showing how the funding profiles and the relative size of FBOs and DBOs have evolved in recent years.

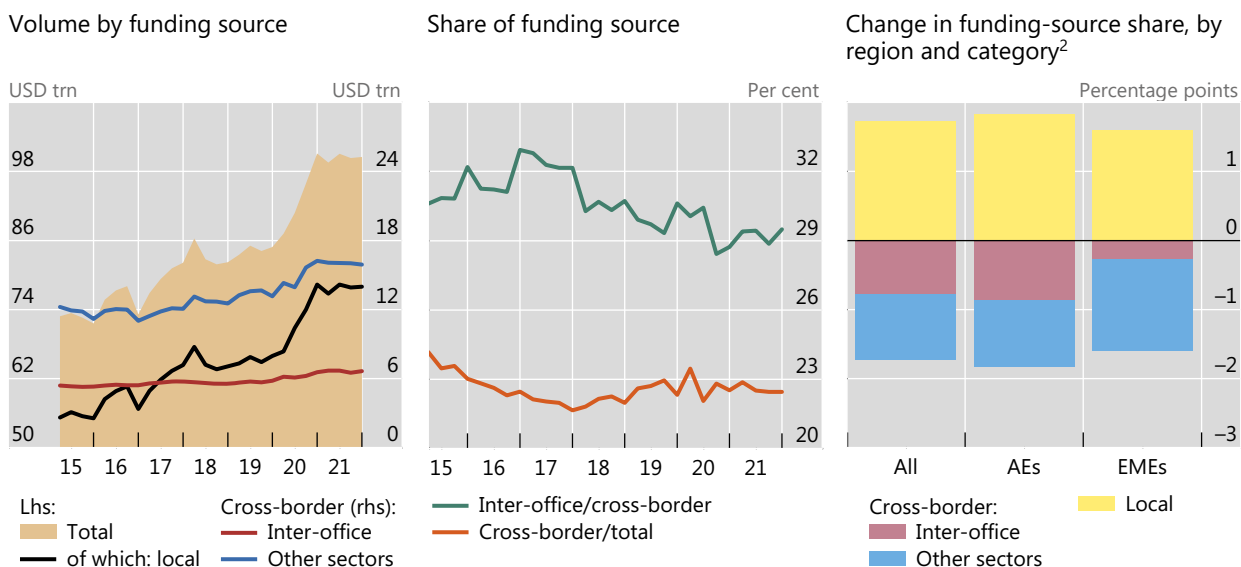
The rest of the article is organised as follows. The first section documents changes to banks' funding mix and sets out the implications for funding stability. The second section looks under the hood, showing that these trends are driven by the evolution of FBOs and DBOs and their differences in terms of funding models. The third section documents an increase in FBO nationality concentration, which also has implications for funding stability. The final section concludes.

Funding sources: recent shifts and relative stability

The mix of funding sources for local banking systems has been shifting in recent years. Following a post-GFC retrenchment, total liabilities grew by 39%, from \$70 trillion in Q1 2015 to \$101 trillion³ in Q4 2021 (Graph 2, left-hand panel). However, the share of funds obtained from cross-border sources showed some decline, falling from 24% to 22% over the same period (centre panel). Within the cross-border segment, funding shifted away from inter-office, falling from 31% of cross-border liabilities to 29%. Overall, local banking systems have replaced cross-border funds, especially inter-office funds for banks in advanced economies (AEs), with local funding (right-hand panel). While these shifts seem small in percentage terms, the decline in the cross-border funding share represents a \$1.7 trillion reallocation of the global aggregate.

Funding mix of local banking systems¹

Graph 2



¹ Based on a constant sample of 27 reporting countries comprising 20 AEs and seven EMEs, excluding offshore financial centres and those that do not report inter-office and local liabilities since Q1 2015 (eg the United States, China). The sample generally comprises more than 75% of aggregate balances reported in the BIS international banking statistics. ² Change in share of total liabilities between Q1 2015 and Q4 2021.

Sources: BIS locational banking statistics; authors' calculations.

³ These figures are based on a constant sample of reporting countries, and so do not match the global aggregates published on the BIS website, which include all available data.

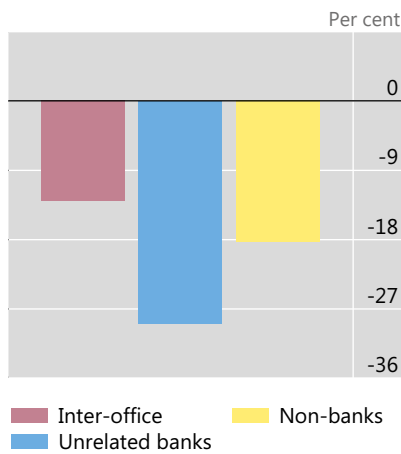
Previous research points to a stability hierarchy among funding sources, particularly in the face of international shocks. Most stable is local funding, especially deposits (Ongena et al (2015)). Within cross-border funding, inter-office funding has been shown to be the most stable (Reinhardt and Riddiough (2015)),⁴ probably as a result of the pursuit of banking group-wide objectives (De Haas and Van Lelyveld (2010)). Cross-border funding from unaffiliated sources is generally the least stable.

Consistent with these stylised facts, we find that inter-office funding was the most stable part of banks' cross-border funding during the GFC. Overall, cross-border funding plunged from its peak in Q1 2008 through Q1 2009, but inter-office cross-border liabilities declined by only 13% in aggregate, while liabilities sourced from unrelated banks and non-banks, declined by 29% and 18% respectively (Graph 3, left-hand panel).^{5,6}

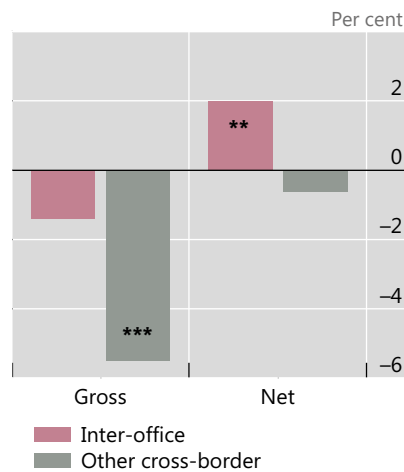
Cross-border funding stability

Graph 3

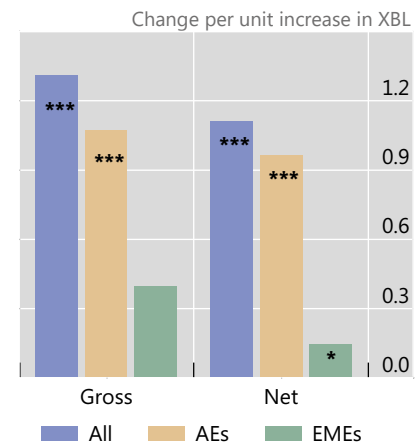
Inter-office contracted less than other cross-border funding after 2008¹



Cross-border funding changes with dollar index^{2,3}



Local lending moves with cross-border liabilities^{2,4}



¹ Values represent percentage change in amount outstanding between Q1 2008 and Q1 2009. The sample of 29 reporting countries, including the United States. ² Net funding equals cross-border liabilities minus cross-border claims. ***/**/* indicates statistical significance at the 1/5/10% level. ³ The reported effects result from a one standard deviation movement in the dollar index and are expressed as percent of average gross cross-border liabilities for the given funding segment. Based on a regression of aggregate cross-border changes on lagged changes in the real broad dollar index (BDI) over Q1 2005–Q4 2021. Sample consists of 22 countries with full coverage of inter-office liabilities over the sample period, excluding the United States (results similar when not excluded). ⁴ XBL = Cross-border liabilities. Coefficients from a regression of the change in aggregate local claims on the change in aggregate local liabilities and either the change in aggregate gross cross-border liabilities and gross cross-border claims or net cross-border liabilities (cross-border liabilities minus cross-border claims) over Q4 2014–Q4 2021. Sample consists of 30 countries that have coverage of local claims over the sample period, comprising 21 AEs and 9 EMEs (excluding the United States and China).

Sources: BIS locational banking statistics; authors' calculations.

⁴ This need not always be the case. During the Covid-19 pandemic, inter-office positions jumped considerably, along with other positions (Aldasoro et al (2021)).

⁵ Local liabilities were likely the most stable funding source, but low data reporting over this period prevents a direct comparison. Local claims in local currency (obtained from the BIS consolidated banking statistics), typically funded by local liabilities and shown to be relatively stable through the GFC (McGuire and von Peter (2016)), declined by 14% over the same period.

⁶ Following the GFC, foreign banks in the United States saw a reversal in their inter-office positions, switching from being a net creditor to their parents to a net borrower (Bruno and Shin (2014)). This development reflects attractive interest rates on reserves at the Federal Reserve, which were due to quantitative easing in the United States, leading banks to keep more funds in their Federal Reserve accounts (McCauley and McGuire (2014)). When banks located in the United States are excluded, inter-office liabilities still see a much smaller decline than those to unrelated sources.

In line with previous studies, we also find that inter-office funding is less sensitive to global financing conditions, as proxied by the broad dollar index (Graph 3, centre panel).⁷ For a one standard deviation change in the dollar index (a roughly 8% appreciation), cross-border liabilities fall by less than 1.5% for inter-office but by 5.5% for other sources (for an overall decline of around 4%). Net changes (whereby cross-border claims are subtracted from liabilities) suggest that inter-office sources actually compensate for the retrenchment of unrelated entities.

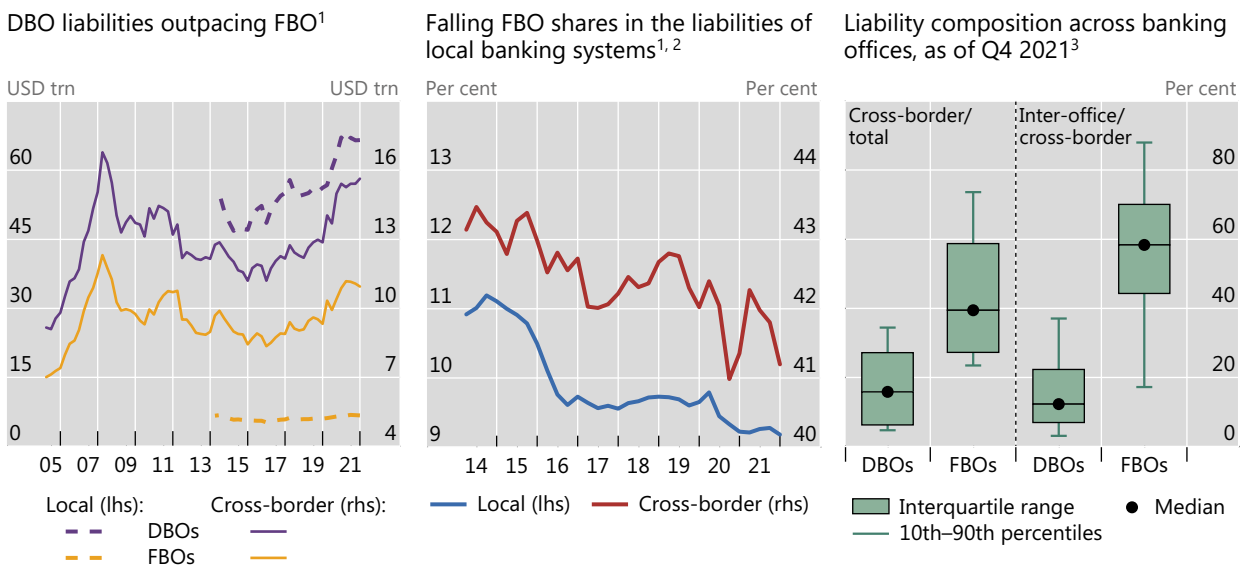
Swings in a local banking system’s cross-border funding go hand in hand with similar swings in domestic lending. We obtain this result from an empirical analysis, that considers both gross and net cross-border liabilities. In particular, we find that, when such liabilities decline, so do local claims, by an equal amount for AEs and by 40% of the gross cross-border liability decline for emerging markets (EMEs) (Graph 3, right-hand panel).

Underlying foreign and domestic banking office trends

The shifts in global funding mix indicated above reflect the confluence of three factors: the declining share of foreign banking offices (FBOs) relative to domestic banking offices (DBOs); the differences between the FBO and DBO funding models; and changes in liability structures within these groups, particularly among DBOs. We discuss these factors in turn.

Changing footprint of FBOs

Graph 4



¹ Cross-border and local liabilities are based on a balanced panel of 27 reporting countries. The sample compositions for local and cross-border liabilities are different due to reporting practices. Local liabilities exclude the United States. ² Share of FBOs in total cross-border and local liabilities. ³ The sample comprises 29 countries, excluding countries without coverage for both inter-office and local liabilities (eg the United States).

Sources: BIS locational banking statistics; authors’ calculations.

⁷ An increase in the broad dollar index is indicative of a tightening of global financial conditions and is associated with a contraction in international banking (Avdjiev et al (2019)).

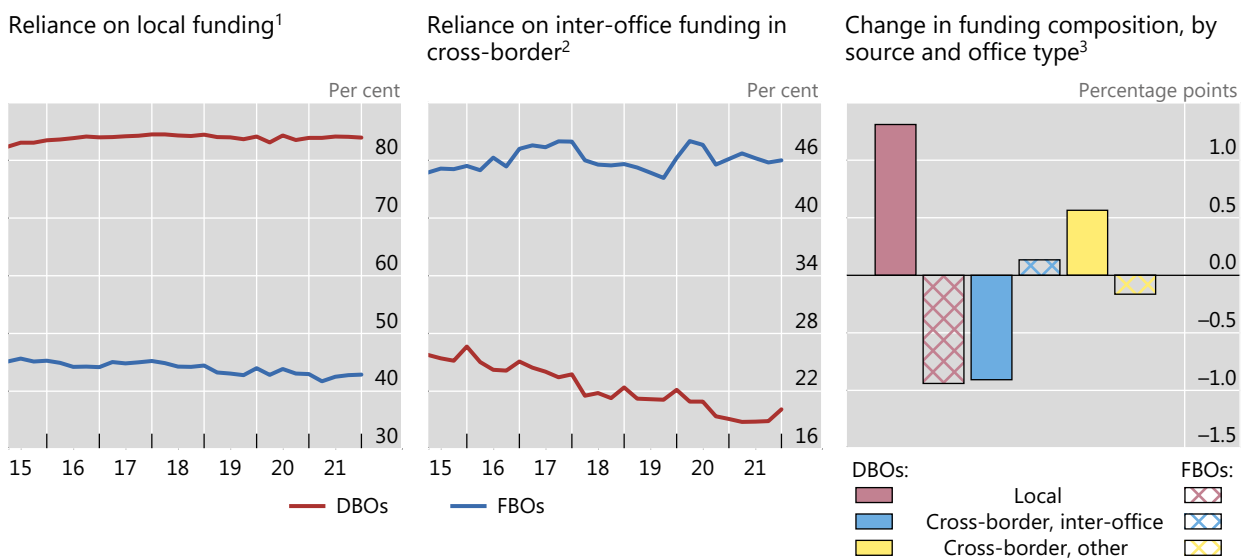
Following the post-GFC retrenchment in international banking, FBOs' liabilities grew from around 2016, but by less than those of DBOs did (Graph 4, left-hand panel). As a result, FBOs' share in local banking system liabilities declined, from 43% in Q1 2015 to 41% in Q4 2021 for those sourced cross-border. In the case of local liabilities, the corresponding decline was from 11% to 9% for local liabilities (centre panel).

FBOs' funding models differ from those of DBOs in several respects. Cross-border positions account for a far higher proportion of FBOs' balance sheets, reflecting these offices' generally greater international focus (Graph 4, right-hand panel).⁸ In addition, FBOs are nodes in global banks' international intermediation networks, and part of their function is to help manage flows of liquidity within global banks. This naturally generates a higher proportion of inter-office positions. FBOs also utilise much more US dollar funding (Box A). These differences across FBOs and DBOs would affect the funding structure of local banking systems, as the share of FBOs declines.

Within the aggregate FBO and DBO groups, the funding mix has been mostly stable over the past five years, with a few notable shifts. For both FBOs and DBOs, the share of funding from local sources remained largely unchanged between Q1 2015 and Q4 2021 (Graph 5, left-hand panel). However, DBOs have reduced the use of inter-office sources, from 26% to 20% of cross-border liabilities over the same period (centre panel).

Funding composition changes across FBOs and DBOs

Graph 5



¹ Local liabilities as a share in the total liabilities. The sample comprises 28 reporting countries, excluding OFCs as well as those that do not report local positions (eg the United States, China). ² Cross-border inter-office liabilities as a share of total cross-border liabilities. The sample comprises 28 countries including the United States, excluding OFCs and those that do not report inter-office liabilities. ³ Changes in shares between Q4 2015 and Q4 2021. Based on a balanced sample of 24 reporting countries in which DBOs and FBOs report both cross-border inter-office and local liabilities throughout the period.

Sources: BIS locational banking statistics; authors' calculations.

⁸ FBOs vary considerably in their funding composition, ranging from those that obtain nearly all their funding from cross-border sources to those that obtain less than a quarter (see also Fender and McGuire (2010)). This reflects differences among parent banks' international business models (McCauley et al (2010)). Nevertheless, the majority of FBOs have significant cross-border positions in their balance sheets.

US dollar funding and foreign banking offices outside the United States

John Caparusso and Bryan Hardy^①

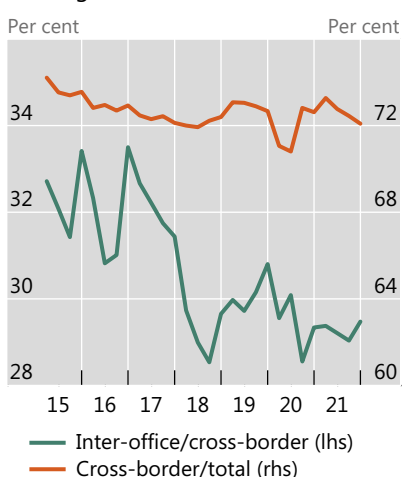
With US dollar funding central to much of the international banking system, dollar funding shortages can be destabilising for banks (Barajas et al (2020)). As the pattern of funding sources has been changing for banks outside the United States, their susceptibility to dollar funding shocks may also have undergone changes. This box highlights how the role of cross-border and inter-office (ie from related banks) funding in US dollars has changed for banks outside the United States. It also relates such changes to the relative presence of foreign banking offices (FBOs, subsidiaries or branches whose parent is in another country) and domestic banking offices (DBOs, those located in their country of headquarters).

There is a distinct change in the location of banks' US dollar funding sources. The share of cross-border sources fell from 74% in Q1 2015 to 72% in Q4 2021 (Graph A, left-hand panel). Over the same period, the share of cross-border US dollar funds that banks sourced inter-office fell from 33% to 29%.

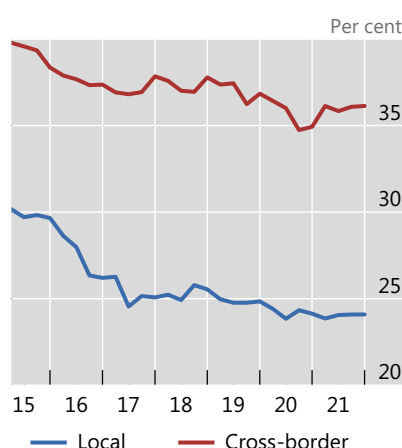
US dollar positions¹

Graph A

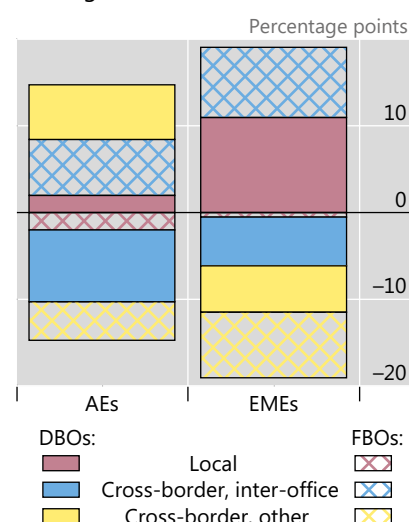
Trends in the location of US dollar funding sources²



FBO share in dollar funding³



Change in the composition of funding sources⁴



¹ For USD-denominated liabilities only. Excludes banks located in the United States and OFCs. Includes balanced panels of countries that report positions continuously over the specified time period. ² Based on a sample of 28 reporting countries. ³ Both lines represent a balanced panel of 31 reporting countries. ⁴ Difference in shares of total liabilities between Q4 2015 and Q4 2021. Sample of 26 reporting countries.

Sources: BIS locational banking statistics; authors' calculations.

A relative retreat of FBOs from local banking systems has driven these developments. With the decline in global banking as a business model, banking groups do more business from their home office rather than through their foreign affiliates (Aldasoro and Ehlers (2018)). A number of consequences follow from such structural shifts. FBOs typically obtain a higher proportion of funding from cross-border, especially inter-office, sources than do DBOs. However, the share of FBOs in the US dollar funding of local banking systems has been falling, from 40% in Q1 2015 to 36% in Q4 2021 for cross-border sources and from 30% to 24% over the same period for local sources (Graph A, centre panel). This shifted the US dollar funding mix of the local banking system, reallocating it away from DBOs' inter-office sources and FBOs' unrelated cross-border funding sources (right-hand panel). In advanced economies, this was compensated for largely by DBOs' borrowing from unrelated sources; in emerging market economies, by local DBO funding.

^① The views expressed are those of the authors and not necessarily those of the Bank for International Settlements.

In sum, the decline in FBOs' liabilities relative to those of DBOs, the differences in these offices' funding structure, and changes in the funding mix within each group have delivered the following shift at the level of local banking systems: from cross-border inter-office to other cross-border and local funding. (Graph 5, right-hand panel). The underlying reshuffling of DBO funding sources is consistent with the generalised retreat of global banking: banking groups have reduced the role of their foreign affiliates to do more business directly from their home offices.

The impact of a shift away from FBOs on funding stability is a priori unclear. Granted, there is evidence that foreign banks tend to be more vulnerable to international shocks than domestic banks are (McGuire and von Peter (2016)). However, such stylised facts reflect foreign banks' greater use of non-deposit funding, especially cross-border funding, whereas FBOs and DBOs that fund themselves similarly are similarly stable.⁹ In addition, FBOs tend to have more stable *cross-border* funding because their parents support them in times of stress, probably as part of an overall optimisation for the banking group (Eguren-Martin et al (2022), De Haas and Van Lelyveld (2006, 2010), Barba-Navaretti et al (2010)). A decline in FBOs' share of the local banking system's cross-border liabilities reduces the reach of these inter-office networks. In the light of the discussion in the previous section, this could impair local banking systems' funding stability, all else equal.

Impact of FBO closures

Many global banks have recently announced sales or closures of their foreign affiliates (either subsidiaries or branches) across host countries.¹⁰ This is yet another facet of a general retreat from global banking business models. To investigate this phenomenon in a systematic way, we drill down to the level of individual foreign banking offices – branches and subsidiaries – that contribute the data underlying the BIS banking statistics.¹¹

Exits of individual foreign affiliates – through closure or divestiture – have contributed to the relative retrenchment of FBOs studied above. The number of individual foreign offices has declined over the past five years by about 8% in both advanced and emerging markets and by about 17% in OFCs (Graph 6, left-hand panel, bars).

Because FBOs' and DBOs' funding models differ, exits of individual foreign affiliates are likely to affect the overall funding mix of a local banking system.

⁹ For instance, Ongena et al (2015) and Claessens and van Horen (2013) show that foreign banks funded locally behave in a similar way to domestic banking offices (DBOs) funded locally. Moreover, internationally funded FBOs do not generally respond to funding shocks more negatively than DBOs with a similar reliance on foreign funding (Ongena et al (2015)). The type of credit and how it is funded matters more than the ownership of the bank (Ehlers and McGuire (2017)), but foreign ownership is notable as it typically indicates a different funding mix.

¹⁰ For instance, since 2021 (in addition to planned exits from Russia): Citi announced its intention to exit retail business in at least 15 emerging market economies; Commerzbank said it would leave Hong Kong SAR, Hungary and Luxembourg; HSBC sold assets in France and Greece and announced sales in Saudi Arabia, Turkey and the United States; Standard Chartered announced exits from at least seven countries in Africa and two in the Middle East; and a few non-US G-SIBs have announced, planned or consummated divestitures of large US subsidiaries

¹¹ The BIS records on a yearly basis the number of banks (head offices, subsidiaries and branch networks) that constitute the reporting population of the BIS locational statistics.

Consistent with this, we see that over the 2016–21 period, declines in the number of foreign bank affiliates¹² were followed on average by a 1.4% decline in the total cross-border funding of local banking systems. This compares with an average 5% increase after the net entry of foreign bank affiliates. The effect of changes in the number of FBOs on the growth of inter-office funding is more striking (Graph 6, centre panel).

More generally, an individual office’s exit reduces the presence of one nationality and opens the door to banks from other – typically, already present – nationalities to step in (either by purchasing the exiting affiliate or expanding to take over market share). This can raise the concentration of nationalities in the local banking system (Graph 6, left-hand panel, dots). Increasing concentration reduces the diversification of ultimate funding sources, which makes overall funding more vulnerable to financial stress in individual home countries and thus more volatile (Peek and Rosengren (2000)). Over the past 10 years, we find a material relationship between the nationality concentration in a local banking system and the volatility of its cross-border liabilities, but not with that of its cross-border claims. Concretely, changes in such concentration explain roughly 25% of the variability in a system’s total cross border liabilities (right-hand panel, bars).

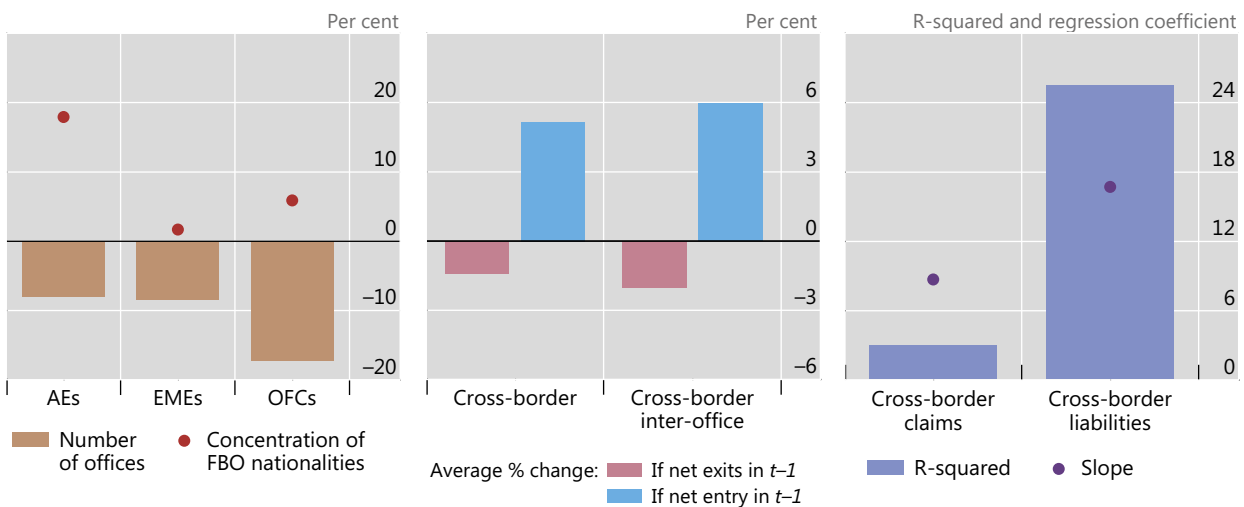
FBO intermediation and stability of cross-border liabilities

Graph 6

Foreign offices: Change in number and concentration, 2016–21¹

Cross-border funding declines (rises) after FBO exit (entry), 2010–21²

FBO nationality concentration and volatility of local banking system cross-border funding³



¹ Based on counts of banking entities that are located in BIS reporting countries and have parents in another country. Bars report the change in median FBO nationality concentration across 47 jurisdictions. Concentration in each jurisdiction is measured as the Herfindahl-Hirschman Index (HHI) of cross-border liabilities of banks of each nationality in the given location. ² Median across 41 countries of the average year-on-year change in local banking system cross-border liabilities in the year after a net FBO entry and exit, respectively. Net exit is identified by decline in both the number of foreign affiliates and number of nationalities (to filter out potential consolidation effects); net entry is identified only by an increase in the number of foreign affiliates. Based on annual data spanning 2010–2021. ³ R-squared and slope from a simple linear regression of each country’s standard deviation of quarter-on-quarter changes in outstanding position, against each country’s average Herfindahl index of liabilities across FBO nationalities, computed for 47 countries over the period Q2 2012–Q4 2021.

Sources: BIS locational banking statistics; authors’ calculations.

¹² A decline in foreign affiliates is flagged when both the number of banking affiliates and the number of bank nationalities decline. This conservative measure accounts for the possibility that the number of affiliates fall because of a consolidation rather than a true exit. The trend is similar if we use only a decline in the number of affiliates. An entry is flagged when the number of affiliates increases.

Conclusion

This article has highlighted changes in the mix of three funding sources for local banking systems – local, cross-border inter-office, and other cross-border. These sources differ in their stability. Local funding is most stable, in part because its major component is deposits. Inter-office funding provides access to cross-border (and foreign currency) funding through a channel that remains relatively resilient during periods of stress. While the focus above was on international shocks, inter-office networks are also an important source of diversification following domestic shocks (Reinhardt and Riddiough (2015), D’Avino (2015)).

Since 2015, a shift toward local funding, which benefits stability, has been counteracted by a decline in the share of inter-office in cross-border funding, which has the opposite effect. These shifts in a local banking system’s funding mix stem from a retrenchment of foreign bank offices, which have ceded funding share to domestic bank offices with weaker cross-border inter-office channels.

The importance of cross-border sources for funding stability is most relevant for economies that cannot readily substitute for such sources locally. For example, foreign currency funds typically need to be sourced cross-border. Thus, the ongoing retreat of foreign banking offices makes central bank swap lines more relevant as a tool to ensure access to foreign currency funding after a shock.¹³

While this article has emphasised the resilience of foreign bank offices’ cross-border funding, the activities of such offices can also be destabilising. Global banks with extensive networks of foreign affiliates can become increasingly complex, which increases their riskiness (Aldasoro et al (2022)). Further, at times of stress in their home country, FBOs may be drawn upon to help support the parent. This could be at the expense of the local banking system and may syphon liquidity away from the host economy (Cetorelli and Goldberg (2012)).

¹³ Access to insured FX retail deposits can similarly cushion banks and stabilise their lending supply (Ivashina et al (2015)).

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