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Foreign currency funding risk and cross- border liquidity

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Contents

Country/region codes.....	iii
Executive summary	1
1. Introduction	4
2. Conceptual framework	5
3. Exposures to foreign currency funding risk.....	8
3.1 Foreign currency funding risk from a consolidated (nationality) perspective.....	8
Funding flightiness.....	9
Asset liquidity	11
Net on-balance sheet funding measures	12
FX derivatives and on- and off-balance sheet net exposures.....	12
Regulatory and supervisory metrics.....	15
3.2 Foreign currency funding risk from a host-country (residence) perspective.....	16
Foreign currency funding and its flightiness: all resident banks.....	16
Funding flightiness, foreign vs domestic banks	18
Asset liquidity and net positions, foreign vs domestic banks	19
3.3 Foreign currency funding risk of NBFIs.....	21
3.4 Data imperfections and gaps.....	22
4. Alleviating foreign currency funding shortages	23
4.1 Banks' internal capital markets.....	23
4.2 Central bank foreign currency liquidity backstop facilities	27
Coverage	27
Size, conditionality and accessibility of central bank foreign currency facilities	30
4.3 Sources of foreign currency for central bank liquidity facilities.....	31
4.4 Steps taken to limit foreign currency liquidity risks.....	33
5. Conclusions	34
References.....	36
Annex A: Drawdowns of off-balance sheet credit commitments during the March 2020 turmoil.....	39
Annex B: Case study on Credit Suisse	41
Annex C: Foreign currency funding by banks in Korea during global dollar funding market stress.....	43

Annex D: Banks' use of FX derivatives.....	46
Annex E: NBFIs' foreign currency funding risk and hedging behaviour	48
Annex F: Insurers' foreign currency exposures and mismatches.....	51
Annex G: Central Bank foreign currency facilities in resolution.....	54
Annex H: Liquidity facilities for NBFIs.....	57
Annex I: Additional material.....	58
A. Decomposing foreign currency exposures.....	58
B. Characteristics of central bank foreign currency facilities	60
C. Additional Graphs.....	62
Annex J: Members of the Working Group.....	67

Country/region codes

AT	Austria	IN	India
AU	Australia	IT	Italy
BE	Belgium	JE	Jersey
BH	Bahrain	JP	Japan
BM	Bermuda	KR	South Korea
BR	Brazil	KY	Cayman Islands
BS	Bahamas	LU	Luxembourg
CA	Canada	MO	Macao SAR
CH	Switzerland	MX	Mexico
CL	Chile	MY	Malaysia
CN	China	NL	The Netherlands
DE	Germany	OFC	Offshore financial centres
DK	Denmark	PA	Panama
EA	Euro area	PH	Philippines
ES	Spain	SA	Saudi Arabia
FR	France	SE	Sweden
GB	United Kingdom	SG	Singapore
GG	Guernsey	TR	Türkiye
HK	Hong Kong SAR	TW	Chinese Taipei
ID	Indonesia	US	United States
IE	Ireland	ZA	South Africa
IM	Isle of Man		

Executive summary

Foreign currency funding shortages are a key driver of financial stress. They come to the fore when funding markets are impaired and worsen when there is a mismatch between financial intermediaries' liquid claims and flighty funding. In the face of such shortages, the functioning of financial intermediaries hinges on the scope for intragroup liquidity transfers and, as a last resort, on access to central bank liquidity facilities. Continuous monitoring of exposures to foreign currency funding risk and the attendant mitigation mechanisms are thus essential to avoid adverse systemic outcomes.

This report presents a Committee on the Global Financial System (CGFS) working group's findings on foreign currency funding risk and cross-border liquidity. The focus is on five major currencies: the US dollar, euro, Japanese yen, British pound and Swiss franc. In its first part, the report examines what available data reveal about financial intermediaries' exposure to foreign currency funding shortages. In the second part, it investigates the resilience of intragroup cross-border transfers (internal markets) when access to private external foreign currency funding markets is impaired. It then goes on to discuss last resort central bank liquidity assistance to entities in trouble.

The first part rests on measures of exposure to foreign currency funding risk, which cover various financial sectors to the extent that available data allow. The bulk of these measures relate to banks, leveraging the BIS international banking and financial statistics, as well as additional statistics submitted by working group members. For non-bank financial institutions (NBFIs), a category encompassing various types of players with diverse business models, the report draws on analysis by specific members as well as on data from the International Association of Insurance Supervisors.

All datasets and measures that allow for comparisons across currencies confirm the US dollar's centrality. Across financial systems and jurisdictions, the dollar typically dominates in foreign currency exposures, which banks seem to manage actively. Small open European economies – where the euro is the main foreign currency – are an exception.

Measures reflecting consolidated exposures to foreign currency funding risk are particularly useful to home authorities, ie authorities in the jurisdiction where financial entities are headquartered. Such measures classify entities by nationality and consolidate positions across locations of financial activity. Here, a currency is defined as foreign if it is issued outside the home jurisdiction.

A key finding from the consolidated perspective is that banking groups source most of their foreign currency funding from home offices, rather than the currency-issuing jurisdiction. Affiliates operating outside their home country tend to obtain foreign currency funding via internal capital markets.

The potential for foreign currency funding shortages underscores the importance of liquid claims that can cushion a retrenchment of funding and/or hedging counterparties. In those banking systems for which the working group obtained relevant data, much of the foreign currency funding stems from deposits by non-financial entities, which are typically stable, although non-core funding sources, including from NBFIs and other banks, are also important in some jurisdictions. While the latter, traditionally flighty, funding could be partly matched or exceeded by assets in the same currency, the liquidity of these assets varies across banks.

On-balance sheet currency mismatches are often reduced with off-balance sheet positions, such as foreign exchange (FX) derivatives. Even then, the potential for foreign currency funding shortages may remain. The reason is that FX derivatives are often short term, thereby introducing rollover risk.

Apart from playing a role as a source of foreign currency funding for banks, the NBFIs sector could itself be exposed to foreign currency funding risks, albeit with variability across entity types. Available data reveal significant offshore investments by asset managers and pension funds, which would typically give

rise to foreign currency exposures. By contrast, large internationally active insurance companies tend to have limited open foreign currency positions on their balance sheets.

Measures of exposure to foreign currency funding risk on a residence basis are particularly useful to host authorities, ie authorities in the jurisdiction where banks operate. Such measures incorporate banks' unconsolidated (ie standalone) foreign currency positions, by booking location. A currency is now defined as foreign if it is issued outside the host – rather than the home – jurisdiction.

Foreign currency borrowing is unevenly distributed across host jurisdictions. Borrowers in the United Kingdom, the euro area, Hong Kong, Japan and Canada account for the lion's share of such borrowing. In several international financial centres, foreign currency borrowing is much lower in absolute terms but accounts for more than 60% of the total bank borrowing booked there.

In several advanced and emerging market economies, foreign banks – ie those headquartered abroad – engage in material foreign currency borrowing alongside domestic banks. Foreign banks typically stand out with a larger share of cross-border funding and, within this funding, a larger share of intragroup positions. While cross-border funding tends to be flighty, intragroup positions are usually stable. Likewise, various additional data sets from a few jurisdictions provide mixed signals about foreign and domestic banks' relative exposure to foreign currency funding risks.

The second part of the report focuses on channels for alleviating foreign currency funding shortages when access to external private market funding is impaired. Drawing on members' survey responses, this part discusses possible impediments to banks' internal capital markets and existing central bank foreign currency liquidity facilities. It also reviews prudential measures that seek to reduce banks' foreign currency funding risks.

In times of stress, when accessing external funding becomes challenging, internal capital markets are a first line of defence against liquidity shortages in specific parts of a financial group. However, impediments to intragroup transfers may arise because of regulatory restrictions or for internal risk-management reasons which could be particularly forceful when the stress is generalised. Such impediments typically do not fully shut down internal markets but become gradually more binding as the entity providing liquidity depletes its buffers. A non-trivial share of exposures to foreign currency funding risk – exceeding 20% for three of the five major currencies in focus – is booked in jurisdictions that, according to survey responses, have experienced restrictions on internal capital markets in the past.

Central bank foreign currency liquidity facilities are the last line of defence. They are used when a banking group does not have enough foreign currency liquidity or cannot redistribute it fast enough across constituent entities to effectively alleviate funding shortages. Some facilities are in the central bank's own currency, which is a foreign currency to resident subsidiaries or branches of banking groups headquartered abroad. Others, in currencies foreign to the central bank that provides the facility, tend to rely on the currency-issuing central bank. Depending on the type of stress that may arise and on its specific characteristics, different arrangements between central banks may be more or less appropriate, eg involving repos or currency swaps. Such arrangements support cross-border intermediation and ensure resilient credit flows from foreign banks to domestic households and firms.

Survey responses show that all these facilities, over which central banks have much discretion, are available only to entities in the central bank's jurisdiction. Almost 60% of the surveyed jurisdictions have facilities for four of the five currencies considered and in almost 80% of the jurisdictions facilities exist for the fifth currency – the US dollar. While these shares are high, non-negligible foreign currency funding exposures would still not be covered by facilities in the same jurisdiction. Moreover, effective coverage could be even lower if there are restrictions on these facilities' size, eg due to central banks' limitations in sourcing foreign currencies, or on counterparty and collateral eligibility.

Intragroup transfers could channel central bank support across borders, thus alleviating funding shortages that occur in a jurisdiction lacking central bank liquidity facilities in the relevant foreign currency. The home central bank could assist domestic bank entities located abroad via downstreaming from the parent bank. And support from the currency-issuing central bank – if available – could also cover any remaining shortfalls at those entities.

When banks enter resolution, they could face different channels for managing foreign currency funding shortages. Only around half of the surveyed central banks have foreign currency facilities that can be accessed by gone-concern banks: these are dedicated resolution facilities and/or – more often – facilities that are also open to going-concern banks. That said, several jurisdictions have resolution-specific funding tools available from authorities other than the central bank.

In sum, this report delivers the following key findings. It confirms the US dollar's global centrality and finds that banks appear to actively manage US dollar funding risks. More generally, banks often seek to minimise currency mismatches with derivatives-based hedges, which would reduce foreign currency funding risk provided that these hedges do not introduce roll-over risk. The report also finds that banks tend to source most of their foreign currency funding from their headquarters and redistribute it with intra-group transfers. This highlights the financial stability implications of any impediments to the smooth functioning of internal capital markets. Since such impediments could materialise in extreme stress, central bank foreign currency liquidity facilities have an important role to play as a last resort. Given the interconnected nature of global trade and finance, these facilities can help support intermediation by foreign banks to the benefit of domestic firms and households.

The report's findings underscore two main takeaways.

First, there is great value in authorities' ongoing efforts to reduce foreign currency funding risks and mitigate their implications. These efforts include improving monitoring tools and enhancing the resilience of intragroup transfers in times of stress. Where appropriate, they also include incorporating foreign currency funding risks in stress tests and imposing currency-specific liquidity requirements. In doing so, authorities seek to ensure that banks manage foreign currency funding risks prudently. International coordination and cross-border crisis preparedness complement these efforts in important ways. Ultimately, effective central bank support hinges on banks' preparedness to access available facilities, subject to moral hazard guardrails.

Second, data gaps and imperfections result in an incomplete global map of exposures to foreign currency funding risks. The most relevant gaps relate to the maturity of foreign currency assets and liabilities, asset liquidity and the use of FX derivatives. Some of these gaps arise because the corresponding data are not collected at the national level, others because of confidentiality constraints on sharing with the CGFS working group. Similar constraints led the working group to conduct the bulk of its analysis with country-level aggregate data, even though funding risk is an entity-level concept. Prudent mitigation of confidentiality constraints – notably, by leveraging existing frameworks for international cooperation – would underpin progress in mapping out global exposures to foreign currency funding risk.

1. Introduction

Liquidity shortages are a key driver of financial stress, especially when they involve a foreign currency. Vulnerability to foreign currency funding shortages come to the fore when access to cross-border funding markets is strained, when cross-border intragroup frictions are exacerbated, or when there are impediments to the last-resort provision of the needed currency by the home or host central bank. Such tensions surfaced during the March 2023 banking turmoil, especially in the case of Credit Suisse. Whether foreign currency funding shortages arise for a single institution or are broad-based, the potential for wide-ranging repercussions calls for systematic monitoring of the attendant exposures.

These lessons motivated the Committee on the Global Financial System (CGFS) to set up a working group that would further the common understanding of foreign currency funding risk in five major currencies: the US dollar (USD), the euro (EUR), Japanese yen (JPY), British pound (GBP) and Swiss franc (CHF).¹ This working group adopted the perspective of 19 CGFS member jurisdictions that are the home and/or host of large internationally active banks. To shed light on the scale and geography of foreign currency funding risks, and the principal impediments to allocating funding to where it is needed, the working group sought to address two key questions.

First, what do available data reveal about vulnerabilities of financial intermediaries to foreign currency funding shortages? To answer this question, the group constructed metrics of foreign currency funding risk that capture – to varying degrees – both the asset and the liability sides of on- and off-balance sheet positions.

Second, when access to external private market funding is impaired, how resilient are intragroup cross-border transfers (internal markets), and to what extent is last-resort central bank liquidity assistance available to an entity in trouble?

The group drew on a large and heterogenous information set and, for sharper focus, put limits on the scope of its investigation. The bulk of the analysis focused on banks, for which the group leveraged the BIS international banking and financial statistics, as well as additional relevant data from member jurisdictions. For NBFIs, the working group relied on data from members and from the International Association of Insurance Supervisors (IAIS). As another source of information, the working group used a survey of member institutions, covering impediments to cross-border transfers of foreign currency funding, the availability of publicly announced facilities for foreign currency central bank liquidity assistance, and steps taken to limit foreign currency liquidity risks. The group principally focused on arrangements relevant for going concern institutions but also contrasted these arrangements with those for banks in resolution.

The rest of the report is organised as follows. Section 2 provides a conceptual framework for the analysis by specifying how a “foreign currency position” is defined and how foreign currency funding risk would ideally be measured. It also discusses private forms of foreign currency funding and central bank liquidity backstop facilities. Section 3 presents metrics of foreign currency funding risk, using data on banks’ on- and off-balance sheet positions. Section 4 discusses restrictions on cross-border transfers of foreign currency liquidity, central bank foreign currency liquidity backstop facilities and steps taken to limit foreign currency liquidity risks. Section 5 provides conclusions and policy considerations. Finally, the report includes a number of annexes that provide additional analysis and information on various aspects of foreign currency funding risks and cross-border liquidity.

¹ An earlier working group report focused on US dollar funding in the global financial system; see CGFS (2020).

2. Conceptual framework

What constitutes a “foreign currency” – and the attendant risks – depends on the specific perspective. This section states the two perspectives explored by this report, outlines an ideal metric of foreign currency funding risk, foreshadows deviations from this metric that the report needs to make, and discusses channels for attenuating foreign currency funding shortages.

A currency position is defined as foreign if it satisfies at least one of the following two criteria. First, it is booked in a *currency different from the entity’s home currency*: eg a UK-headquartered group’s subsidiary residing in the United States books a USD-denominated position. Second, it is booked *outside the currency-issuing country*: eg the same subsidiary books a GBP-denominated position. A position may satisfy both criteria, eg the parent in the UK-headquartered group books a USD position. The definitions underscore the necessity to keep track of three aspects of a bank position: (i) the currency of denomination; (ii) the location of the booking entity; (iii) the entity’s nationality.

Foreign currency funding risk is defined in this report as the risk that *private* sources of funding become unavailable in stress and foreign currency shortages arise. Salient examples of such sources are: retail and wholesale deposits; affiliated entities (ie intragroup borrowing); and markets for funding through repo, debt instruments and FX derivatives. When foreign currency funding shortages do materialise, they could be attenuated with intragroup cross-border transfers – ie via the “internal capital market”. Depending on the location of the needs, the parent bank may *downstream* liquidity from the headquarters to an affiliated entity abroad; or branches or subsidiaries may *upstream* liquidity from abroad to the parent. Central bank facilities are the last-resort source of foreign currency liquidity in stress.²

Foreign currency funding risk should be measured with reference to a particular entity and a particular time horizon. A relevant entity would either be an entire banking group or be *part* of a banking group and have a standalone balance sheet – a parent, a subsidiary or a branch.³ In turn, an ideal metric would compare the entity’s “flighty funding” in a foreign currency and the “liquid claims” in the same currency. Flighty funding is the amount of on- and off-balance sheet funding that is likely to become unavailable in a stress event over the chosen horizon. And liquid claims are the on-balance sheet assets and off-balance sheet receivables (eg from derivatives) that are likely to be liquidated with minimal losses or come due over the same horizon. When the flighty funding is larger than the liquid claims, there is risk of a foreign currency funding shortage. Graph 1 illustrates a stylised exposure to foreign currency funding risk.

Proper assessment of foreign currency funding risk would incorporate two perspectives on banks’ positions: consolidated and unconsolidated. Analyses anchored in *unconsolidated* data – that is, at the level of the parent, subsidiary or branch – convey information on how such entities separately conduct foreign currency liquidity management. By contrast, analyses on a *consolidated* basis rely on data that combine the positions within a group, netting out intragroup positions. Such analyses hinge on an implicit assumption that internal markets function seamlessly across borders and foreign currency funding risk is managed only at the group level. Since it is difficult to forecast the level at which foreign currency funding shortages may arise, the two perspectives provide authorities with complementary information.

² While central bank facilities may come into play in tranquil times, this report focuses on their role in stress.

³ A branch may not have a standalone balance sheet, thus managing foreign currency funding risk jointly with its parent. In this case, the consolidated perspective (introduced below) is particularly useful.

Foreign currency funding risk (FCFR) – a stylised example¹

A bank entity with a standalone balance sheet

Graph 1

On-balance sheet	
Assets	Liabilities
FC liquid (eg cash, gov't bonds)	FC flighty (eg wholesale funding)
FC illiquid (eg FC mortgages, loans)	FC stable (eg deposits, intragroup borrowing)
Domestic currency assets	Domestic currency liabilities

Off-balance sheet	
Lend	Borrow
FC short-term (eg forward receipts)	FC short-term (eg forward obligations)
In domestic currency	

A + B = exposure to FCFR

¹ Liquidity, flightiness, stability and short-term classification are determined over some time horizon.

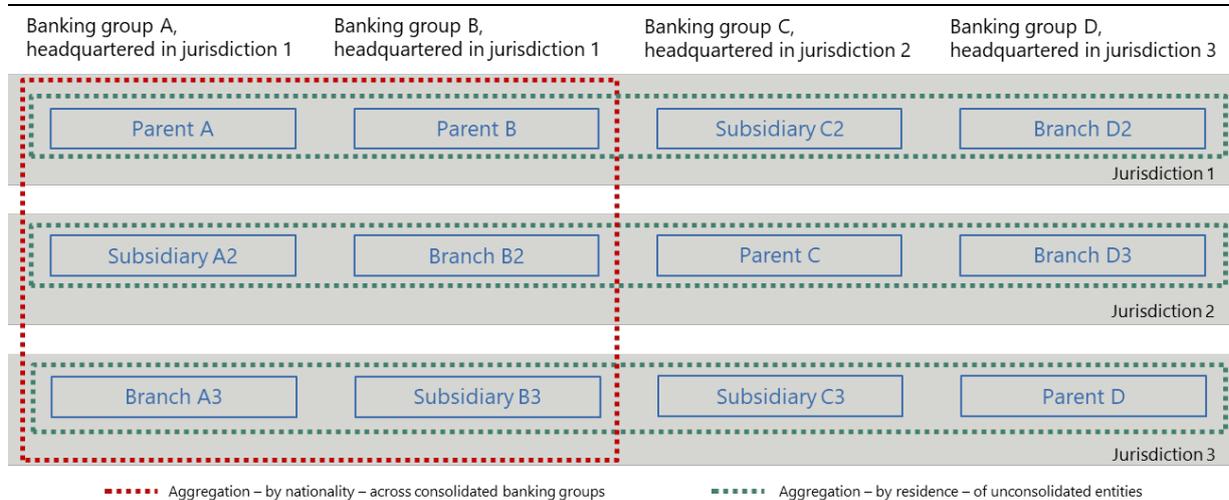
Source: CGFS Working Group.

Real-world data are often aggregated – notably, for confidentiality reasons – preventing the construction of ideal metrics of foreign currency funding risk (FCFR). For instance, the aggregation that underpins some metrics discussed in Section 3 is applied to the consolidated positions of banking groups of the same nationality, ie the country of headquarters. In other instances, the aggregation is by residence, applied to all entities located in a jurisdiction, sometimes also with a nationality breakdown. Examples of such aggregation are in Graph 2. In either case, the data preclude analyses at the level of the entities that are subject to FCFR. Thus, such data may underpin useful metrics when exposures to foreign currency funding risk are similar across banks (as illustrated by the system-wide stress in Japan during the March 2020 turmoil; see Annex A). But they may mask institution-specific vulnerabilities (eg similar to those observed during the Credit Suisse crisis; see Annex B) or more general heterogeneity across banks.

Additional data limitations imply that metrics reported in Section 3 need to be interpreted with more caveats. For instance, metrics based only on on-balance sheet data assume that off-balance sheet positions do not alter the exposure to foreign currency funding risk. Some of these metrics subtract assets in a particular currency from the corresponding liabilities, assuming that these assets can be immediately liquidated and that any remaining liabilities need to be funded over the relevant horizon. Further, metrics based on data that group positions into maturity buckets assume eg that the “short” maturity is within the horizon of interest.

Bank consolidation and aggregation perspectives

Graph 2

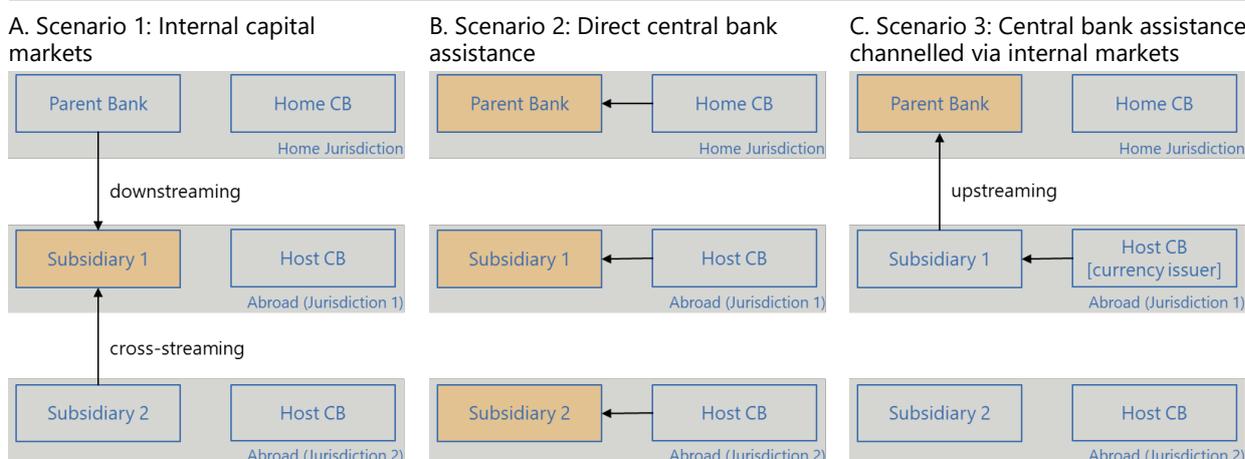


Source: CGFS Working Group.

Given the focus on internal capital markets and central bank facilities as mitigants of foreign currency funding shortages, the report considers three distinct scenarios. First, a shortage may be mitigated only via internal capital markets, provided that they function smoothly and to the extent that there is no group-level shortage in the particular currency (Graph 3.A). Second, the central bank in the entity's location may be the only source of the currency in shortage (Graph 3.B). This could arise if internal capital markets are insufficient to close the funding gap. Third, an entity in one location may channel a currency from the central bank in the same location to an entity experiencing a shortage elsewhere (Graph 3.C). This scenario hinges on functioning internal capital markets and may arise when there is a group-level shortage. Section 4 below allows for several such scenarios to be at play at the same time, eg partial impairments to internal capital markets and/or limits to central bank assistance.

Scenarios for foreign currency shortage mitigation¹

Graph 3



¹ The highlighted entity experiences foreign currency shortages. Black arrows denote mitigating foreign currency liquidity flows.

Source: CGFS Working Group.

3. Exposures to foreign currency funding risk

This section examines banks' exposures to foreign currency funding risk across five major currencies (USD, EUR, JPY, GBP, CHF) and across jurisdictions. Data aggregation leads to two perspectives in the analysis: by bank nationality and bank residence. Under the first, positions are consolidated at the group level and the focus is on where banks are headquartered. For the second perspective, the data are unconsolidated and the focus is on banks' location.

Starting with the nationality perspective, the analysis highlights that the prevalence of foreign currency funding varies markedly by jurisdiction. Reflecting the centrality of the US dollar in finance and trade, foreign currency liabilities are mostly dollar-denominated, with a few exceptions. Foreign currency funding is generally booked in home offices rather than in branches or subsidiaries located in the currency-issuing jurisdiction, and tends to generate rollover risk due to relatively short maturities. Derivatives can be sizeable and often reduce on-balance sheet mismatches, though data limitations mean that the drivers of derivatives use, such as hedging or market making, and their ultimate implications for risk-taking can be opaque. Turning to the residence perspective, foreign currency funding tends to be concentrated in a few jurisdictions. Host authorities may need to contend with foreign currency funding shortages faced by locally domiciled banks, whether foreign or domestic.

3.1 Foreign currency funding risk from a consolidated (nationality) perspective

Analysing foreign currency funding risk from a consolidated perspective effectively assumes that long positions in one location offset short positions in another. This perspective is relevant for assessing how banks would manage their global consolidated balance sheets and meet home country regulatory requirements that apply group-wide. Such considerations often come to the fore for internationally active banks with a centralised model – pooling foreign currency funds to a central treasury (upstream to headquarters) and distributing them across the group (downstream from the headquarters; Cetorelli and Goldberg (2012), Hardy et al (2024)). In this context, a currency is foreign if it is issued outside of the country in which the banks are headquartered (ie it satisfies the first criterion in Section 2). It is in such currencies that home-country authorities tend to perceive greater funding risk when they adopt a consolidated perspective.

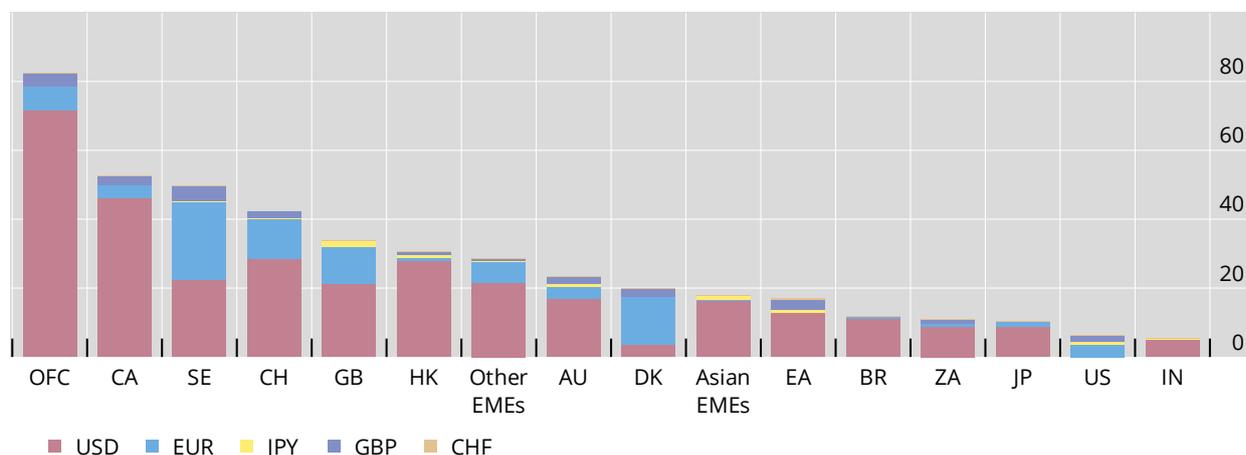
The use of foreign currency funding varies widely across bank nationalities, with the dollar often the dominant foreign currency. It is especially material for banks headquartered in traditional offshore financial centres (Graph 4).⁴ To a lesser extent, this is also the case for banks from smaller advanced economies (eg Canada, Sweden, Switzerland) and emerging market economies. Most foreign currency liabilities are dollar denominated, but other currencies are key for some bank nationalities. In particular, banks headquartered in Denmark and Sweden make significant use of euro funding. The shares of GBP, JPY and CHF in foreign currency liabilities are relatively low and more uniform across bank nationalities.

⁴ The large banking systems tend to be behind the bulk of the overall volume of foreign currency borrowing (Graph I4).

The five major foreign currencies in total liabilities, by bank nationality¹

In per cent, as of Q2 2024

Graph 4



¹ Share of total liabilities (excluding interoffice positions). The numerator excludes currencies when they are domestic for each nationality (eg euro for AT banks). EA = euro area banks; OFC = banks with parents in BH, BM, BS, IM, JE, KY and PA; Asian EMEs = ID, KR, MY, PH, TW; Other EMEs = SA, CL, MX, TR.

Sources: BIS locational banking statistics by nationality (LBSN); BIS consolidated banking statistics (CBS)

Funding flightiness

Assessing the flightiness of gross liability positions – the theme of this subsection – provides information about the extent of potential funding shortages. The flightiness proxies examined below are: the location of the borrowing entity, the sector of the funding provider, the type of funding instrument and the maturity of the funding. Definitive conclusions on the basis of these or other simple proxies would be premature. As illustrated by the Credit Suisse crisis, traditionally stable funding can flee a bank under stress (Annex B). Thus, some banks mitigate their foreign currency funding risk by diversifying funding sources geographically,⁵ by instrument, by maturity or by investor type (Royal Bank of Canada (2024), Bank of Japan (2021)).

One would expect foreign currency funding to be most stable – all else equal – if booked by affiliates in the currency issuing jurisdiction. Compared to other funding locations, there is a higher likelihood that a local – rather than cross-border – funding instrument is a sticky retail deposit. In addition, the anticipation of a central bank liquidity backstop helps reassure the funding providers.

However, funding obtained by a subsidiary or branch in the currency-issuing jurisdiction tends to be a small share of the total foreign currency funding on a consolidated basis (Graph 5.A).⁶ Instead, many national banking systems tend to book much of their foreign currency funding from their home offices (red bars; Aldasoro and Ehlers (2018)). Such funding could then be reallocated cross border within the same group (red dots).⁷

⁵ However, most bank nationalities source half of their foreign currency funding from lenders in just 5 jurisdictions, and in some cases from just 3 jurisdictions (Graph I5).

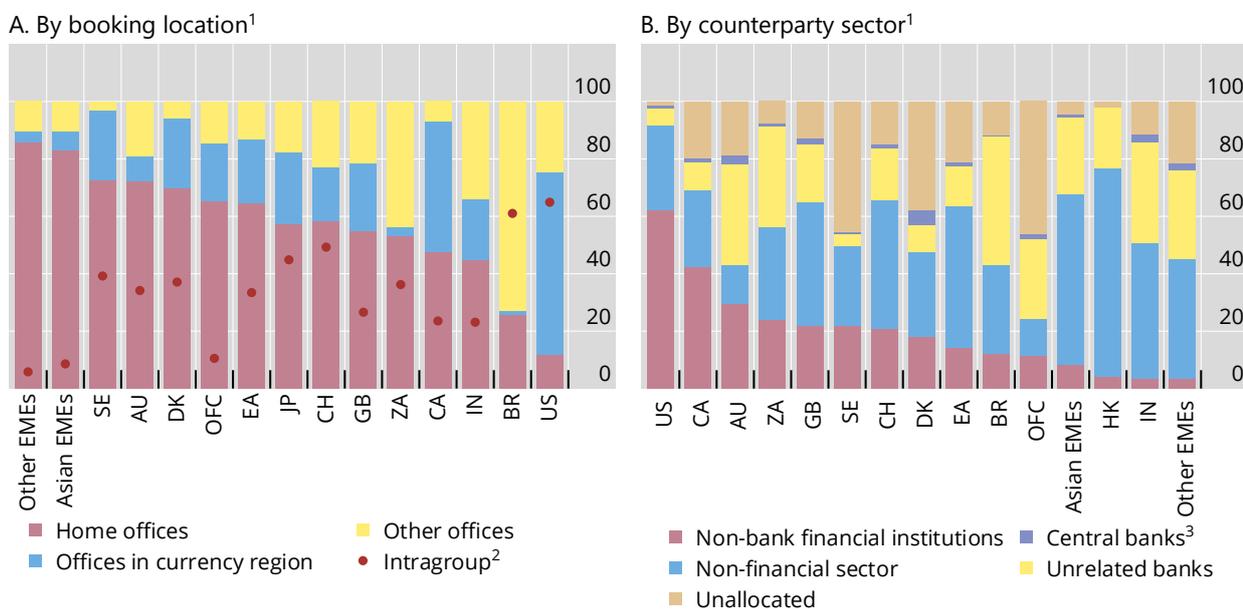
⁶ Liabilities in pound sterling are mostly booked by offices in the United Kingdom (Graph I6).

⁷ In addition to a reallocation of funding, such positions can reflect other business needs.

Sources of foreign currency liabilities, by bank nationality

In per cent of foreign currency liabilities, as of Q2 2024

Graph 5



The foreign currencies are USD, EUR, JPY, GBP and CHF, excluding cases where these are domestic for the nationality.

¹ The bars exclude interoffice liabilities. “Home offices” are those located in the country of headquarters. Offices in “currency region” are those located in the jurisdiction issuing the underlying currency (eg offices in Switzerland for CHF liabilities). EA = euro area banks; OFC = banks with parents in BH, BM, BS, IM, JE, KY and PA; Asian EMEs = ID, KR, MY, PH, TW; Other EMEs = SA, CL, MX, TR. ² Dots plot intragroup claims in foreign currency divided by foreign currency liabilities, excluding interoffice liabilities, by bank nationality. ³ Cross-border positions only.

Source: BIS locational banking statistics by nationality (LBSN); BIS consolidated banking statistics (CBS).

Turning to the sector of the funding provider, local deposits by the non-financial sector tend to be stable, whereas money-market and interbank funding is typically short term and can be flighty (Caparusso and Hardy (2022), McGuire and von Peter (2016)). The data reveal that the non-financial sector plays an important role as a funding provider, accounting for 30% or more of foreign currency funding for most bank nationalities (Graph 5.B). As for flightier sources, up to 45% of national banking systems’ consolidated foreign currency liabilities are to unrelated banks, typically in the form of repo or other money market instruments. In addition, NBFIs have grown in importance over time (Aldasoro and Ehlers (2018), Aldasoro et al (2020), FSB (2024)) and account for up to 60% of foreign currency liabilities as of mid-2024.⁸ NBFIs lending includes short-term funding via the repo market, unsecured funding (eg commercial paper), deposits, derivatives, and holdings of banks’ debt securities. The latter instruments (derivatives and debt securities) account for much of the “unallocated” (by sector) component in Graph 5.B.⁹

Among funding instrument types, non-core liabilities – eg wholesale funding, interbank, and cross-border funding – are typically less stable in stress (Bruno and Shin (2015), Ivashina and Scharfstein (2010)) or susceptible to price fluctuations (Bank of Canada (2023)). A higher share of long-dated debt in non-core liabilities (eg bonds, currency swaps) would address this issue by reducing rollover risk (Bank of

⁸ NBFIs can be a particularly important counterparty for cross-border funding. For instance, Canadian banks’ domestic counterparties are mostly in the real sector (eg households and non-financial corporations) while their most common counterparties abroad are NBFIs (Friedrich et al (2025)).

⁹ NBFIs are typical lenders in these instruments, so they may be likely to be behind much of the unallocated amounts.

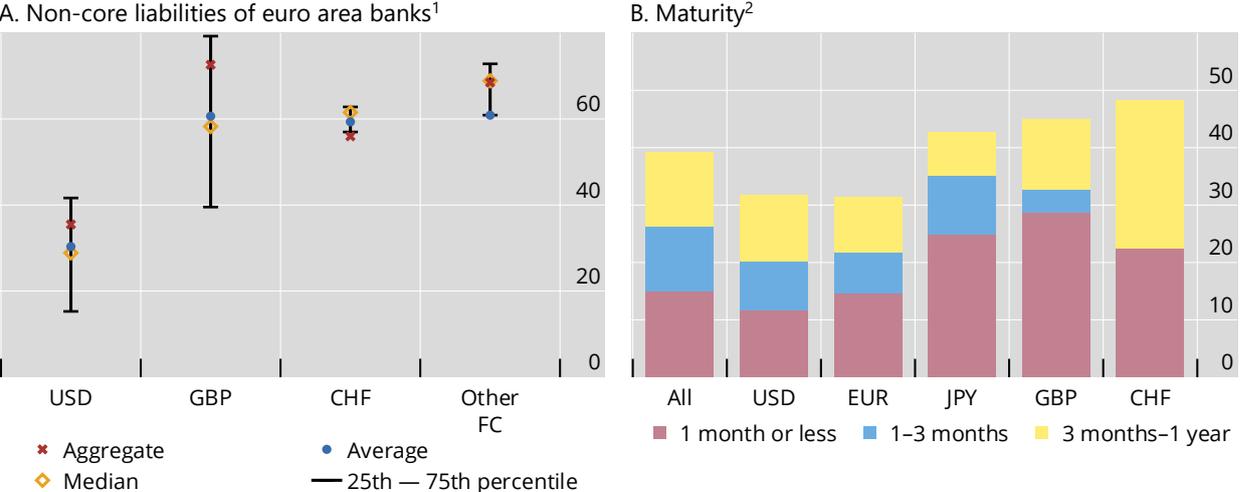
Japan (2025)). Nevertheless, short-term – notably, repo – funding markets remain a key source of US dollars for many non-US banks (Klaus and Mingarelli (2024), Mouakil and Schwenninger (2025)).

Data for euro area banks reveal heavy reliance on non-core liabilities, albeit with differences across currencies (Graph 6.A). In particular, the share of such liabilities at these banks averages 30% for the USD. The corresponding shares stand at around 60% for other currencies.

Non-core and short-term foreign currency liabilities, selected bank nationalities

In percentage of total liabilities in each currency, as of Q2 2024

Graph 6



¹ Non-core liabilities are defined as the sum of wholesale, interbank, debt securities and cross-border deposit liabilities ² Consolidated data for the following nationalities: AU, CA, CH, GB, KR, MX. JPY bar excludes AU and CA banks, GBP bar excludes CH and GB banks, CHF bar excludes AU, CA and CH banks.

Source: CGFS Working Group.

Lastly, shorter-maturity liabilities are more exposed to roll-over risk, all else equal. Among a few bank nationalities with available data, most foreign currency funding has a maturity of less than one year, and over half of these liabilities are at even shorter tenors, notably in JPY (Graph 6.B). In some cases, a substantial share of foreign currency funding could flee banks even over short stress periods (Annex C).

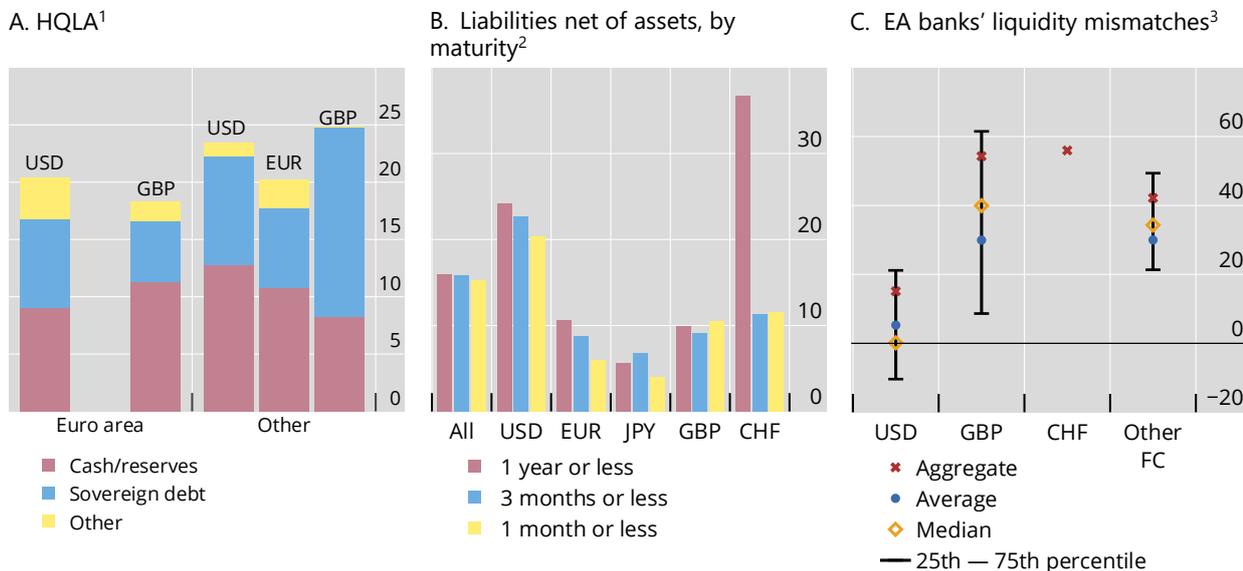
Asset liquidity

The amount of assets that are liquid over a given horizon helps determine how much funding flight a bank can meet without needing outside assistance or becoming distressed. Banks hold high quality liquid assets (HQLA) – which can be readily converted into cash at little or no discount over a short horizon – both for regulatory and risk management purposes. For the few bank nationalities with available data, reserves and sovereign debt are both important components of foreign currency HQLA, which amount to about 20% of the *total* liabilities in each currency (Graph 7.A).

Foreign currency on-balance sheet liquidity positions, selected bank nationalities

In per centage of total liabilities in a given currency, as of Q2 2024

Graph 7



¹ HQLA=high quality liquid assets. Aggregated across euro area, CH, KR and MX banks. ² Net positions are liabilities minus assets. Consolidated data for the following nationalities: AU, CA, CH, GB, KR, MX. JPY bars exclude AU and CA banks, GBP bars exclude CH and GB banks, CHF bars exclude AU, CA and CH banks. ³ Non-core liabilities – ie the sum of wholesale, interbank, debt securities and cross-border deposit liabilities – minus HQLA. Euro area banks.

Source: CGFS Working Group.

Net on-balance sheet funding measures

Net funding metrics in this section subtract (a portion of) banks' assets from (a portion of) their liability positions in a given currency. Such metrics assume that the liabilities in question can be withdrawn over the relevant horizon and the corresponding assets are liquid over that horizon. For a few bank nationalities with available data, short-term funding – ie funding subject to rollover risk – is often greater than the corresponding short-term assets – ie those that can be monetised (Graph 7.B). In the case of the USD and the CHF, the gap for this sample of banks exceeds 20% of total liabilities in the respective currency, notably for funding due within 1 month. Maturity transformation is a defining feature of traditional bank business models, thus naturally resulting in short-term liabilities or callable deposits funding longer term assets.

Zooming in on euro area banks reveals that the potential for funding gaps differs markedly across currencies. For instance, the USD HQLA for the median entity exactly matches non-core (flighty) dollar liabilities (Graph 7.C).¹⁰ By contrast, HQLA falls materially short of non-core liabilities for other currencies.

FX derivatives and on- and off-balance sheet net exposures

Derivatives are a key and increasing source of foreign currency liabilities for banks. Banks may enter FX derivatives contracts as market makers or when trading on behalf of clients. They may also use FX derivatives to speculate, exploit arbitrage opportunities or hedge their on-balance sheet exposures. Ultimately, the specific use of FX derivatives would depend on – or may be a defining feature of – bank

¹⁰ Net on-balance sheet positions can be computed for a wider set of bank nationalities (Graph I7). While useful, such a measure assumes that all liabilities are maturing and are at risk of not being rolled over, and that all assets can be immediately used to address funding shortfalls.

business models (Annex D).¹¹ Regardless of the precise motivations, derivatives create obligations in specific currencies that will need to be met, thus contributing to foreign currency funding risk, as well as receipts that could help offset such risk in other currencies.

Data on derivatives should be interpreted with inherent limitations in mind. Such data tend to be scarce, even relative to the on-balance sheet data considered above. And they may not be comparable across jurisdictions.¹² Nevertheless, the available data provide a view into banks' off-balance sheet foreign currency positions and illustrate their importance.

In gross notional terms, FX derivative obligations can be large relative to on-balance sheet liabilities. Aggregate estimates of the USD obligations of non-US banks suggests the off-balance sheet portion is triple that of the on-balance sheet debt (Borio et al (2022)). Examining directly just the interdealer segment of FX derivatives for the major banking systems reveals that the outstanding notional amounts of USD obligations are about 40% as large as on-balance sheet USD liabilities, while they are around 70% for EUR, and upwards of twice as large for JPY and CHF (Graph 8.A). Since these estimates exclude client-facing trades, they can be viewed as a lower bound. While the various estimates of the size of FX derivatives vary, the steady growth in this market segment – in USD and other major currencies – is well established (Graph J8).

The *level* of netting of FX derivatives would typically affect the *measured* size of the corresponding positions. Detailed EMIR data for euro area banks provide a case in point (Graph 8.B). When netting FX derivatives at the bank level and then aggregating separately across net obligor banks and net recipient banks, the resulting USD positions stand at over EUR 500 bn and EUR 800 bn respectively. However, if the netting is at the country-level and the aggregation is across net obligor countries and net recipient countries, the same data would indicate net USD positions that are 30-50% smaller. The findings are qualitatively similar for other currencies. When interpreting any findings based on netting and aggregation, it is thus important to keep in mind that measured positions shrink when the netting is at a higher level.

In principle, banks could use FX derivatives to mitigate on-balance sheet currency mismatches. A survey of working group member institution sought to shed light on the extent of this mitigation. One-third of the respondents indicated that domestically headquartered banks tend to close most of their on-balance sheet open FX exposure with FX derivatives (Graph 8.C). Another third reported at least partial hedging and the final third provided no information.

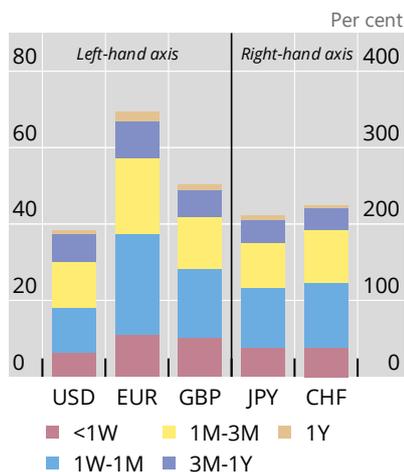
Available data for twenty jurisdictions points to at least partial hedging of on-balance sheet mismatches with FX derivatives. For confidentiality reasons, these data are aggregated within two groups: one comprises four jurisdictions (CH, GB, KR, MX) whereas the US and euro area countries are in the other. In the former group, FX derivatives fully close the net on-balance sheet mismatch in USD but widens the EUR mismatch (Graph 9.A). In the latter group, FX derivatives largely offset open exposure in JPY, GBP and CHF.

Detailed maturity data from the jurisdictions in the former group (CH, GB, KR, MX) also sheds light on how FX derivatives positions affect rollover risk. For USD positions, these data reveal that net long derivatives positions at short maturities mitigate rollover risks (Graph 9.B). However, currency mismatch could remain at shorter maturities even if derivatives close this mismatch overall. By contrast, FX derivatives seem to amplify this risk in the case of the EUR.

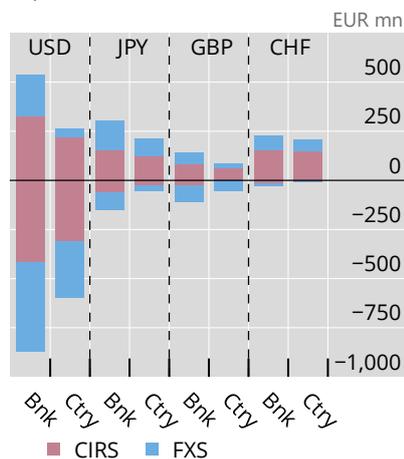
¹¹ Annex E discusses NBFIs' foreign currency exposures and hedging behaviour in Australia and Korea. In addition, Annex F considers foreign currency exposures and mismatches among internationally active insurance firms.

¹² In particular, data for euro area banks includes only FX swaps and forwards, and data for British banks includes all derivatives by currency (not only FX derivatives).

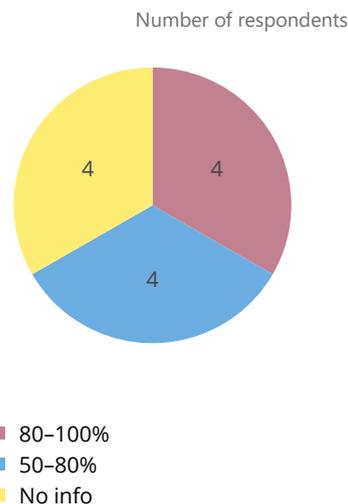
A. Gross obligations as percent of on-balance sheet liabilities¹



B. Higher consolidation level may shrink materially measured exposures²



C. Share of on-balance sheet FX mismatch closed via derivatives³



¹ As a percentage of total liabilities in the given currency, excluding interoffice positions, as of Q2 2024. Aggregated across banks headquartered in: AU, CA, CH, euro area, GB, JP and US. Reflects derivative obligations in the interdealer market (FX swaps, forwards and currency swaps), when that obligation is not the domestic currency in the country of the bank's headquarters. ² Sample based on euro area banks, covering currency swaps (CIRS) and FX swaps and forwards (FXS). Obligor (payee) positions minus recipient positions in FX derivatives; Bnk=netted at the bank level, then positive / negative values aggregated separately across banks; Ctry=netted at the country level, then positive / negative values aggregated separately across countries. ³ Based on survey responses by working group members.

Source: BIS locational banking statistics by nationality (LBSN); BIS Consolidated banking statistics (CBS); CGFS Working Group; CLS; EMIR.

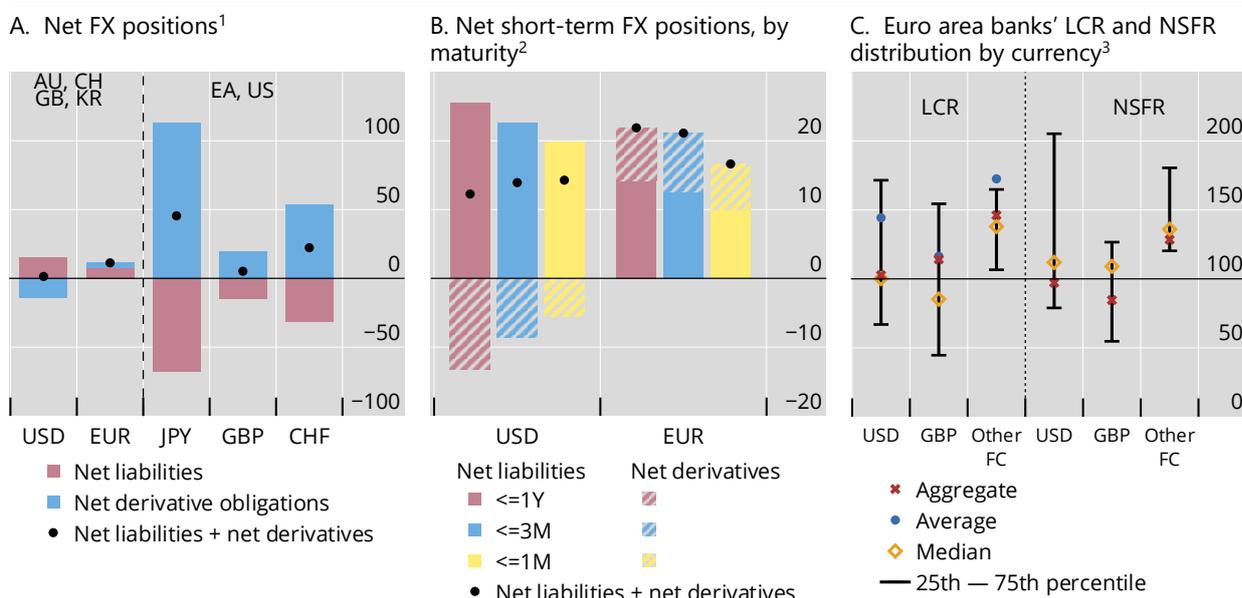
Importantly, even where off-balance sheet positions mitigate asset-liability currency mismatches, they need not fully mitigate foreign currency funding risk. A key reason is the prevalence of short maturities. BIS triennial data reveal that FX derivatives contracts are often of short maturity, notably FX swaps (Drehmann and Sushko (2022)). Likewise, zooming in on the interdealer market reveals that contracts of 3-month or shorter maturity accounts for about 80% of the total. (Graph 8.A). When maturities are short, large swings in hedging or funding costs come to the fore (Avdjiev et al (2019), Eguren-Martin et al (2024)). For example, shocks to cost of funding via FX derivatives can force banks to liquidate assets instead of rolling over short-term derivatives (Cesa-Bianchi et al (2021)). Aligning the maturities of FX derivatives with the maturities of the corresponding on-balance sheet positions can help mitigate rollover risk (Atkin and Harris (2023)).

Besides through FX derivatives, banks may also assume large foreign currency exposures through contingent credit facilities or guarantees. Foreign banks' credit commitments to borrowers in the major currency areas are around 20% of the attendant on-balance sheet claims (Graph I9). When these lines are drawn, as during the dash-for-cash of March 2020, banks may suddenly find themselves in need of foreign currency funding (see Annex A).

Net currency positions on- and off-balance sheet

In per cent, as of Q2 2024

Graph 9



¹ Relative to the total on-balance sheet liabilities in the given currency. Sample of bank nationalities shown above the bars. ² Based on AU, CH, GB and KR banks. Net positions are liabilities minus assets and FX derivatives obligations minus receipts. Relative to the total on-balance sheet liabilities in the given currency. ³ LCR = liquidity coverage ratio; NSFR = net stable funding ratio. Other FC = other foreign currencies.

Source: CGFS Working Group.

Regulatory and supervisory metrics

Supervisors consider summary metrics of foreign currency funding risk, often accounting for both on- and off-balance sheet exposures.¹³ One such metric is the LCR, which targets short-term risks – it compares assets that banks are expected to be able to liquidate over a 30-day horizon with cash outflow over the same horizon in stress. The NSFR requires banks to have a certain amount of funding from stable sources, incentivising long-term funding.

By monitoring such metrics at the currency level, supervisors can gauge the adequacy of banks' liquidity positions.¹⁴ For example, the Japanese Financial Services Agency and the Bank of Japan assess whether foreign currency liquidity stress tests conducted by major Japanese banks are based on reasonable assumptions, and whether the banks hold sufficient HQLA to withstand the most adverse scenario in the test (Bank of Japan (2024)).

While international standards impose LCR and NSFR requirements at the level of all currencies combined, the possibility for cross-currency frictions underscores the value of splitting the measures by currency. Indeed, Basel III specifies that currency-level LCR should be monitored and reported to help

¹³ Section 4.4 also discusses survey data on the use of such metrics among central banks as part of their efforts to reduce banks' foreign currency funding risks.

¹⁴ Some jurisdictions track other metrics, including non-regulatory ones, to evaluate banks' foreign currency funding risk. For example, the Bank of Japan uses the loan-to-funding gap (the difference between non-liquid loans and total deposits, medium/long-term FX and currency swaps and bonds) to evaluate the stability of major banks' foreign currency positions (Bank of Japan (2025)).

supervisors assess if banks can meet liquidity needs in major currencies.¹⁵ Euro area supervisors offered evidence of such monitoring. It reveals substantial variability in the foreign currency LCR and NSFR ratios across banks and currencies (Graph 9.C) – which does not signal regulatory breaches, as there are no corresponding requirements in the euro area.¹⁶ That said, liquidity requirements at the level of individual foreign currencies are imposed elsewhere. If more jurisdictions reveal such currency-specific liquidity ratios, it would be possible to draw useful comparisons across banks.

3.2 Foreign currency funding risk from a host-country (residence) perspective

Funding stress at individual bank offices may need to be addressed within the host jurisdiction. Such a scenario would be particularly relevant for global banks with a decentralised model – whereby affiliates in foreign jurisdictions operate rather autonomously. And it is a concern for host authorities. To shed light on potential funding shortages that host authorities may find particularly hard to address, a currency is defined in this subsection as foreign if it is issued outside the bank’s jurisdiction of residence (ie it satisfies the second criterion in Section 2). Banks are grouped by their location on an unconsolidated basis (ie including intragroup positions).

Foreign and domestic banks adopt different business models, with varying implications for foreign currency funding, and thus may pose distinct challenges to local authorities. The first part of this subsection provides an overview of foreign currency funding from a residence perspective, with all banks grouped together (given data constraints). The second part covers domestic and foreign banks separately to illustrate the distinct risks for each.

Foreign currency funding and its flightiness: all resident banks

Foreign currency funding is mostly concentrated in a few jurisdictions. Given London’s role as a global financial hub, banks located in the United Kingdom stand out, with funding in the five major foreign currencies amounting to almost 6 trillion USD (Graph 10, black dots). This figure is comparable to the corresponding volume for the euro area as a whole.¹⁷ Taken together, the United Kingdom and the euro area account for half of bank foreign currency borrowing in the locations shown.¹⁸ Foreign currency USD funding is also high for banks in Hong Kong, which serves as an international financial centre and a key USD funding hub in Asia.

In several jurisdictions, foreign currency funding is a substantial fraction of banks’ balance sheets. Offshore financial centres (eg the Cayman Islands) operate primarily in foreign currencies. In ten additional jurisdictions, positions in the five major foreign currencies account for at least 20% of total bank liabilities. The dollar is the key foreign currency in all jurisdictions considered, except for Sweden and Denmark, where the euro dominates.

¹⁵ Section 30.27 of Basel III. For a discussion of the use of the foreign currency LCR in the case of Korea, see Annex C.

¹⁶ In addition, banks may manage their foreign currency funding risk in ways not captured by the LCR or NSFR.

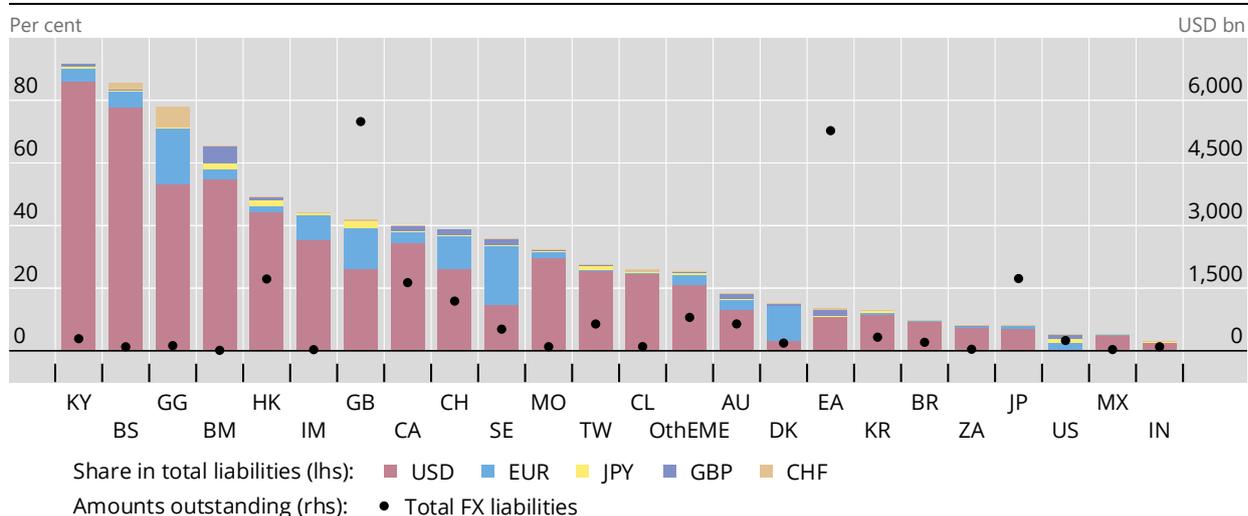
¹⁷ See also Graph I10.

¹⁸ The United Kingdom is also central in the FX derivatives market – see Graph I11, which is based on interdealer positions. Likewise, estimates from the BIS derivatives statistics that extend beyond the interdealer market likewise imply the centrality of London; see also Demski et al (2022).

Foreign currency funding, by bank residence

As of Q2 2024

Graph 10



“OthEME” comprises ID, MY, PH, SA and TR. Currencies are excluded when issued by the given jurisdiction. Total FX liabilities comprises the sum of the five major currencies shown.

Source: BIS locational banking statistics (LBS).

While Graph 10 illustrates the foreign currency funding positions of banks across jurisdictions, an assessment of foreign currency funding risk requires additional information, such as funding flightiness. In this respect, the lender’s location is an important albeit rough indicator. For instance, local funding tends to be more stable during stress than cross-border funding (McGuire and von Peter (2016)). Local funding ranges from 8% and 10% of total FX liabilities for banks in Sweden and Spain to 54% for banks in Saudi Arabia (Graph 11.A).¹⁹ Although banks in Hong Kong have a significant share of foreign currency funding, approximately half of this funding is sourced locally. In turn, cross-border funding is likely to be more stable if it stems from the currency-issuing country (eg US dollars from lenders in the United States) than otherwise. The share of such funding also exhibits marked dispersion, ranging from 5% for banks in China to 47% for banks in the United States.²⁰

The sector of the funding provider’s counterparty is also a useful indicator of funding flightiness. Funding within the banking group tends to be a more stable source of cross-border funding (Caparusso and Hardy (2022), Reinhardt and Riddiough (2015)), while NBFIs are particularly flighty in stress (Forbes et al (2023)). Available data on counterparty sector reveal that banks located in financial centres like the United States, United Kingdom or Luxembourg tend to have a large share of foreign currency liabilities from NBFIs (35%, 28% and 39% respectively; Graph 11.B). By contrast, the share of foreign currency funding sourced within the banking group (ie “related offices”) is rather similar across many host jurisdictions, at roughly 20%.

¹⁹ China and the United States do not report local foreign currency positions.

²⁰ Lenders outside of the currency area in focus may face a funding squeeze at the same time as other foreign borrowers. Thus, residents of the currency issuing jurisdiction, with access to deeper markets and official sector liquidity facilities, may be a more stable source of cross-border foreign currency funding (Aldasoro and Ehlers (2018)).

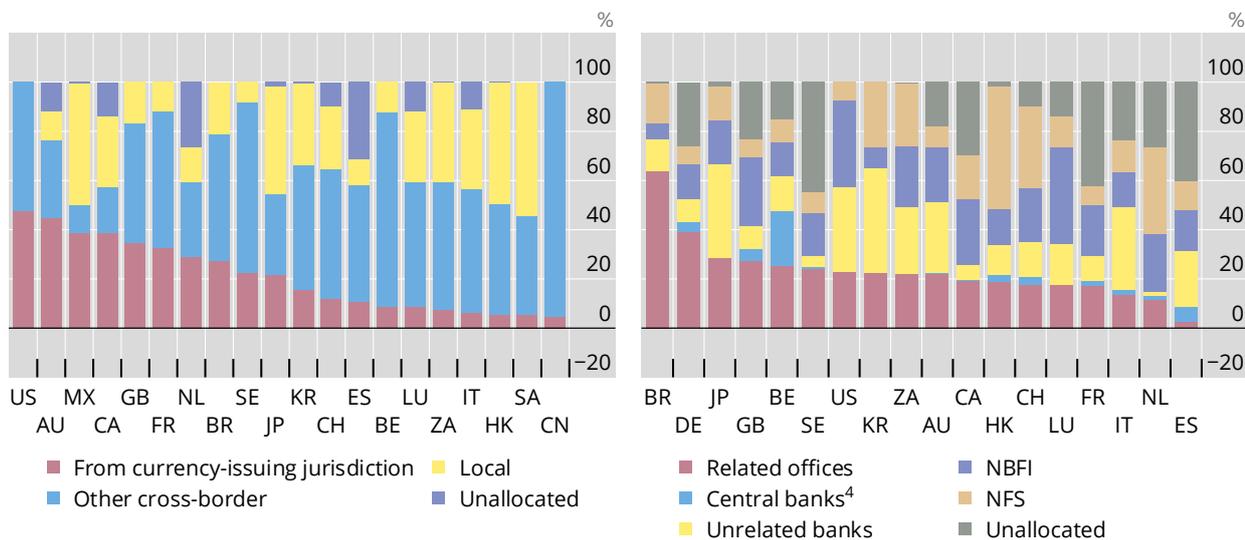
Banks' foreign currency funding sources, by bank residence¹

As of Q2 2024, share in total foreign currency liabilities

Graph 11

A. By location of counterparty²

B. By sector of counterparty³



¹ Refers to USD, EUR, JPY, GBP and CHF as foreign currencies (ie excluding USD for banks located in the US). Local positions are not reported by China and the United States. ² From currency issuing jurisdictions means counterparties located in the jurisdictions that issue that currency (ie counterparties in the euro area for EUR liabilities). ³ The “unallocated” sector includes positions subject to confidentiality constraints. ⁴ Central banks as a counterparty includes only cross-border positions.

Source: BIS locational banking statistics (LBS).

Funding flightiness, foreign vs domestic banks

The foreign currency funding risk of foreign and domestic banks likely differs because their balance sheet composition differs along the key dimensions just discussed. Foreign banks tend to borrow (and lend) more in foreign currencies, source more of their funding from abroad and rely to a greater degree on intragroup positions (Graph 12.A; Caparusso and Hardy (2022)). These patterns are somewhat weaker for foreign subsidiaries relative to branches. Subsidiaries are typically subject to stricter local supervision than branches and also tend to rely less on the traditionally flighty wholesale funding (Aldasoro et al (2022)).²¹

Among six jurisdictions with relevant data, foreign and domestic banks show similarities in their reliance on non-core²² and short-term foreign currency funding. The shares of non-core sources in total USD, JPY and GBP funding differ by only 0-5 percentage points between foreign and domestic banks, while the minimum share is at about 80% (Graph 13.A). The difference is 10-16pp in the case of the CHF and EUR. Within another set of a few jurisdictions, the share of foreign currency liabilities due within a year tend to be similar between foreign and domestic entities (around 80%; Graph 13.B).

The potential differences between foreign and domestic banks are important for assessing exposures to foreign currency funding risk, as the former account for a large share of such exposures. In most jurisdictions with relevant data, foreign banks account for at least 10% of foreign currency liabilities

²¹ Not every jurisdiction permits foreign branches to operate. The choice of a foreign branch or subsidiary and of how to use that affiliate – eg as a local lender, raising funds for the group – reflects the banking group’s business model (Hardy et al (2024)).

²² In contrast to the subsection on consolidated bank balance sheets, non-core funding is defined as total liabilities minus local non-financial sector deposits.

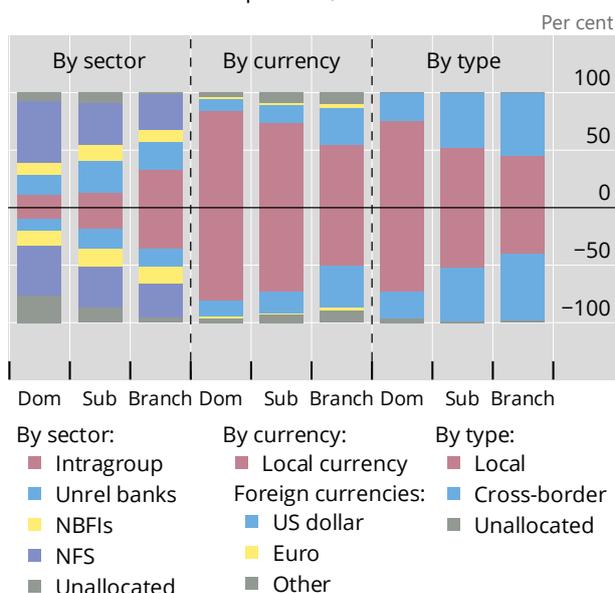
in USD, EUR, JPY, GBP or CHF; the average share is at about 25% across all such jurisdictions (Graph 12.B, blue dots). For eight of the jurisdictions – including both advanced and emerging market economies – foreign banks have over 20% of their liabilities in these five foreign currencies (black x's). In five of these jurisdictions, foreign banks account for more than 20% of all foreign currency borrowing.

Balance sheet composition and foreign currency liabilities of foreign banks

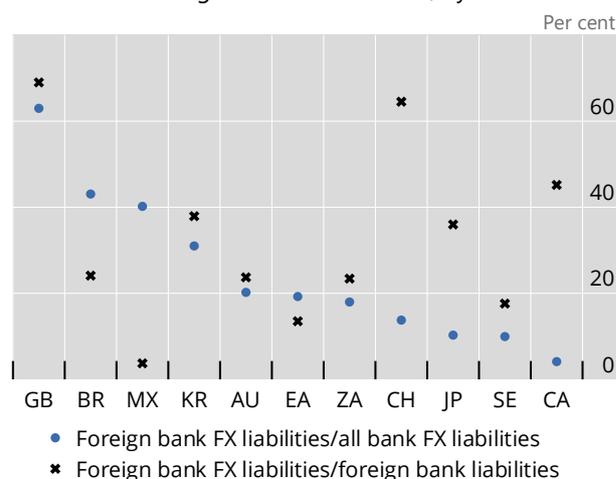
As of Q2 2024

Graph 12

A. Balance sheet composition, in all currencies¹



B. Shares of foreign banks' FX liabilities, by residence²



¹ As a share of total claims (positive bars) and liabilities (negative bars) of domestic and foreign branch and subsidiaries in 35 host locations. JP data includes trustee banks. Unrelated banks include central banks and unallocated sector. Dom = domestic bank, Sub = foreign subsidiaries, Branch = foreign branches, NBFIs = non-bank financial institutions; NFS = non-financial sector. ² Refers to USD, EUR, JPY, GBP and CHF when not issued by the given jurisdiction.

Source: BIS locational banking statistics (LBS).

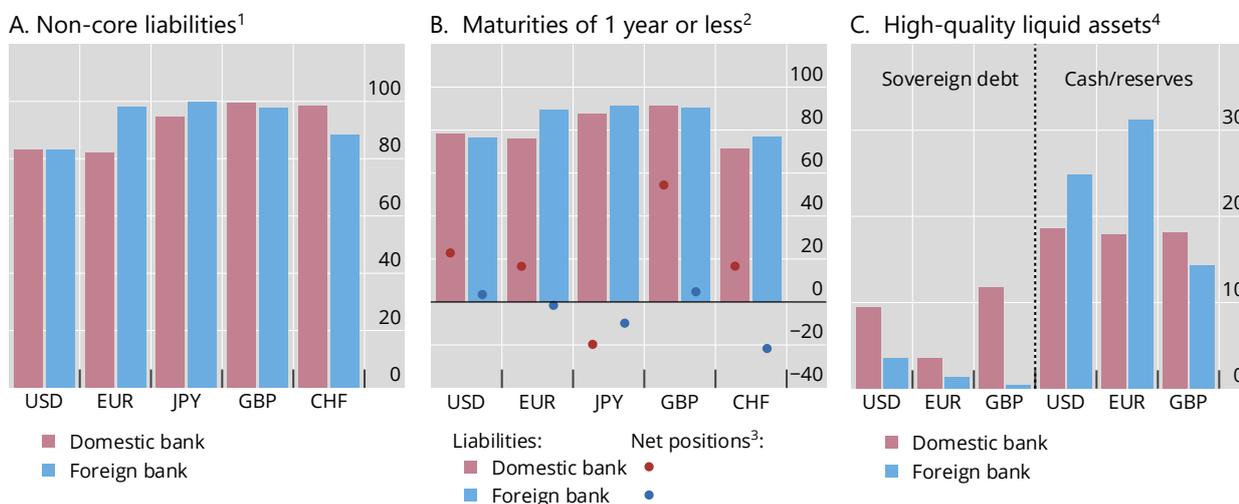
Asset liquidity and net positions, foreign vs domestic banks

Differences in business models between foreign and domestic banks can lead to differences in the foreign currency assets held and ultimately in net on-balance positions. Available data from six jurisdictions suggests that foreign banks in those jurisdictions tend to have less risky foreign currency exposure on net, due to having more liquid or short-maturity assets. Specifically, the USD and EUR components of HQLA are more strongly tilted towards cash – rather than sovereign debt securities – for foreign banks compared to their domestic peers in these jurisdictions (Graph 13.C). Additionally, another subsample of banks shows foreign banks with roughly as much or more short-term foreign currency assets as liabilities (Graph 13.B). By contrast, the corresponding domestic banks have less short-term assets than short-term liabilities in all foreign currencies except JPY.

Funding flightiness and asset liquidity, foreign vs domestic banks

In per cent of total liabilities in the given currency, selected jurisdictions, as of Q2 2024

Graph 13



¹ Non-core liabilities are total liabilities minus local non-financial sector deposits. Based on banks in BE, CA, CH, GB, HK and MX. EUR excludes BE. GBP excludes GB. CHF excludes CH. ² Based on banks in AU, BE, CH, GB, KR, LU, MX. EUR bar excludes BE and LU. JPY bar excludes AU and LU. GBP bar excludes CH and GB. CHF bar includes only BE, KR, MX. ³ Net positions are short-term (less than one year) liabilities minus short-term assets in the given currency. ⁴ Sovereign debt sample: BE, KR, LU, MX; EUR bar excludes BE and LU. Cash sample: AU, KR, LU, MX, SG; EUR bar excludes LU.

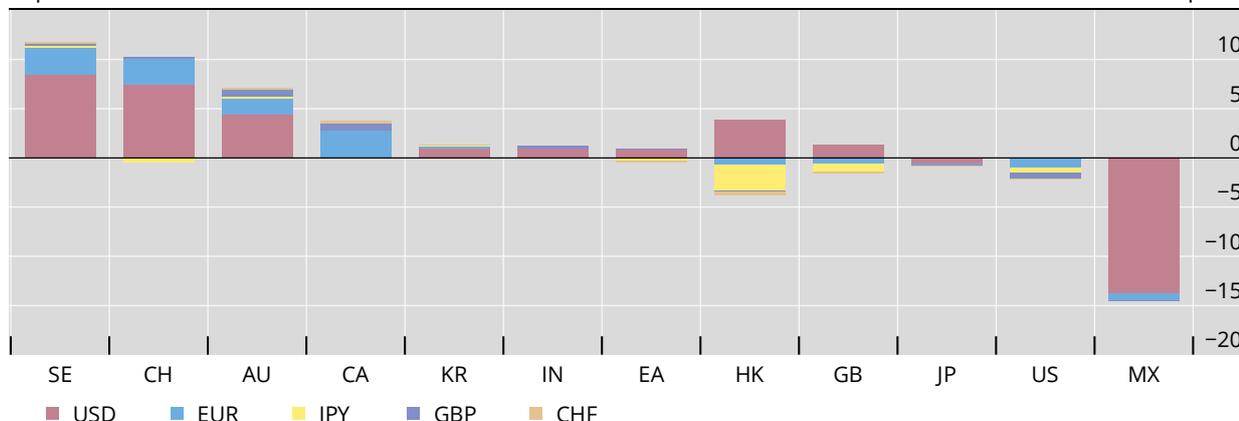
Source: CGFS Working Group.

Together, foreign and domestic banks can have significant net on-balance sheet currency mismatch within certain jurisdictions. In many cases, banks have more foreign currency liabilities than assets on their balance sheets overall, with the dollar typically accounting for the largest net position (Graph 14; see also Graph I12). Interestingly, this graph – although it aggregates foreign and domestic banks within a host jurisdiction, for confidentiality reasons – barely blurs heterogeneity across nationalities, as net on-balance sheet positions of foreign and domestic banks mostly point in the same direction.

Net on-balance sheet positions in foreign currencies, by bank residence

In per cent, as of Q2 2024

Graph 14



¹ Liabilities minus claims, in major currencies (when not issued by the jurisdiction), divided by total liabilities in all currencies.

Source: BIS locational banking statistics (LBS).

3.3 Foreign currency funding risk of NBFIs

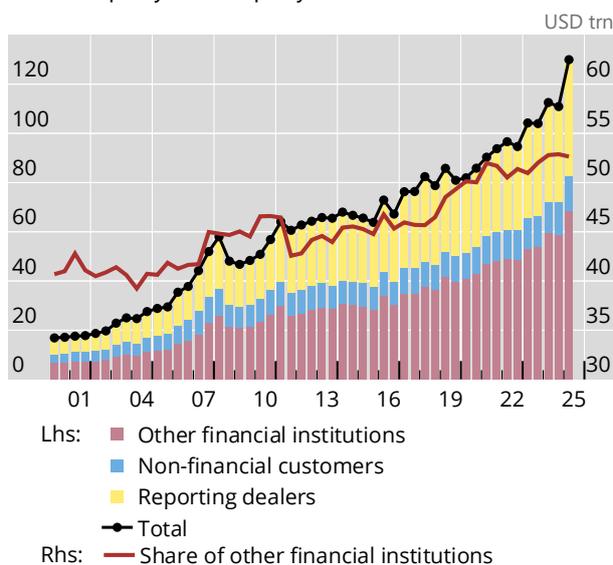
For a map of system-wide foreign currency funding risk to be informative, the NBFi sector (including insurers, investment funds, financial companies, etc.) needs to be part of it. NBFIs and banks were similar in size in 2011 with assets of 150% of global GDP. Thereafter, both sectors outpaced global GDP, with NBFIs growing more rapidly to become 30% larger than banks in 2023 (BIS (2025)).

As the NBFi sector grew, so did its presence across markets, including FX. Large segments of this sector (pension funds) have liabilities primarily in their domestic currency but seek asset diversification abroad, in foreign currencies (BIS (2025); Annex E). To the extent that these NBFIs mitigate the attendant currency mismatches, they enter FX derivative contracts. Consistent with this, the volume of FX swap and forward transactions with a counterparty in the “other financial institutions” category – which includes NBFIs – tripled between 2008 and end-June 2025 (Graph 15.A; see also IMF (2025)).

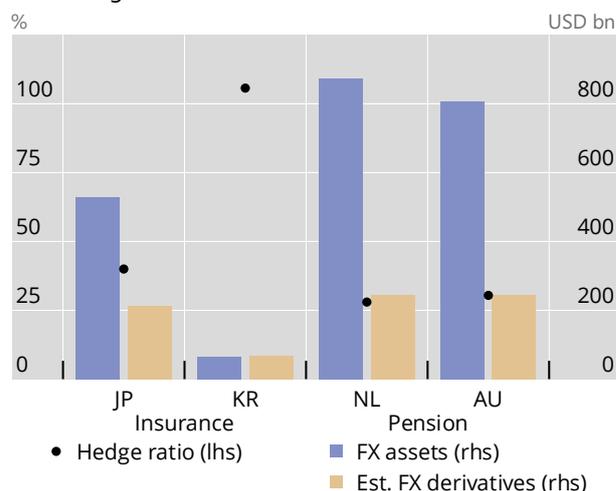
FX derivative funding by NBFIs

Graph 15

A. FX swaps by counterparty sector¹



B. FX hedge ratios for select NBFIs²



¹ Positions from dealer banks in major jurisdictions. Includes FX swaps, outright forwards and currency swaps. Other financial institutions include NBFIs and non-dealer banks. See [here](#) for more details on compilation and coverage. ² FX derivatives are estimated as FX assets multiplied by the hedge ratio. Figures for Japan reflect only the life insurance industry.

Source: BIS OTC derivatives statistics; Bank of Korea; De Nederlandsche Bank; Aquilina et al (2025); ABS; RBA

FX derivatives that reduce currency mismatches may leave NBFIs exposed to foreign currency funding risk.²³ For instance, when investing in a foreign-currency asset, an NBFi could exchange the domestic currency for a foreign currency at the initiation of an FX swap, in which case it would have an obligation to repay the foreign currency principal at a future date.²⁴ The shorter the maturity of such instruments compared to the corresponding NBFi assets, the higher the roll-over risk and, thus, the higher the risk of foreign currency funding shortages.

²³ Aquilina et al (2025) find that life insurers increasing use of derivatives has raised their exposure to liquidity risks. See Annex F for further discussion of foreign currency exposures of the insurance industry.

²⁴ Since 2022, outright forward contracts with non-dealer financial institutions – used to hedge the exchange rate risk in existing positions – have increased more than FX swaps (Huang et al (2025)). While most NBFIs tend to use derivatives for hedging purposes, hedge funds mainly use them to speculate (Hacioğlu-Hoke et al (2024)).

Information on the extent to which NBFIs reduce currency mismatches – ie their currency “hedge ratios” – allows for rough estimates of their FX derivative positions. When only the size of foreign currency assets and the corresponding hedge ratio are known, the estimates need to: (i) abstract from heterogeneity in NBFIs’ activities and funding structures; and (ii) assume that the currency mismatch is reduced exclusively with FX derivatives. For a few jurisdictions with available data, such estimates suggest sizable use of FX derivatives by the pension and insurance sectors (Graph 15.B).²⁵ Given the prevalence of the USD as a foreign currency, this is consistent with findings in IMF (2025) that USD hedging by NBFIs has been rising over the last decade. Efforts to lengthen the maturity of FX derivatives can help reduce the attendant roll-over risks (Annex E).

3.4 Data imperfections and gaps

High-quality data are essential for having a complete global map of exposures to foreign currency funding risks. However, because of confidentiality considerations, even when disaggregated data do exist in the corresponding jurisdiction, the analysis in this report generally relied on data aggregated at a high level, thus obscuring risks at individual banks. In addition, limited shareability of some aggregated data, as well as gaps reflecting uncollected data, also weakened the analysis.

This report relies mostly on the BIS international banking statistics. While these statistics cover banks’ global activities – including a currency breakdown – they exhibit important gaps as regards the maturity profile of the balance sheet, the liquidity of assets held, the exact nature of certain liabilities and the banks’ off-balance sheet exposures. Thus, they paint an incomplete picture of exposures to foreign currency funding risk.

The report also draws on an ad hoc data collection from participating central banks. Many jurisdictions were unable to provide important data for mapping exposures to foreign currency funding risk. For instance, data on non-core liabilities by currency was only provided by a few jurisdictions, LCR by currency was not shared beyond European countries, and currency positions at very short maturities (1 month or 1 week) were sparse. The lack of data was due in part to confidentiality restrictions, as more data are available to supervisors and central banks than those shared with the working group. In addition, some jurisdictions have reportedly not yet collected certain data that the analysis in the report calls for or have done so only from a specific perspective – consolidated or locational.

Many of the metrics that underpinned the analysis on a consolidated basis could not be constructed on a locational basis.²⁶ This precludes answering questions along the lines of: where does foreign currency funding risk reside within a banking group and what parts of the group might be affected? These questions are of particular importance to a range of authorities – from host central banks and supervisors, to domestic supervisors and to the currency issuing central bank.

Consistent data on FX derivatives are particularly challenging to assemble. Only a few jurisdictions reported data on off-balance sheet derivatives exposures that could be matched with balance sheet positions at the level of a foreign currency. More data were available to approximate banks’ FX derivatives

²⁵ Hedging practices can differ substantially across jurisdictions due to market and regulatory factors. For instance, Korean insurers face binding regulation that limits the open currency exposure they can take (Aquilina et al (2025)). Separately, Du and Huber (2024) estimate that mutual funds hedge 21%, pension funds 35%, and insurance companies 44% of their USD-denominated assets – leading to an estimated \$2 trillion of USD derivatives obligations among NBFIs outside the United States in 2019. Arbitrageurs like hedge funds can be suppliers of USD funds to the FX derivatives market as well as borrowers.

²⁶ This was due to several jurisdictions only collecting or only able to provide consolidated data, as well as to poorer coverage by the shareable data on an unconsolidated basis, eg as regards derivatives exposures, LCR and/or NFSR by currency.

positions, despite some inconsistencies of the reported instruments across jurisdictions. Data from CLS on the interdealer market helped to fill some of these gaps.

A longstanding data gap relates to NBFIs. Because of these entities' significant footprint, this gap materially impairs analyses of foreign currency funding risk. NBFIs can be particularly challenging to account for. Even when they are part of a banking group and thus influence its riskiness, their data can fall outside the usual perimeter of consolidation of banking entities. While this report utilised various data sources to shed light on this sector, the breadth and depth of the resulting analysis fell far short of those for the banking sector.

4. Alleviating foreign currency funding shortages

When private external funding dries up, banks facing foreign currency liquidity shortages can, in principle, use internal capital markets to reallocate liquidity across their home office, subsidiaries, and branches. When such transfers are insufficient and the resulting distress threatens the continuity of financial intermediation, central bank liquidity facilities may be available to support banks, thereby ensuring the resilience of credit flows to domestic households and businesses. Graph 3 illustrates some of the potential channels for mitigating foreign currency funding shortages. Bank-specific stress episodes (eg the 2023 Credit Suisse crisis; see Annex B) as well as more sector-wide types of stress (eg Japanese banks' foreign currency funding shortages during the March 2020 turmoil; see Annex A) have highlighted the central role foreign currency funding shortages can play in extraordinary stress situations. Still, while central bank liquidity assistance in the domestic currency has been studied extensively – eg Arseneau et al (2025), CGFS (2017), Coelho et al (2024) – *foreign currency* backstop assistance has received less attention.

To shed light on potential liquidity sources of foreign currency assistance and their limitations, the working group surveyed member jurisdictions. The survey focused on three broad areas. First, it asked about past and anticipated restrictions on the use of internal markets in stress. Second, it reviewed central bank foreign currency liquidity backstop facilities, including arrangements between central banks. Third, it took stock of regulatory measures seeking to reduce banks' foreign currency funding risks.

In addition to summarising survey responses, this section combines them with information on banks' foreign currency positions to provide bird's eye views on the potential *materiality* of alternative sources of foreign currency liquidity in stress. One exercise compares the distribution of foreign currency positions across booking locations with an indicator of which locations have experienced restrictions on internal markets in the past. A second exercise looks at the fraction of exposures that could potentially be covered by *direct* assistance – ie within the same jurisdiction – from existing central bank foreign currency liquidity facilities. A third exercise examines what portion of exposures not already covered by direct central bank assistance could benefit indirectly from a facility of the home central bank. Finally, a fourth exercise records the relative importance of foreign currency sources that central banks may tap in operationalising their facilities. Annex I.A provides further detail.

4.1 Banks' internal capital markets

Internal capital markets can be a double-edged sword. On the one hand, they can be a key line of defence when private external sources of foreign currency funding are impaired. For instance, during the GFC and in March 2020, banks drew on dollar facilities at major central banks and used intragroup positions to

reallocate the dollars across the group (Aldasoro et al (2020), Yun (2021), Hardy et al (2024)).²⁷ Downstreaming liquidity from an unscathed parent or transferring liquidity from the currency-issuing jurisdiction would be stabilising. But, on the other hand, a troubled parent may destabilise a subsidiary in a host jurisdiction, as upstreaming depletes this subsidiary's foreign currency liquidity.

In turn, the functioning of internal capital markets may be constrained during stress episodes. This can be due either to external factors – eg regulatory restrictions – or to internal constraints – eg the need for bank entities to maintain foreign currency liquidity resilience on a standalone basis. In addition, operational constraints, such as time-zone differences between affiliated entities may complicate timely redistribution of liquidity (such as in the Credit Suisse episode; see Annex B). In the light of this, the working group surveyed member jurisdictions on whether internal capital markets have been subject to restrictions in past stress events and if future restrictions were anticipated.

Constructed from the perspective of the home central bank, Graph 16 reports survey responses as regards past restrictions on *upstream* transfers, ie restrictions on foreign branches and subsidiaries providing support to the parent bank (Panel A) and on *downstream* transfers, ie restrictions on the parent bank providing support to affiliated entities abroad (Panel B).²⁸ In both cases, the majority of jurisdictions report to have experienced no internal capital market restrictions so far.²⁹ But some jurisdictions have seen past restrictions, notably of a regulatory nature – eg constraints on the transfer size relative to capital and ring-fencing aimed at ensuring self-sustainability. Alongside regulatory constraints, operational ones were also reported to have played a role – notably, internal limits to ensure sufficient liquidity for an entity's operations. Finally, the legal constraints in Graph 16 refer to sanctions-related restrictions.

A specific recent case in which a bank group encountered impediments to internal transfers was the Credit Suisse crisis in 2023. The bank found that liquidity in individual entities was not fully available for meeting outflows in other parts of the banking group. These impediments were due to a combination of regulatory expectations and requirements as well as operational needs at the entity level, coupled with obstacles due to time-zone differences (Annex B discusses this case in more detail).

When there is still foreign currency liquidity available at the group level, to what extent may impediments to internal capital markets prevent the mitigation of potential shortages at the level of specific bank entities? Restrictions on upstream transfers could adversely affect the parents of banking groups. And downstream restrictions could prevent domestic banks' subsidiaries abroad from sourcing foreign currency when in need.³⁰ In turn, BIS international banking statistics (augmented with additional data gathered by working group members), where banks are grouped by nationality and location, shed light on such potential needs of parents and subsidiaries in each of the five currencies considered.³¹ Thus, combining these statistics with information from the working group's survey provides rough estimates of

²⁷ As credit lines were increasingly drawn during the March 2020 "dash-for-cash" episode, many foreign banks in the US were able to obtain the needed additional dollar funding from their parent banks in countries with standing swap lines with the Federal Reserve (Cetorelli et al (2020)). Japanese banks operating in the US were a case in point. They had expanded their off-balance-sheet USD credit commitments prior to the March 2020 episode, which resulted in additional foreign currency funding needs as the crisis hit and credit lines were drawn (see Annex A).

²⁸ Here, the euro area is considered as one jurisdiction. In this context, 13 jurisdictions are represented in the working group, 12 of which provided survey responses.

²⁹ The survey did not distinguish between (i) certainty about the lack of restrictions and (ii) lack of information about restrictions.

³⁰ Such restrictions typically seek to ensure a sufficiently strong liquidity position of domestic entities.

³¹ One jurisdiction does not report the nationality of resident banks' foreign currency exposures. For this jurisdiction, the total exposure in a given currency is distributed across bank nationalities (domestic and foreign) according to the corresponding shares in all-currencies positions in the BIS consolidated banking statistics.

the fraction of exposures to foreign currency funding risk that corresponds to jurisdictions where restrictions on cross-border intra-group transfers have occurred in the past (See also Annex I.A).

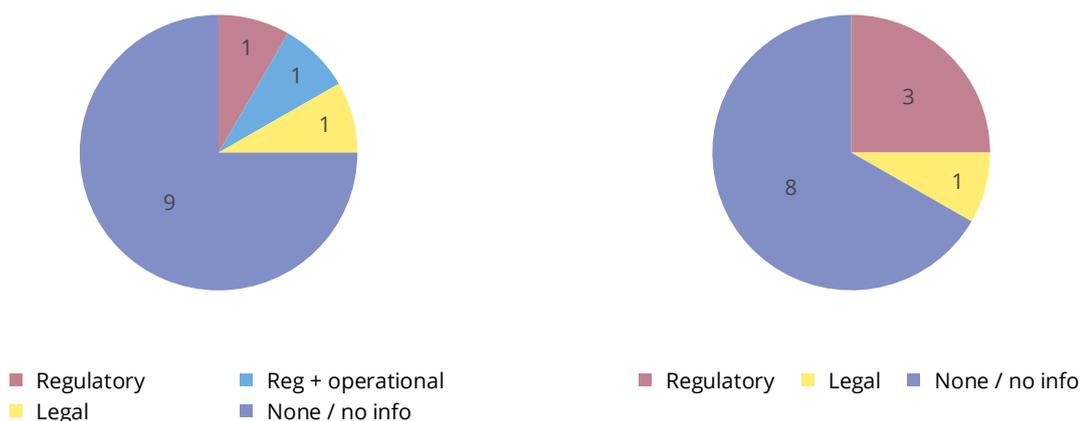
Past restrictions on banks' internal capital markets

Number of jurisdictions with restrictions

Graph 16

A. On upstream transfers from foreign subsidiaries to the parent bank

B. On downstream transfers from the parent bank to subsidiaries abroad



Source: CGFS Working Group.

The estimates, reported below, need to be interpreted with caution because of underlying data limitations. First, they abstract from off-balance sheet positions. While it is often assumed that much of banks' on-balance sheet exposures are hedged off balance sheet (eg Atkin and Harris (2023)), the evidence discussed in Section 3 was mixed. Second, the survey responses report only instances of *past* internal market restrictions affecting domestic banks at home (for upstream transfers) or affiliated entities of domestic banks abroad (for downstream transfers). They report neither the jurisdiction where the restrictions originated nor the affected currencies – thus, the estimates below assume that the restrictions applied proportionately across all currencies. Third, the reported impediments need not stand for *fully* inoperable internal markets. Historical impediments have reflected partial restrictions, eg aimed at ensuring that an entity retains a minimum amount of foreign currency liquidity to safeguard its own operations. Fourth, the estimates are in two variants – each based on an extreme proxy of exposures to foreign currency funding risk.³² One is based on *gross foreign currency liability positions*. It would be an overestimate if not all liabilities become due over the time horizon of interest or if banks can use foreign currency assets to repay some of the liabilities due. The other variant uses *net positive foreign currency liabilities*. It might be an underestimate if not all foreign currency assets can be drawn upon to repay the liabilities due.³³

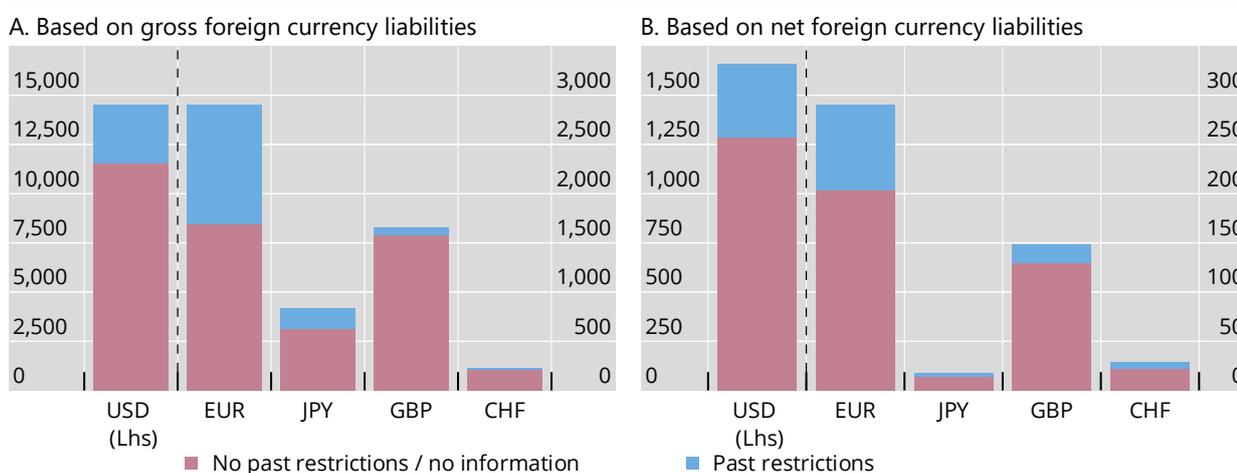
³² Since the two variants will feature in related exercises below, the same caveats will apply.

³³ In principle, it would have been preferable to use foreign currency HQLA and flighty liabilities when calculating net positions. Such data are, however, not available in the location-nationality set-up needed for this exercise.

Banks' estimated foreign currency exposures and past internal market restrictions¹

USD billion, Q2 2024

Graph 17



¹ Estimated based on BIS locational banking statistics and Working Group survey results. The height of each bar is equal to positions in a particular currency that is classified as foreign because of the booking banks' location and/or nationality. Each blue segment reports positions of banks both headquartered and located in a jurisdiction that has experienced upstream restrictions on intra-group transfers, and/or positions of domestic banks' affiliated entities in a foreign jurisdiction that has experienced downstream restrictions on intra-group transfers.

Source: BIS locational banking statistics by nationality (LBSN); CGFS Working Group.

With these caveats in mind, Graph 17 juxtaposes potential foreign currency funding needs with past restrictions on internal capital markets. The exercise refers to the magnitude of foreign currency positions booked in those jurisdictions that have experienced restrictions to internal transfers. It does not refer to the overall pool of liquidity in a given currency that might or might not be affected by transfer restrictions.³⁴ A non-trivial proportion of the exposures proxied with gross positions correspond to location-nationality configurations that have seen internal market restrictions in the past (panel A).³⁵ A qualitatively similar picture emerges for net foreign currency liabilities, although these are an order of magnitude smaller than gross positions (Panel B). Of course, these rough estimates may differ materially from the extent to which internal market transfers could help alleviate foreign currency funding shortages in a *future* stress scenario.

Looking forward, a rather large share – half or slightly above half – of central banks anticipate that future internal market restrictions could materialise (Graph I13). Compared to the answers reported in Graph 16, this indicates expectations of an increase in the impediments. These results should also be interpreted with caution, as future impediments are inherently difficult to forecast and different respondents may have had different criteria for including anticipated restrictions.

³⁴ If jurisdiction A reports past *upstream* internal capital market restrictions, all (gross or net) foreign currency liabilities of domestic banks located in jurisdiction A would be associated with "past restrictions" in Graph 17. If this jurisdiction also reports past *downstream* restrictions, the liabilities of domestic banks' affiliates abroad would be added to that classification. Annex I.A contains illustrative examples of the calculations.

³⁵ The relatively large proportion of EUR exposures in the "past restrictions" category reveals that banks located and/or headquartered in jurisdictions that have seen past internal capital market restrictions tend to have large euro-denominated foreign currency exposures.

4.2 Central bank foreign currency liquidity backstop facilities

In cases when external and internal funding markets are inaccessible or insufficient, the last resort against foreign currency funding shortages is assistance from a central bank. For this reason, part of the working group’s survey took stock of central bank foreign currency backstop facilities, their characteristics and their potential limitations, referring only to facilities in the five major currencies in focus (USD, EUR, JPY, GBP and CHF). This subsection discusses the answers collected. While the focus is on facilities for going-concern banks, Annex G discusses assistance to banks in resolution.³⁶

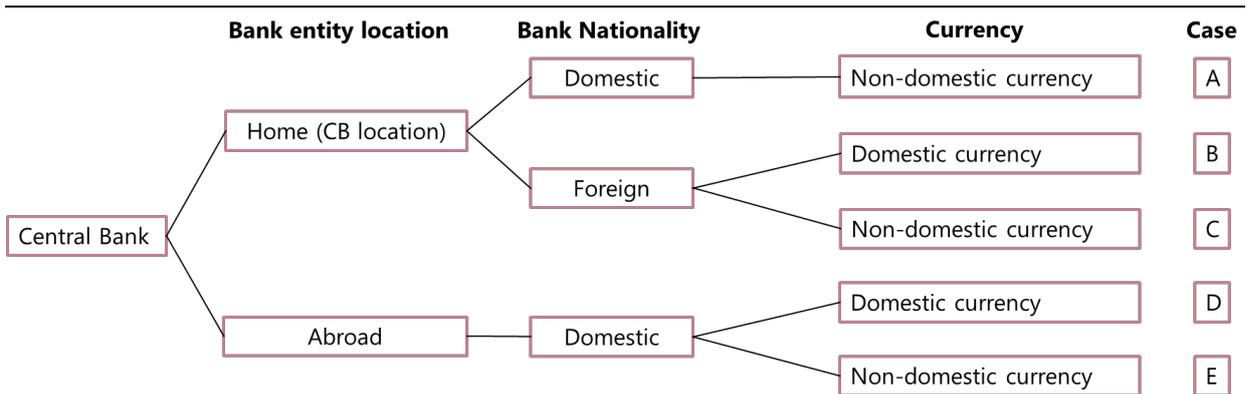
Coverage

From the central bank’s perspective, its capacity to provide foreign currency liquidity assistance to a bank entity in stress may depend on the location of the entity, its nationality, and the currency in question.³⁷ Graph 18 shows the cases included in the survey.

Potential central bank facilities

By location and nationality of entity in need; by currency type

Graph 18



Note: From a central bank’s perspective.

The survey results reveal that the entity’s location is the key determinant of the availability of central bank assistance (Graph 19.A).³⁸ Between 70% and 85% of central banks report having foreign currency facilities that are available to resident banks, with a higher share in the case of domestic entities (red bars, cases A and C).³⁹ Likewise, each of the five central banks issuing the currencies in focus is able to provide assistance in its own currency to foreign bank entities located in their jurisdiction (case B). By contrast, home central banks do not directly offer foreign currency facilities to bank offices located abroad (cases D and E). Instead, such bank entities are presumably expected to meet foreign currency liquidity

³⁶ In addition, Annex H discusses the availability of facilities to NBFIs.

³⁷ This subsection considers liquidity assistance from a central bank to a private bank entity, not foreign currency liquidity backstop tools arranged between central banks, eg central bank swap lines. These are discussed in the next subsection.

³⁸ The euro area is here counted as one jurisdiction.

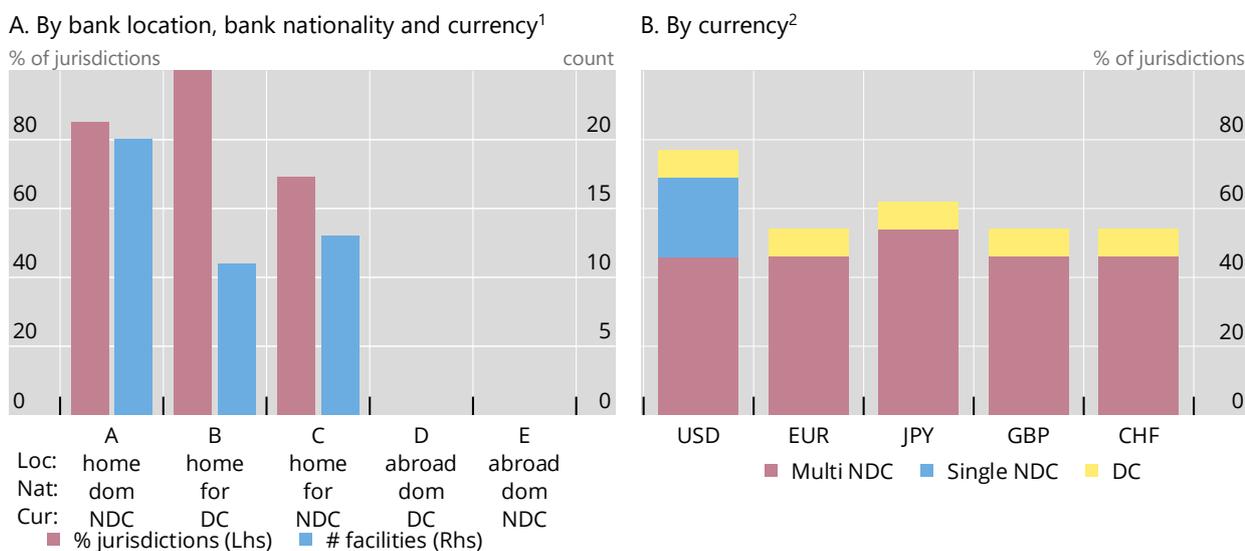
³⁹ Two central banks – 15% of jurisdictions – had no foreign currency facility in place for any of the five covered currencies.

shortages by approaching the host central bank or tapping internal capital markets – with the latter a potential channel for accessing the home central bank indirectly.⁴⁰

Among the surveyed jurisdictions, the prevalence of facilities is highest for the USD and changes little across the other currency in focus (Graph 19.B). Around 55-60% of the surveyed jurisdictions have facilities for EUR, JPY, GBP or CHF, while USD facilities exist in almost 80% of the jurisdictions. Facilities can take three forms: for multiple non-domestic currencies (red areas); for a single non-domestic currency (blue areas); or for a domestic currency available to resident foreign bank entities (yellow areas).⁴¹ Single-currency facilities exist only for the US dollar, in line with its importance as a global funding currency.⁴²

Central bank foreign currency liquidity facilities

Graph 19



From a central bank's perspective. NDC = non-domestic currency, DC = domestic currency

¹ See Graph 18 for definitions of cases A – E. Loc = bank location (home or abroad); Nat = bank nationality (dom = domestic or for = foreign); Cur = currency. Case B is relevant only for the five central banks issuing: USD, EUR, JPY, GBP, CHF. For cases D and E, no facilities were reported. ² DC facilities include facilities for several currencies including the domestic one. When a jurisdiction has both Multi NDC and Single NDC facilities, it is counted as Multi NDC only.

Source: CGFS Working Group.

To what extent do central bank liquidity facilities exist in locations where foreign currency funding shortages may materialise? Combining the survey results summarised in Graph 19 with data on foreign currency positions – organised by bank nationality and location – helps shed light on this question. For brevity, the discussion refers to facilities' "coverage" (Annex I.A provides further detail).

Consider initially only *direct* central bank assistance, abstracting from indirect assistance that internal markets channel across borders. The largely qualitative nature of the available information necessitates the assumption that an existing central bank facility in a particular foreign currency would

⁴⁰ This underscores the importance that foreign bank entities have a thorough understanding of the host jurisdiction's central bank facilities for providing foreign currency liquidity, and that central banks know under what conditions their banks around the world can obtain foreign currency liquidity from the host country's central bank (as also emphasised in CGFS (2017)).

⁴¹ Out of scope are domestic currency facilities that are exclusively accessible by domestic banks located in the home jurisdiction.

⁴² See eg CGFS (2020).

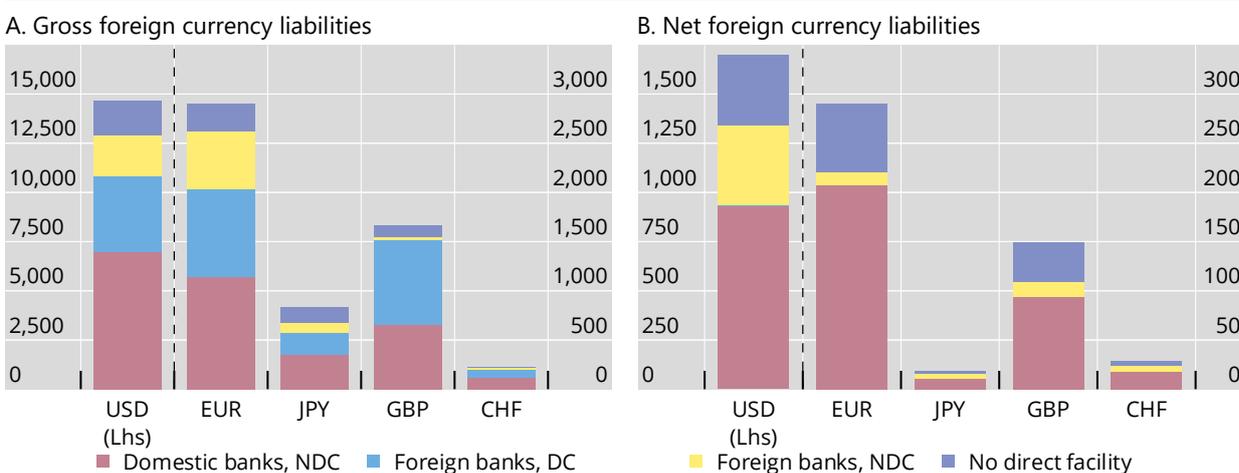
fully meet resident banks' potential needs in that currency.⁴³ In case there are restrictions on the size or accessibility of central bank facilities (see below), this assumption would result in underestimates of foreign currency funding needs without direct assistance.

Some foreign currency liabilities – on both gross and net basis – are booked in jurisdictions without corresponding central bank facilities. Small shares of *gross* foreign currency liabilities – but large absolute amounts – are booked in jurisdictions lacking central bank facilities in the corresponding currency (Graph 20.A).⁴⁴ In comparison, the estimated magnitudes of *net* foreign currency liabilities not covered by central bank facilities are lower, but the attendant shares tend to be higher (Graph 20.B). Overall, these findings indicate that the concentration of foreign currency liabilities in jurisdictions without a corresponding lending facility is greater on a net than a gross basis.

Estimates of foreign currency positions directly covered by central bank facilities¹

By banks' booking location, in USD billion

Graph 20



¹ Based on BIS locational banking statistics and Working Group survey results. The height of each bar is equal to positions in a particular currency that is foreign with respect to the booking banks' location and/or nationality. A red segment plots positions booked in home jurisdictions with a facility in the particular non-domestic currency (domestic banks, NDC); a blue/yellow segment plots positions of foreign banks in host jurisdictions with a facility in the domestic (foreign banks, DC) or non-domestic currency (foreign banks, NDC). The purple bar plots positions booked in jurisdiction without a facility in the relevant currency.

Source: BIS locational banking statistics by nationality (LBSN); CGFS Working Group.

Suppose – contrary to a key premise of the above exercise – that internal markets would be fully operational everywhere to indirectly provide *downstream assistance* from the parent bank to its foreign affiliates, after the parent taps a liquidity facility of the home central bank. How would this change the picture with respect to the coverage of foreign currency exposures? Graph 21 provides an answer, based on additional results from the working group survey. Generally, internal market downstream assistance could benefit banks accounting for a bit over half of gross foreign currency exposures in jurisdictions without direct central bank assistance (and substantially more in the case of the JPY). For net exposures, the potential for such indirect assistance is somewhat lower. Hence, although downstream assistance would be helpful in closing funding gaps, much of both gross and net exposures would still remain not

⁴³ The survey responses include no information on possible quantitative limits to liquidity assistance through available facilities. Qualitative information on size restrictions is discussed below.

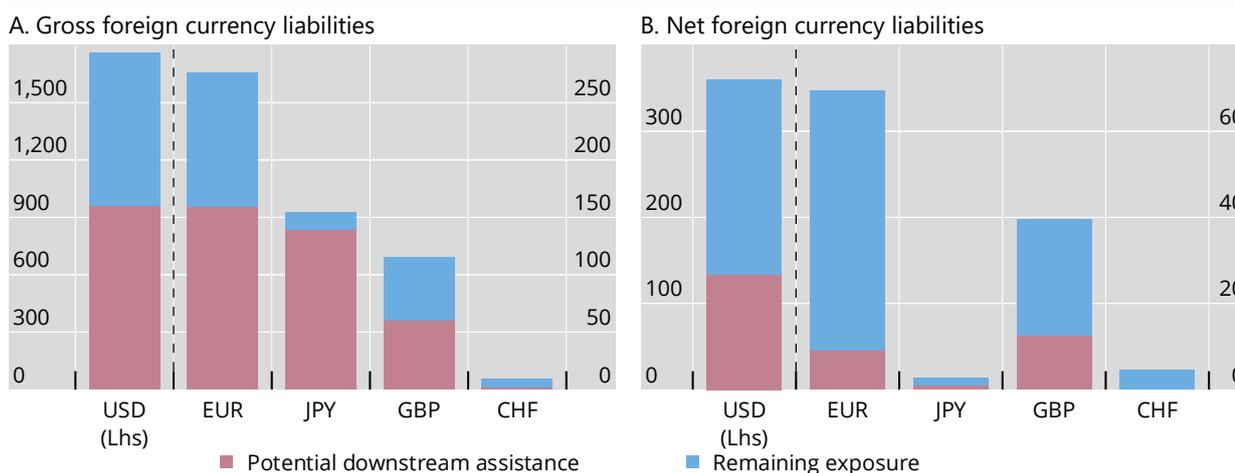
⁴⁴ Again, this considers only potential *direct* central bank assistance, abstracting from indirect assistance that internal markets channel across borders. An example is the Sterling liquidity facility between the Bank of England and the BIS; see Section 4.3.

covered. These would therefore need to be addressed by internal capital markets, possibly with support from the currency-issuing central bank (if available), underscoring the importance of ensuring preparedness for intragroup transfers in stress.

Estimate of banks' foreign currency positions not covered by central bank facilities¹

Potential downstream assistance from the central bank; USD billion

Graph 21



¹ Based on BIS locational banking statistics and Working Group survey results. The height of each bar is equal to positions in a particular currency that is classified as foreign with respect to the booking banks' location and/or nationality and is booked in a jurisdiction without a corresponding central bank facility (purple bar segments in Graph 20). The red segments plots positions booked by entities whose parent could in principle obtain the shortage currency at a facility of the home central bank.

Source: BIS locational banking statistics by nationality (LBSN); CGFS Working Group.

Quantitative information on central bank facility *restrictions* would help refine estimates of how much potential foreign currency funding shortages such facilities would be able to cover. While such information is not available to the working group, qualitative answers to the survey indicate restrictions that do matter. These are discussed next.

Size, conditionality and accessibility of central bank foreign currency facilities

This subsection briefly discusses key characteristics of central bank foreign currency backstop facilities, namely facility size, conditions under which the facilities are made available and eligibility criteria for access. Annex I.B discusses these characteristics in more detail, along with additional ones, including pricing and lending maturities.

Size of facility. Very few facilities have pre-specified fixed restrictions on their size, irrespective of whether they provide liquidity in a domestic or a non-domestic currency (Graph 22.A).⁴⁵ Of course, the extent to which banks tap these facilities may still be constrained by eg collateral availability and how much foreign currency central banks can source (see below).

Type of stress. The type of foreign currency related stress – idiosyncratic or sector-wide – may affect the availability of central bank liquidity assistance.⁴⁶ The type of stress is not a factor for the availability of domestic-currency (DC) facilities to foreign banks (Graph 22.B, first bar). It does matter, however, for

⁴⁵ For domestic currency facilities, we only consider those that allow foreign bank entities to access them.

⁴⁶ The purple areas in Graph 22.B correspond mainly to standing facilities.

facilities in non-domestic currencies (NDC, second bar). While essentially all these facilities are available amid sector-wide stress, 40% of them are dedicated solely for such stress (red segment).

Conditionality. Among foreign currency facilities available specifically in stress scenarios, most do not require that banks establish a lack of funding alternatives (Graph 22.C, red bars). Still, a significant number of facilities do require banks to demonstrate that private sources of foreign currency funding are unavailable before gaining access (blue and yellow bars). Of the latter facilities, all but one include a requirement for banks to show unavailability of intra-group funding as well.

Size and conditionality of central bank foreign currency facilities¹

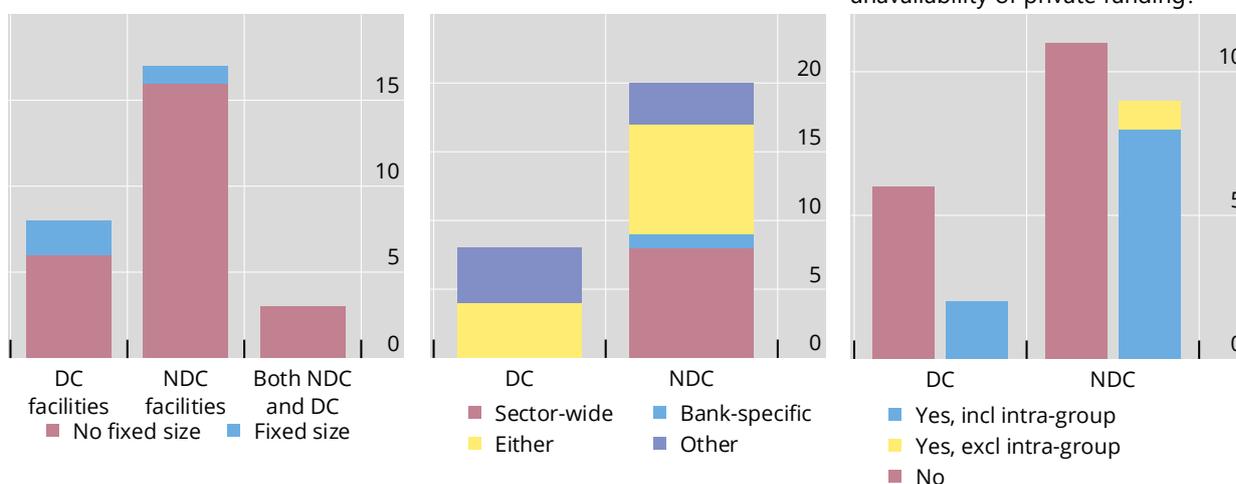
Count

Graph 22

A. Limit on size of facilities

B. Stress trigger for use of facility

C. Necessary to establish unavailability of private funding?



¹ DC = domestic currency facilities; NDC = non-domestic currency facilities.

Source: CGFS Working Group.

Eligibility (see Annex I.B for more detail). When banks access central bank foreign currency facilities, two types of eligibility criteria are key: entity type and collateral. Concerning entity type, half of the reported NDC facilities impose stricter eligibility criteria than corresponding DC facilities. In some cases, eligibility criteria reveal a preferential treatment of banks, relative to NBFIs. In other cases, foreign bank entities face stricter criteria than domestic banks. By contrast, the treatment of foreign branches and subsidiaries is generally equal. With regard to collateral eligibility, only a relatively small subset of NDC facilities have stricter eligibility criteria than DC facilities. In the end, however, a majority of foreign currency facilities are fully discretionary, giving central banks much latitude in deciding on their use.

4.3 Sources of foreign currency for central bank liquidity facilities

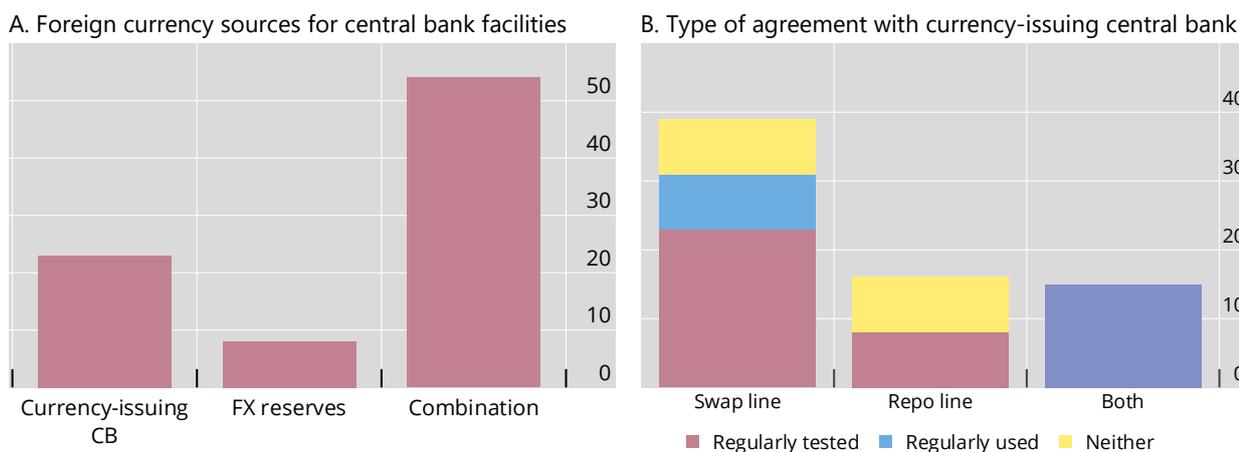
When central banks provide last-resort liquidity assistance in non-domestic currencies, where do they obtain those currencies – FX reserves or the currency issuer? According to survey responses, some of the central banks rely exclusively on temporarily obtaining the funds from the currency issuing central bank (Graph 23.A). It is rare for the central bank to rely solely on its FX reserves (ie selling some of its foreign

currency denominated assets in the open market).⁴⁷ This may be because FX reserves tend to be earmarked for other policy needs, or because it is challenging to quickly convert reserves – mostly held in the form of government bonds – to foreign currency cash at scale when liquidity stress emerges. In the case of the Credit Suisse crisis, the SNB used large amounts of its US Treasury holdings as collateral to obtain US dollars from the Fed’s FIMA repo facility (see Annex B). Generally, in more than half of the jurisdictions, the central bank obtains non-domestic currency using a combination of the two options.⁴⁸

Channels for sourcing central bank facilities’ foreign currency

% of jurisdictions

Graph 23



Source: CGFS Working Group.

In sourcing a non-domestic currency for liquidity facilities from the currency-issuing authority, central banks often rely on a swap or a repo line. While swap lines enable central banks to exchange their respective currencies directly, repo lines allow them to obtain foreign currency by pledging securities denominated in that currency as collateral. Swap lines, which have existed for several decades, have become a valuable liquidity backstop tool for central banks (see eg Denbee et al (2016)).⁴⁹ Central bank repo lines are newer, introduced at the onset of the pandemic crisis.⁵⁰ While some of the surveyed jurisdictions rely on both arrangement types, swap lines are more than twice as prevalent (Graph 23.B).⁵¹

When central banks provide assistance to alleviate foreign currency funding shortages, what is the relative importance of their alternative sources of liquidity? Graph 24 provides an answer, based on the aggregate gross and net positions already studied above and considering only facilities available for

⁴⁷ Those that do, almost exclusively rely on their general pool of FX reserves, rather than any dedicated reserves.

⁴⁸ There may be other support channels not covered here. One example is the Sterling liquidity facility between the Bank of England (BoE) and the BIS, whereby the BoE can provide collateralised Sterling liquidity to the BIS, who in turn can provide such liquidity to eligible existing central bank customers; see <https://www.bankofengland.co.uk/news/2021/april/sterling-liquidity-facility-boe-bank-for-international-settlements-from-27-april-2021>. Moreover, a limited number of jurisdictions have special bilateral arrangements that may result in foreign currency assistance under special circumstances.

⁴⁹ For a history of Fed swap lines, see Bordo et al (2015).

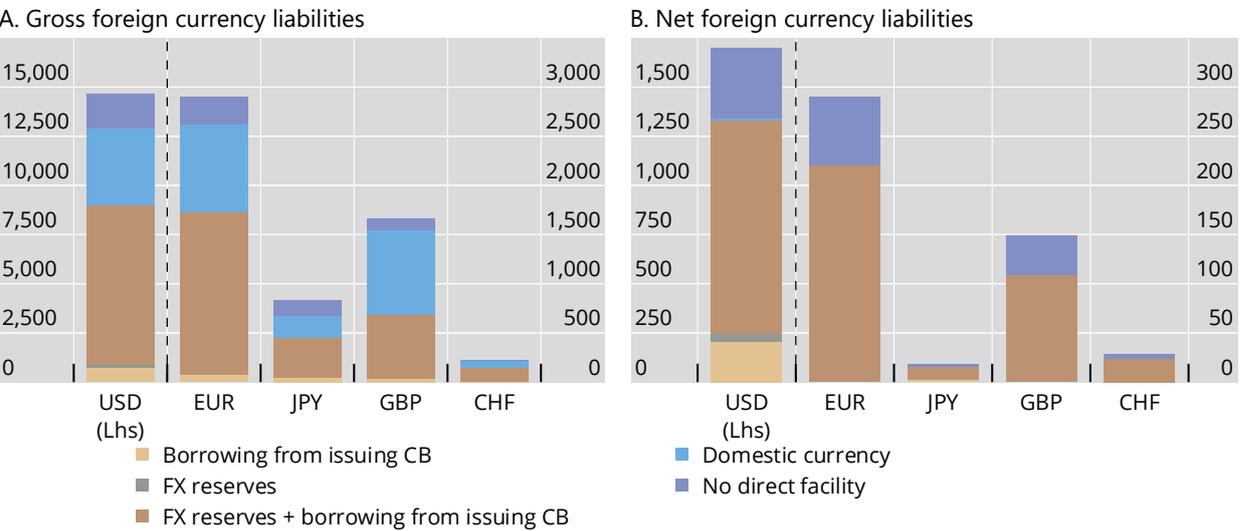
⁵⁰ In many but not all jurisdiction, both arrangement types are either regularly tested or regularly used.

⁵¹ Most swap and repo lines are standing/permanent, although some are temporary and normally renewed at expiration. Typically, the maximum maturity is around three months, and the pricing is generally agreed at activation, often following a pre-specified formula (eg some reference rate plus a pre-defined spread).

covering directly – within the same jurisdictions – potential shortages.⁵² It shows that, setting aside cases in which the central bank assists foreign branches or subsidiaries with its domestic currency, the bulk of other liquidity assistance would rely on a combination of FX reserves and, in case of widespread stress, borrowing from the currency-issuing central bank (see Annex I.A for details). Across all five currencies, reliance solely on FX reserves accounts for only a tiny fraction. Overall, when intra group assistance is unavailable or insufficient and risks sparking financial instability, central bank liquidity lines play a key role in underpinning the broad availability of foreign currency liquidity across jurisdictions and currencies. Given how interconnected national economies are within the global financial system, such liquidity lines therefore also play an important role in preventing stress from being imported from abroad, thereby supporting intermediation both at home and abroad.

Alleviating banks’ foreign currency shortages: central banks’ sources¹

USD billion Graph 24



¹ Refers to central bank facilities where the liabilities are booked. “Domestic currency” facilities are offered by a host central bank to resident foreign banks.

Source: BIS locational banking statistics by nationality (LBSN); CGFS Working Group.

4.4 Steps taken to limit foreign currency liquidity risks

Since central bank backstop facilities are generally a last resort, central banks, together with regulatory and supervisory authorities, have continuously taken steps to limit banks’ foreign currency funding risks. A part of the working group survey sought to shed light on the steps taken so far.

In some jurisdictions, authorities impose regulatory requirements that explicitly refer to foreign currency exposures. One example is liquidity coverage ratio (LCR) requirements at the currency level.⁵³ Such requirements may be the default measure or implemented under specific conditions, eg if an

⁵² As in Graph 20, these calculations only consider exposures potentially covered by direct central bank support, ie excluding any potential indirect support via internal markets.

⁵³ In this context, a “foreign currency” refers to a position booked in a currency different from the entity’s home currency.

institution is found to be taking excessive foreign currency risk. Similarly, some jurisdictions may impose net stable funding ratio (NSFR) requirements for significant currencies on a case-by-case basis.⁵⁴

Beyond such specific measures, several survey responses indicated that banks are generally required to manage liquidity in material currencies. Some jurisdictions require banks to explicitly take into account possible restrictions on the transfer of liquidity across borders when assessing foreign currency funding risk and when meeting regulatory requirements. A widely used tool is stress testing, which 75% of the surveyed jurisdictions reported conducting, albeit with varying frequency. While the tests in most jurisdictions focus on one significant foreign currency at a time, some jurisdictions consider foreign currencies jointly. Some of the stress scenarios assume no external foreign currency funding for an extended period and a liquidity shock due to massive outflows, similar to or more severe than the GFC.

Authorities also seek to reduce exposure to foreign currency liquidity risks by mitigating moral hazard. For instance, common measures to reduce reliance on existing central bank backstop facilities include penalty borrowing rates, strict collateral requirements and associated haircuts. In addition, almost all jurisdictions reported that efforts had been made, beyond the regulatory/supervisory measures discussed above, to improve banks' management of foreign currency funding risks. A common manifestation of such efforts is enhanced engagement with banks' boards, management and auditors.

Monitoring of foreign currency exposures is another important tool in limiting funding liquidity risks. A common approach across jurisdictions is monitoring banks' LCRs by significant currencies.⁵⁵ Other monitoring tools include measures of concentration in foreign currency funding, maturity mismatches by currency and cash-flow projections by currency. Relatedly, some central banks track the share of banks' short-term foreign currency borrowing, foreign currency loan-to-funding gaps (the difference between banks' FX loans and their stable funding sources), FX loan-to-deposit ratios or ratios between such loans and various measures of capital.

If a bank's foreign currency funding risk metrics fall below guidance levels or the bank otherwise is deemed to have taken on excessive risk, there is a range of remedial actions, depending on the jurisdiction. The first step is generally to initiate a dialogue with the bank to urge corrective measures. Authorities would also try to examine the drivers of the regulatory breach in order to better calibrate a supervisory response or, at least, intensify supervisory scrutiny.

5. Conclusions

This report delivers several important findings. Given the central role of the US dollar in the global financial system, banks actively manage risks associated with USD funding. More broadly, banks often aim to minimise currency mismatches by employing derivatives-based hedging strategies. This can mitigate foreign currency funding risks to the extent that these hedges do not introduce roll-over risks. Additionally, banks primarily obtain foreign currency funding through their headquarters and subsequently allocate it via intra-group transfers. The reasons behind this general tendency are an important topic for future work. The tendency underscores the financial stability challenges that could arise from disruptions to the efficient functioning of internal capital markets. Since such disruptions may occur under severe stress, central bank foreign currency liquidity facilities play a crucial role as a last-resort measure. Given the interconnected

⁵⁴ The applicability and scope of these regulatory requirements may differ across banks, depending on their size, international exposure, or systemic importance, as well as on whether the bank is foreign or domestic.

⁵⁵ A specific example is the use of granular LCR metrics by the Bank of England, which are constructed at the level of individual currencies, considers the daily cumulative net inflows and accounts for outflows occurring before inflows. This is especially useful for banks with significant derivative activity (Bank of England (2023)).

nature of global trade and finance, these facilities support intermediation by foreign banks, ultimately benefiting domestic businesses and households.

Findings in the report underscore the value in ongoing efforts by authorities to reduce foreign currency funding risks and address their potential repercussions. These initiatives include enhancing monitoring tools, integrating foreign currency funding risks into stress testing frameworks where appropriate, imposing currency-specific liquidity requirements, and strengthening the resilience of intra-group transfers during periods of stress. Such measures aim to ensure that banks manage foreign currency funding risks responsibly. These efforts are further enhanced by international policy coordination and operational preparedness for crises that transcend national borders. Ultimately, the effectiveness of central bank support depends on banks being well-prepared to access available facilities, subject to safeguards against moral hazard.

The report also highlights that data limitations and gaps create an incomplete global picture of exposures to foreign currency funding risks. The most critical limitation is the need to conduct most of the analysis at the country level, even though foreign currency funding risk is an entity-level concept. Important gaps relate to the maturity profiles of foreign currency assets and liabilities, the liquidity of assets, and the use of FX derivatives. Some of these limitations and gaps stem from the absence of data collection at the national level, while others arise from confidentiality constraints that restrict information-sharing with the CGFS working group. Addressing such confidentiality challenges in a prudent manner – particularly by leveraging existing frameworks for international cooperation – would be instrumental in advancing efforts to map global exposures to foreign currency funding risks.

References

- Aldasoro, I, C Cabanilla, P Disyatat, T Ehlers, P McGuire and G von Peter (2020): "Central bank swap lines and cross-border bank flows", *BIS Bulletin*, no 34.
- Aldasoro, I, J Caparusso and Y Chen (2022): "Global banks' local presence: a new lens", *BIS Quarterly Review*, March.
- Aldasoro, I and T Ehlers (2018): "The geography of dollar funding of non-US banks", *BIS Quarterly Review*, December.
- Antoku, K, R Aoki, S Fukushima, T Yagi and S Watanabe (2021): "Foreign currency funding of major Japanese banks – Review of the March 2020 market turmoil", *Bank of Japan Review 2021-E-4*.
- Aquilina, M, F Garavito, G Gelos, U Lewrick, F Packer, G Pinter, V Sushko and K Todorov (2025): "The transformation of the life insurance industry: systemic risks and policy challenges", *BIS Papers*, no 161.
- Arseneau, D, M Carlson, K Chen, M Darst, D Kirkeeng, E Klee, M Malloy, B Malin, E O'Malley, F Niepmann, M-F Styczynski, M Vanouse and A Vardoulakis (2025): "Central bank liquidity facilities around the world", *FEDS Notes*, 26 February.
- Atkin, T and J Harris (2023): "Foreign currency exposure and hedging in Australia", *RBA Bulletin*, March.
- Australian Bureau of Statistics (2022): "Foreign currency exposure, Australia", *ABS*, March.
- Avdjiev, S, C Koch, H S Shin and W Du (2019): "The dollar, bank leverage, and deviations from covered interest parity", *American Economic Review: Insights*, vol 1, no 2.
- Bank for International Settlements (BIS) (2025): "Financial conditions in a changing global financial system", *Annual Economic Report 2025*, Chapter II.
- Bank of Canada (2023): *Financial System Review, 2023*.
- Bank of England (2023): "Statement of policy 1/18 – pillar 2 liquidity", December.
- Bank of Japan (2021): "Foreign currency funding of major Japanese banks – review of the March 2020 market turmoil", *Bank of Japan Review*, October.
- (2024): "Foreign currency liquidity risk management at Japanese major banks: efforts and enhancement", *Bank of Japan Review*, May.
- (2025): "Risks faced by financial institutions", *Financial System Report*, April.
- Bank of Korea (2022): *Financial Stability Report*, December.
- Bordo, M, O Humpage and A Schwartz (2015): "The evolution of the Federal Reserve swap lines since 1962", *IMF Economic Review*, vol 63, no 2.
- Borio, C, R McCauley and P McGuire (2022): "Dollar debt in FX swaps and forwards: huge, missing and growing", *BIS Quarterly Review*, December.
- Bruno, V and H S Shin (2015): "Cross-border banking and global liquidity", *Review of Economic Studies*, vol 82, no 2.
- Caparusso, J and B Hardy (2022): "Bank funding: evolution, stability and the role of foreign offices", *BIS Quarterly Review*, September.
- Cesa-Bianchi, A, R Czech and F Eguren-Martin (2021): "Dash for dollars", *Bank of England Staff Working Papers*, no 932.

Cetorelli, N and L Goldberg (2012): "Liquidity management of US global banks: internal capital markets in the great recession", *Journal of International Economics*, vol 88, no 2.

Cetorelli, N, L Goldberg and F Ravazzolo (2020): "How Fed swap lines supported the US corporate credit market amid Covid-19 strains", *Liberty Street Economics*, 12 June.

Choi, M, L Goldberg, R Lerman and F Ravazzolo (2022): "The Fed's central bank swap lines and FIMA repo facility", *FRBNY Economic Policy Review*, 28, no 1, June.

Coelho, R, M Drehmann, D Murphy and R Walters (2024): "Navigating liquidity stress: operational readiness for central bank support", *FSI Insights on policy implementation*, no 64.

Committee on the Global Financial System (CGFS) (2017): "Designing frameworks for central bank liquidity assistance: addressing new challenges", *CGFS Papers*, no 58.

——— (2020): "US dollar funding: an international perspective", *CGFS Papers*, no 65.

Czech, R, S Huang, D Lou and T Wang (2021): "An unintended consequence of holding dollar assets", Bank of England *Staff Working Paper*, no 953, December.

De Nederlandsche Bank (2025): "Weaker US dollar hits pension funds harder than falling stock prices", *Statistical news*, 17 June.

Demski, J, R McCauley and P McGuire (2022): "London as a financial centre since Brexit: evidence from the 2022 BIS Triennial Survey", *BIS Bulletin*, no 65.

Denbee, E, C Jung and F Paternò (2016): "Stitching together the global financial safety net", Bank of England *Financial Stability Papers*, no 36.

Drehmann, M and V Sushko (2022): "The global foreign exchange market in a higher-volatility environment", *BIS Quarterly Review*, December.

Du, W and A Huber (2024): "Dollar asset holdings and hedging around the globe", *NBER Working Papers*, no 32453.

Eguren-Martin, F, M Ossandon Busch and D Reinhardt (2024): "Global banks and synthetic funding: the benefits of foreign relatives", *Journal of Money, Credit and Banking*, vol 56e, no 1.

European Central Bank (2024): *Financial Stability Review*, November.

Financial Stability Board (FSB) (2022): *US dollar funding and emerging market economy vulnerabilities*, April.

——— (2024): *Global monitoring report on non-bank financial intermediation 2024*, December.

——— (2026): *2025 Resolution report*, January.

Forbes, K, C Friedrich and D Reinhardt (2023): "Stress relief? Funding structures and resilience to the Covid shock", *Journal of Monetary Economics*, vol 137(C).

Friedrich, C, H Friedrich, N Lawrence, J Cortes and P Tian (2025): "The international exposure of the Canadian banking system", Bank of Canada *Staff Working papers*, 25–1.

Hacıoğlu-Hoke, S, D Ostry, H Rey, A Planat, V Stavrakeva and J Tang (2024): "Topography of the FX derivatives market: a view from London", Bank of England *Staff Working Paper*, no 1103.

Hardy, B, P McGuire and G von Peter (2024): "International finance through the lens of BIS statistics: the geography of banks' operations", *BIS Quarterly Review*, December.

Huang, W, I Krohn and V Sushko (2025): "Global FX markets when hedging takes centre stage", *BIS Quarterly Review*, December.

International Monetary Fund (IMF) (2025): "Risk and resilience in the global foreign exchange market", *IMF Global Financial Stability Report*, October, Chapter 2.

Ivashina, V and D Scharfstein (2010): "Bank lending during the financial crisis of 2008", *Journal of Financial Economics*, vol 97, no 3.

Kim, K and J Y Lee (2017): "Estimating the effects of FX-related macroprudential policies in Korea", *International Review of Economics & Finance*, vol 50.

Klaus, B and L Mingarelli (2024): "Euro area banks as intermediators of US dollar liquidity via repo and FX swap markets", *European Central Bank Financial Stability Review*, November.

McGuire, P and G von Peter (2016): "The resilience of banks' international operations", *BIS Quarterly Review*, March.

Mouakil, T and A Schwenninger (2025): "Dollar funding of French banks by US money market funds", *Banque de France Financial Stability Report*, June.

Persi, G (2020): "US dollar funding tensions and central bank swap lines during the COVID-19 crisis", *ECB Economic Bulletin*, issue 5.

Reinhardt, D and S Riddiough (2015): "The two faces of cross-border banking flows", *IMF Economic Review*, vol 63, no 4.

Royal Bank of Canada (2024): *Annual Report 2024*.

Yun, Y (2021): "International spillover of central bank swap lines – evidence from the Covid-19 experience of Korea", *Finance Research Letters*, vol 43, no 102003.

Annex A: Drawdowns of off-balance sheet credit commitments during the March 2020 turmoil

Global banking organisations have activities across a range of foreign currencies, managed throughout their foreign branches.⁵⁶ These are typically funded by a combination of capital internally received from their parent organisations, uninsured deposits from corporations and money market funds, and other short-term market funding sources. Global banks also provide extensive backstop financing for their clients via large off-balance-sheet credit commitments, such as undrawn lines of credit. These credit lines can be a source of funding risk for banks and may result in new foreign currency-denominated funding needs at times of global, systemic crises.

In the United States, branches of foreign banking organisations (US FBO branches) are part of global banking groups from twenty-one different countries, with currently over \$3 trillion in aggregate assets - about 13 percent of banking system assets in the United States. About one third of US FBO branches' aggregate assets are loans to corporations that also receive credit commitments.

At the outbreak of the pandemic in the spring of 2020, US FBO branches' outstanding commitments totalled nearly \$1 trillion, or about 40 percent of their balance sheets, on average. As the US corporate credit market froze, US FBO branches experienced a significant increase in the size of dollar-denominated loans associated with large customer draws on credit commitments (Cetorelli, Goldberg and Ravazzolo, 2020). These increased loans also resulted in new funding needs that likely contributed to the amplification of funding market strains at a time when global funding markets were already stressed (Graph A1.A). The global banks experiencing this type of demand through credit commitments included large Japanese banks (Graph A1.B and C).

In the case of Japanese banks, many had been actively expanding their overseas businesses, especially in the US, in an attempt to increase their profitability. In this process, they strengthened business ties with US-based non-Japanese corporations and established off-balance-sheet credit commitments. In March 2020, Japanese banks' overseas loans denominated in US dollars increased sharply, as US-based corporations drew funds from their committed lines to increase liquidity funding buffers (Aoki, Antoku, Fukushima, Yagi and Watanabe, 2021). Much of the funds obtained from the drawdown of committed lines were not retained in the deposit accounts at Japanese banks and instead were transferred to accounts in US banks held for cash management purposes of those US-based corporations. As a result, Japanese banks faced additional foreign currency funding needs. At the same time, however, there was no notable decline in Japanese banks' existing deposits — reconfirming that deposits are a relatively sticky source of funding even under stress. Funding through certificate of deposit (CD) and commercial paper (CP) markets deteriorated as prime money market funds drastically reduced their CD/CP purchases. The liquidity of the foreign exchange swap markets, another source of funding, also deteriorated substantially.

On the back of increased funding needs of Japanese and other foreign banks, standing US dollar liquidity swap lines were an important source of dollar liquidity to sustain financial intermediation by non-US banks, including in the United States. These swap lines are collateralised with currency provided by the borrowing central banks. The actions taken by central banks in March 2020,⁵⁷ together with Japanese banks' sustained efforts to increase the stability of foreign currency funding through expansion of client-related deposits and issuance of long-term debt, contributed to the prevention of major disruptions to

⁵⁶ This annex takes a nationality perspective, so foreign currency is one issued outside of the bank's home country.

⁵⁷ <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200315c.htm>
<https://www.federalreserve.gov/newsevents/pressreleases/monetary20200320a.htm>

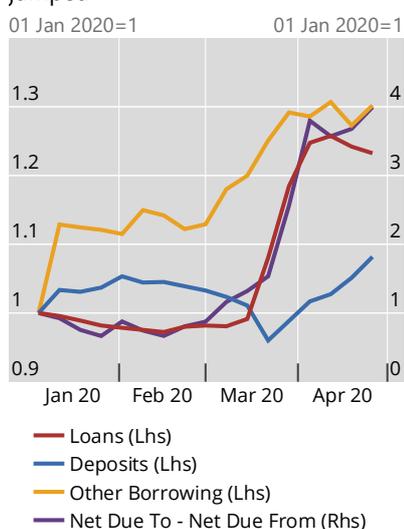
Japanese banks' foreign currency funding at that time and maintained credit flows to the US businesses and households.

Japanese banks have been stepping up their efforts to address the stability of foreign currency-denominated funding while improving the profitability of overseas operations. For example, in order to attract demand deposits from local corporate customers, which tend to be stickier and involve lower funding costs than market funding, Japanese banks have expanded their deposit services by offering ancillary services including foreign exchange transaction services to clients.

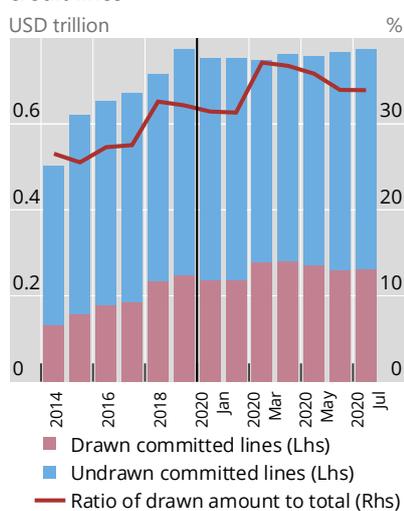
Credit commitments strained funding markets during the pandemic

Graph A1

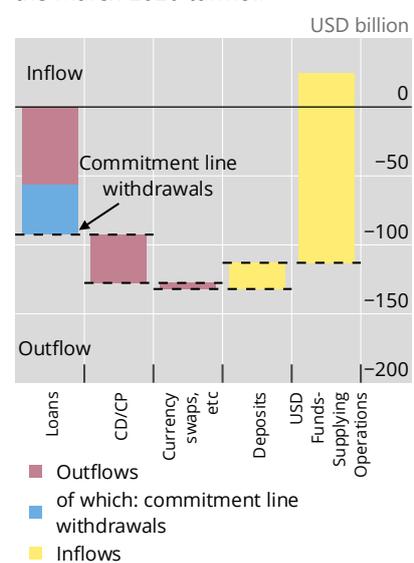
A. US FBO branches' funding needs jumped



B. Major Japanese banks' committed credit lines^{2,3}



C. Japanese banks' flow of funds over the March 2020 turmoil²



¹ Sample contains 65 FBOs. FBOs are defined by existing in both the FR2644 and FFIEC002 forms. ² Covers internationally active banks. ³ The data are as at year-end or month-end. Latest data as at July 2020.

Source: FR2644; FFIEC002; BoJ.

Annex B: Case study on Credit Suisse

The Credit Suisse crisis underscored two important lessons for central banks regarding foreign currency funding risks. First, providing liquidity support to a globally active bank in distress may require extraordinarily large amounts, both in domestic and foreign currencies. Second, to ensure a rapid and effective response in the event of a crisis, it is essential to ensure operational readiness and to maintain well-established lines of communication with foreign central banks.

In 2022, Credit Suisse was one of the 30 globally systemically important banks.⁵⁸ Like other globally active banks, Credit Suisse relied on funding not only in domestic currency (Swiss francs) but also in foreign currencies. The bank's foreign currency funding consisted mainly of client deposits, long-term debt and, to a lesser extent, securities financing transactions, short-term borrowings and other liabilities. Regarding assets, about two thirds of the bank's leverage ratio exposure was denominated in foreign currencies.⁵⁹ The bank used FX derivatives to hedge mismatches between assets and liabilities denominated in foreign currencies. The bank's liquidity position before the first wave of outflows was comfortable: as of September 30, 2022, 30% of the bank's total assets were high-quality liquid assets (HQLA) with a significant fraction of HQLA denominated in foreign currencies. The company also published an LCR of 191% as of that date.

The crisis at CS resulted from repeated incidents at the bank, primarily caused by breaches of legal and supervisory obligations, as well as shortcomings in risk management. These incidents resulted in large fines, several supervisory enforcement actions, and financial losses. Furthermore, there was uncertainty as to whether the bank's new strategy would overcome its weak profitability. These developments led to increasingly critical assessments of the bank by its clients, market participants, and rating agencies, ultimately resulting in a loss of confidence.

On the first weekend of October 2022, the bank experienced a surge in negative social media and press coverage. Until the end of the month, market participants' uncertainty remained elevated, and CS experienced a first wave of deposit outflows, mainly from wealth management clients domiciled abroad. A substantial fraction of these outflows was denominated in foreign currencies. Deposit outflows in Switzerland were significantly lower than in entities abroad.⁶⁰ In the following months, the bank was unable to fully replenish its liquidity buffers.

In March 2023, as the failure of two US banks increased stress in the global banking sector, the market perception of CS deteriorated further. Against this backdrop, the announcement by a major shareholder that it would not recapitalise the bank was probably the ultimate trigger of a massive loss of confidence. Subsequently a second wave of deposit outflows occurred, which was from both domestic and international clients. This time, deposit outflows were denominated both in domestic and foreign currencies and from different types of depositors, including international wealth management clients and Swiss retail and wholesale clients.

In addition to the depletion of liquidity buffers caused by deposit outflows, foreign currency liquidity within the group became less easily available for several reasons. First, the bank faced an increase in external pre-positioning requirements from payment agents, central counterparties, and clearing institutions. Second, local regulatory and supervisory minimum requirements regarding the liquidity it held in its foreign entities became binding. Third, the bank increased liquidity buffers in all entities to ensure that payments could be settled even under severe stress without relying on liquidity booked in different

⁵⁸ Cf 2022 List of Global Systemically Important Banks (G-SIBs) - Financial Stability Board.

⁵⁹ Cf Credit Suisse Fourth Quarter and Full Year 2021 Results Supplemental Information, February 10, 2022

⁶⁰ Cf Bericht der FINMA Lessons Learned aus der CS-Krise, 19 December 2023.

time zones. These factors were exacerbated by the bank's gradual loss of access to FX swap markets, which reduced its ability to convert cash into the required currencies.

Subsequently, Credit Suisse was at increased risk of being unable to meet its financial obligations. In response, Swiss authorities announced the acquisition by UBS and the Swiss National Bank (SNB) provided extensive liquidity assistance. The maximum liquidity assistance was calculated to cover virtually all potential short-term outflows. In total, the SNB extended CHF 168 billion in liquidity support in Swiss francs, US dollars and euro to CS's parent bank and its Swiss subsidiary. To secure US dollar liquidity, the SNB relied on the Federal Reserve's Foreign and International Monetary Authorities (FIMA) repo facility. The SNB used USD 75 billion of its own US Treasury holdings as collateral for this transaction.⁶¹

⁶¹ Cf SNB Annual Report 2023, Accountability Report.

Annex C: Foreign currency funding by banks in Korea during global dollar funding market stress

Banks in Korea mainly source short-term foreign currency funding⁶² via borrowings – wholesale deposits, repo, commercial papers and FX swaps – from global funding providers including GSIBs. When global dollar-funding markets come under strain, they tend to reduce their liquidity provision, thus making it harder for the banks to secure foreign currency funding. The magnitude of stress depends on the capacity of global funding providers during the shock, the intensity of domestic banks' funding demand, and the policy responses and available tools of major central banks. This annex analyses such dynamics in two major stress periods: (i) the GFC (September 2008–March 2009) and (ii) the Covid-19 pandemic (March–April 2020). In both periods, policy interventions – including the temporary currency swap line with which the Bank of Korea borrowed USD from the Federal Reserve against local currency collateral⁶³ – stabilised domestic markets by ensuring the continuous provision of liquidity to the banking sector.

During the GFC, banks in Korea repaid their external creditors and thus reduced their short-term foreign currency borrowing (Graph C1.A). The fall in funding was common to both domestic and foreign banks, together seeing a decline of around \$3 billion per month, on average. In contrast, during the Covid-19 pandemic, all banks – domestic banks, foreign-owned branches and subsidiaries – significantly increased short-term funding (Graph C1.B). Notably, foreign-owned branches recorded an average of nearly \$3 billion in net monthly inflows during this period.

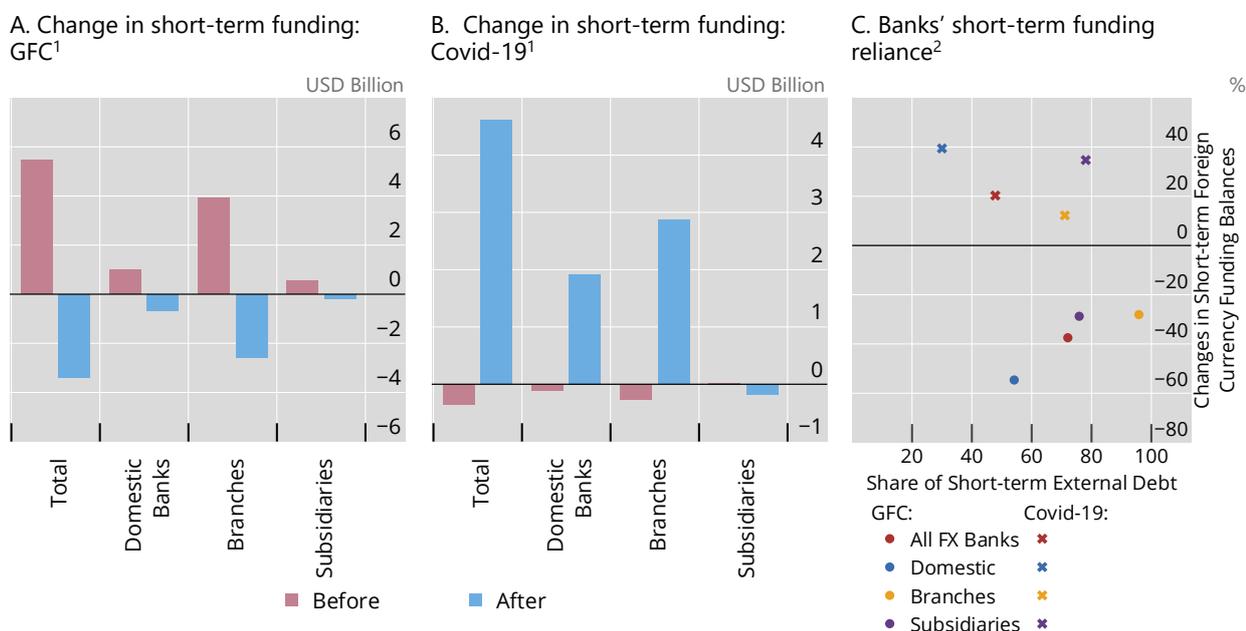
This contrasting pattern was in part due to the fundamentally different nature of the shocks during the GFC and the Covid-19 pandemic and banks' initial conditions facing each crisis. While both crises led to a surge in the demand for USD (flight to safety), banks – with capital bolstered by post-GFC regulatory reforms – were perceived as safer during the latter crisis, reflected in a muted impact on their CDS spreads.⁶⁴ In addition, reliance on short-term external debt had decreased by the onset of Covid-19 compared to the GFC episode (Graph C1.C). Between these two periods, banks' share of short-term debt compared to total foreign debt did not only decrease, but the source of short-term debt was shifted. After the GFC, banks in Korea expanded short-term foreign currency funding through "core liabilities" (eg resident foreign currency deposits) while reducing non-core liabilities (eg from external creditors).⁶⁵

⁶² Short-term foreign currency funding covers only offshore funding by domestic and foreign banks' branches and subsidiaries (USD funding with a residual maturity of less than one year).

⁶³ During the GFC, on October 30, 2008, the Bank of Korea signed a USD 30 billion temporary currency swap agreement with the Federal Reserve and provided USD 16.35 billion to local Korean banks by early 2009. At the outbreak of Covid-19 turmoil, on March 19, a USD 60 billion temporary swap line between the Bank of Korea and the Federal Reserve was reintroduced with the Bank of Korea providing USD 19.87 billion to Korea-based banks by May 6. This was part of a wider array of temporary swap lines between the Federal Reserve and a number of central banks.

⁶⁴ During the GFC, significant financial losses heightened risk aversion toward global banks, causing the CDS premium for GSIBs to surge from 20.1 to 175.1. Korea's sovereign CDS premium also rose sharply, from 21.4 to 308.2. In contrast, during the COVID-19 pandemic, the GSIBs' CDS premium remained relatively stable, increasing from 43.6 to 79.2, while Korea's sovereign CDS premium climbed moderately from 28.4 to 35.0.

⁶⁵ For the domestic banks, the reliance on short-term external borrowings compared to total short-term foreign currency funding, decreased from 24.5% in 2009 to 13.3% at the end of 2020. And, for the branches, the short-term external borrowing decreased from 53.2% in 2009 to 32.9% at the end of 2020



¹ Before: 3-month average prior to the stress period; 'After': average during the stress period. Branches and subsidiaries refer to foreign banking organisations. ² x-axis: share of short-term external debt to total external debt (a month before the stress period); y-axis: the rate of change in short-term borrowing and foreign bond issuance during turbulence: GFC (Sep 2008–Mar 2009); Covid-19 (Mar–Apr 2020).

Source: Bank of Korea.

A key factor influencing the mix of maturities and counterparties in banks' foreign currency funding was the set of macroprudential measures introduced and managed by Korean authorities. These were (1) limits on foreign exchange derivatives positions, (2) foreign currency Liquidity Coverage Ratio (LCR)⁶⁶ and (3) the foreign exchange stability levy.

The first measure required all banks in Korea to hold the daily foreign exchange derivatives positions within a certain specified level relative to its equity capital at the end of the previous month.⁶⁷ The purpose is to contain any excessive increases in short-term foreign currency funding as firms engage in forward exchange transactions to hedge foreign exchange risks.⁶⁸ The second measure, the foreign currency LCR, was introduced in 2017, prompting banks to shift toward longer-term borrowing in order to keep the ratio higher. It specifies parameters for calculating expected 30-day cash outflows under severe stress. For example, non-core liabilities borrowed from external creditors incur a much higher outflow rate than core liabilities from resident depositors. The third measure, a 0.1% foreign exchange stability levy, has been imposed on non-deposit foreign currency liabilities with maturities under one year, aiming to discourage excessive non-core foreign currency funding and encourage longer debt maturities. In addition, the levy rate is more discounted according to the debt's weighted-average maturity.

⁶⁶ The foreign currency LCR regulation applies to domestic banks, while foreign bank branches that have obtained a liquidity support commitment from their headquarters are exempt.

⁶⁷ The limits on net FX derivatives positions relative to capital are 75% for domestic banks and 375% for foreign bank branches.

⁶⁸ For example, domestic exporters may sell forward contracts to banks to hedge against the risk of a stronger won reducing the value of their future export earnings. Those banks would suffer a loss if the won instead appreciates by the time the foreign currency is received. To offset this risk, banks simultaneously borrow foreign currency, sell the borrowed funds, and later repay the loan with the foreign currency it receives from the exporter. The regulation was introduced as such transactions grew excessively, thereby increasing short-term external debt.

Consequently, banks incur a higher burden on short-term non-deposit funding and have less incentive to rely on it, prompting them to shift toward holding deposit and longer-term liabilities.⁶⁹

⁶⁹ Empirical evidence from Kim and Lee (2017) indicates that the foreign exchange stability levy reduced short-term foreign borrowing by 0.08%p within 6 months of its introduction and by 0.35%p after 36 months.

Annex D: Banks' use of FX derivatives

Both financial and non-financial firms increasingly take FX exposure using FX derivatives (eg, swaps, forwards, options and currency swaps). As of 2025, around 70% of global FX turnover takes place in derivatives markets, as compared to only about 30% in spot markets (BIS triennial survey). In this annex, we leverage new trade repository data on FX derivatives transactions across three major jurisdictions (euro area (EA), Singapore, and the UK) to delve into the structure and vulnerabilities of FX derivatives markets, with a particular focus on the role of banks.

The FX derivatives market is composed of 2 segments: (i) an inter-dealer market wherein large global banks manage currency positions; and (ii) a periphery market in which dealers supply currency to clients. In the context of Singapore in Q2 2024, banks and dealers form the core of the FX market, with over 60% of gross exposures taken between these agents. This interbank figure rises to 85% in the EA. By contrast, only 25% of gross exposures in Singapore are taken between dealers and the next largest market segment, NBFIs. Dealers are therefore involved in at least one side of almost all of FX derivatives transactions.

In theory, firm-level net exposures, which net out firms' long and short gross positions in the same currency, better capture the currency risk faced by firms. As of Q2 2024, banks reporting in the UK and the EA held net exposures of about 90 and 100 billion USD, respectively (Graph D1.A). In contrast to gross exposures, the vast majority of these net exposures are with clients, rather than with other banks. In particular, both UK and EU dealer banks persistently lend USD to their clients in exchange for EUR and GBP in the near-leg of their FX swap transactions (the most common currency instrument), which we refer to as dealers being net-long the USD. However, while dealer banks are net-long the USD, non-dealer banks in the UK market are instead net-short overall, albeit with considerable heterogeneity, which highlights that different types of agents use FX derivatives for different purposes (Graph D1.B and C).

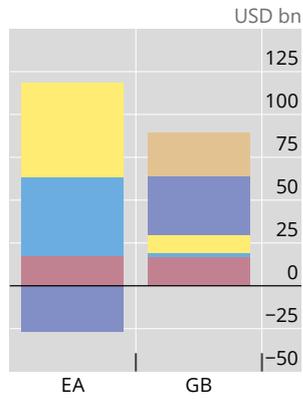
Why do dealer banks and their clients (non-dealer banks, NBFIs, non-financials) use FX derivatives? By examining the persistence and direction of different firms' net exposures, Hacıoglu-Hoke et al (2024) show that most investment funds, pension funds, insurance companies and non-financial corporates use FX derivatives for hedging purposes, ie, are persistently net-short the USD in derivatives markets to limit the currency risk associated with their persistent on-balance sheet USD investments or sales. By contrast, hedge funds' net-USD exposure, along with some non-dealer banks' and investment funds', change directions frequently over time and load on well-known FX investment strategies—the carry trade, momentum, and macro news-strategies—consistent with their use of FX derivatives for speculative and arbitraging purposes. Interestingly, dealer banks' net exposures do not load on these investment strategies, suggesting that they do not serve as arbitrageurs in FX derivatives markets, but instead play the role of liquidity providers to clients. This may be because dealer banks are net-short the USD on their balance sheets—and so neutral overall—as has been shown for EU-reporting banks with respect to repo (ECB Nov. 2024 FSR).

Dealer banks' net USD derivatives exposures are also highly concentrated in the UK and EA, which, alongside the short maturity of most derivatives transactions, poses potential financial stability risks. For example, in the EA as of Q2 2024, the largest 5 dealers account for 60% of the market, with the concentration even larger for net exposures, largely vis-à-vis clients, in the UK market (Graph D1.D). Furthermore, 55% of all FX swap contracts in the EA have maturities of less than 1 day (ECB Nov. 2024 FSR). Together, these observations highlight that clients' access to FX liquidity can dry up rapidly should the balance sheets of only a handful of dealers become impaired.

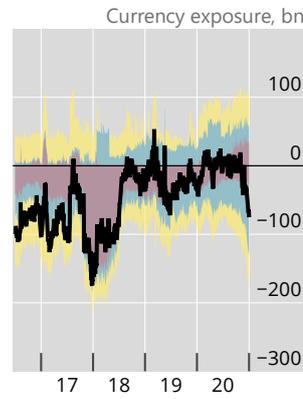
FX derivatives: exposures and concentration

Graph D1

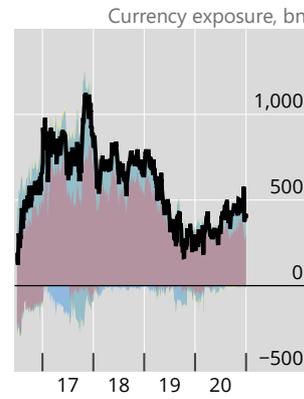
A. FX derivatives: net exposures



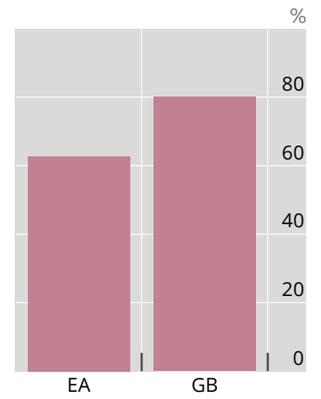
B. GB non-dealer banks' net USD exposure



C. GB dealer banks' net USD exposure



D. Concentration: share of five largest banks



- Less 1 week
- Less 1 month
- Less 3 months
- Less 1 year
- More than 1 year

- Total
- Largest 5 players
- Next largest 10 players
- Smaller players

- Total
- Largest 5 players
- Next largest 10 players
- Smaller players

Data for panels A and D are from Q2 2024.

Source: ECB, MMSR, Hacıoglu-Hoke et al (2024).

Annex E: NBFIs' foreign currency funding risk and hedging behaviour

Globally, NBFIs make significant offshore investments. These can be prompted by size constraints in the domestic market, a desire for greater diversification and potentially higher returns. Managing the exchange rate exposure associated with offshore investments can create foreign currency funding risks depending on the hedging instruments that are used. Using data from Korea and Australia, this annex provides evidence on foreign currency funding risks at NBFIs and how such risks are managed.

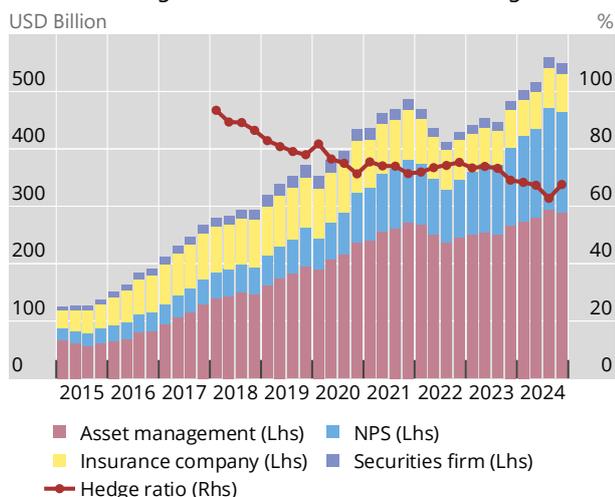
NBFIs often hedge their exchange rate risk through FX swaps that are of shorter maturity than the assets funded by the swaps. Such maturity transformation creates the risk that they may be unable (or unwilling, if costs have spiked materially higher) to roll over their foreign currency funding. In those circumstances, other funding sources in the foreign currency (such as repo or unsecured borrowings) may not necessarily be available to them.

Korea's investment in foreign assets has increased significantly since the mid-2010s, driven by a current account surplus and an ageing population. Overseas securities investment has expanded, centred around asset management companies and the National Pension Service (NPS) (Graph E1.A).⁷⁰

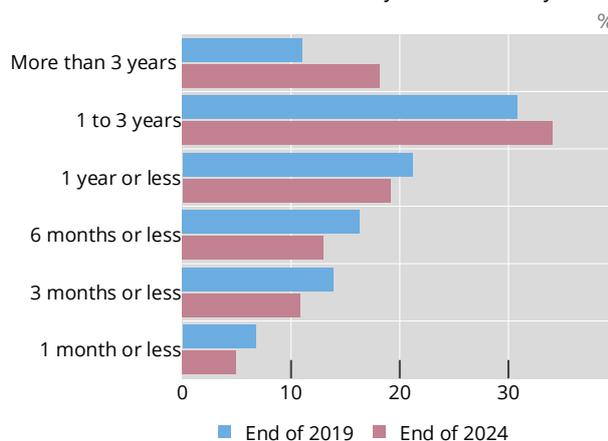
Korean NBFIs overseas investments and FX hedging

Graph E1

A. NBFIs' foreign securities investment and hedge ratio



B. Korean insurers' FX derivatives, by initial maturity¹



¹ FX derivatives notional amounts outstanding, shares by initial maturity.

Source: Bank of Korea

Korean NBFIs have operated with high hedge ratios although, in aggregate, these have been decreasing as they invest more in equities (which are generally less hedged than bonds).⁷¹ In particular, asset management firms and the NPS have concentrated their investments in equities. In recent years, the authorities have altered the rules for insurance companies to encourage long-term hedging. As a result,

⁷⁰ While the foreign securities investment of the National Pension Service consists of stocks, bonds and alternative investments, the foreign investment part of alternative investments is not separated, so only stocks and bonds are analysed here.

⁷¹ The hedge ratio in Graph E1.A excludes the NPS. The NPS adopted an unhedged FX strategy exchange policy in 2018. However, the NPS is exceptionally allowed to hedge up to 15% of its foreign currency assets (10% strategic hedge + 5% tactical hedge) depending on market conditions.

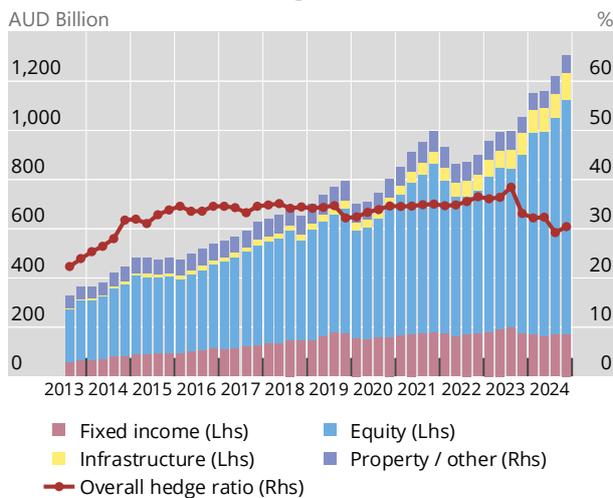
insurance companies' hedges and the proportion conducted at longer maturities have both increased from before the COVID-19 crisis (Graph E1.B).

In Australia, the most significant NBFIs are the superannuation (pension) funds. The value of assets managed by these funds has doubled over the past decade and now exceeds 150 per cent of GDP. In tandem, the value of their assets invested offshore rose rapidly (Graph E2.A). By 2024, the share of assets invested offshore had reached almost one-half, with further increases expected in the future.

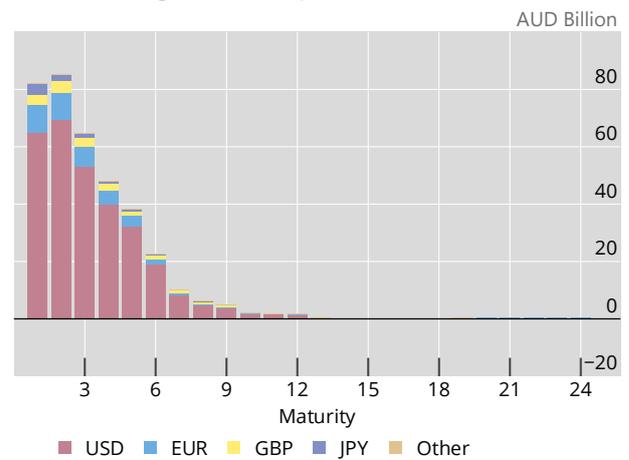
Australian super funds' offshore investments and FX hedging behaviour

Graph E2

A. Offshore assets and hedge ratio



B. Outstanding forward FX positions¹



¹ Estimated net-receive-AUD position of super funds, averaged over Jul-Oct 2024; by currency, displayed in 1-month buckets.

Sources: ABS; RBA.

Historically, Australian funds have also hedged a much higher proportion of their offshore fixed-income investments compared with their equity investments. Concentrated maturities for hedges (predominantly, 1-month FX swaps)⁷² reflected the indices against which they were benchmarked. In recent years, a greater focus on liquidity risk (including from the regulator) has seen the average tenor for hedges increase, and with funds now more likely to stagger the maturities of their forward deliveries (Graph E2.B). To some extent, increased investments in less liquid foreign currency assets (unlisted equities, infrastructure, private credit) have also encouraged a shift toward longer-maturity hedges. However, many funds are also now starting to manage their FX positions at a portfolio level, rather than targeting discrete hedge ratios for each component asset class. This approach limits their perceived need for longer-term hedges as liquidity can be drawn from elsewhere in the portfolio.

In addition to rollover risk, liquidity risk can also come from changes in asset prices and/or exchange rates that trigger margin calls. In March 2020, Korea's securities firms were required to pay margin on equity-linked securities (ELS) in foreign currency, which led to a surge in short-term foreign currency demand. In response, the Korean authorities have sought to strengthen NBFIs' foreign exchange

⁷² Australian funds make very little use of FX derivatives such as futures and options (see Australian Bureau of Statistics (2022). *Foreign Currency Exposure, Australia*).

liquidity management, forcing securities firms to hold liquid assets corresponding to at least 20% of the value of the self-hedged ELS in foreign currency, and introducing monitoring indicators for these firms.⁷³

Such liquidity calls can spill over into other markets. In September 2022, a depreciation in the won increased local currency liquidity risk at Korean asset management and insurance companies through higher costs of FX hedging and/or additional provision of collateral securities for FX derivative transactions.⁷⁴ Czech et al (2021) find that similar dynamics contributed to the spike in UK gilt yields in mid-March 2020, as UK-based insurance companies and pension funds sold gilts to meet margin calls on short-dollar FX positions linked to the hedging of their dollar exposures.^{75 76}

Even where funds do not have margining arrangements in place (and many Australian funds do not margin deliverable FX instruments), an equivalent outcome can materialise when a forward FX position is rolled at maturity (or otherwise reset) following a depreciation of the home currency. Other things equal, longer-maturity hedges (or lengthier reset periods) can delay these calls on liquidity. Systemically, how funds choose to meet such liquidity demands (eg by reducing their positions in foreign currency assets, by drawing on domestic cash sources) will become increasingly important in financial systems where foreign asset holdings comprise a growing share of funds under management.

⁷³ The monitoring indicators are (1) available foreign currency funds minus foreign currency outflows, (2) the ratio of foreign currency net worth to foreign currency assets, and (3) the maturity of foreign currency assets divided by the maturity of foreign currency liabilities.

⁷⁴ See Bank of Korea (2022), *Financial Stability Report*, December.

⁷⁵ Czech, R, S Huang, D Lou and T Wang (2021): "An unintended consequence of holding dollar assets", *Bank of England Staff Working Paper*, no 953, December.

⁷⁶ The experience may have varied across jurisdictions. FSB (2022) notes that among EMEs, observed margin increases were only marginally related to FX derivatives.

Annex F: Insurers' foreign currency exposures and mismatches⁷⁷

This annex provides an overview of large, internationally active insurers' foreign currency exposures and asset-liability mismatches.⁷⁸ The insurance groups are allocated to regions by their country of headquarters, and a currency is classified as "foreign" if it is not the domestic currency in that country. The analysis relies on year-end 2024 data from the IAIS Global Monitoring Exercise,⁷⁹ covering insurance groups' positions at the consolidated level and including qualitative information on risk management practises. This is complemented by supervisory authorities' insights on their responses and practises.

The key messages of this annex are as follows. A high share of insurers' aggregate assets and liabilities are denominated in domestic currencies. Reinsurers exhibit a more even split between domestic and foreign currencies, reflecting their international business models. Among the foreign currency exposures, assets and liabilities are mostly concentrated in USD, with some regional variations. Aggregate results show that the vast majority of foreign currency liabilities are matched with assets in the same currency (>98%). Insurers' risk management practices (including through hedging using FX derivatives), regulatory frameworks and supervisory responses (including stress tests and risk-based capital requirements) help mitigate risks arising from foreign currency mismatches.

Asset and liability composition of insurance groups by local and foreign currency

At the aggregate level, assets and liabilities in the insurance sector are mostly held in domestic currencies (Graph F1). Reinsurers' more even split between domestic and foreign currencies reflects their more internationally oriented business models.

The split of assets and liabilities by foreign and domestic currency indicates that foreign liabilities are generally backed by foreign currency assets across all business models.

Foreign currency assets, liabilities and mismatches

The USD plays a predominant role as a foreign currency both on the asset and the liability sides of insurers' balance sheets (Graph F2). This is the case across all regions and business types.

Assets in a particular foreign currency may not correspond to instruments in the same currency. While such asset-side mismatches constitute a small share of the total balance sheets, they are mostly denominated in USD (Graph F3, positive bars). There are regional differences, with Asia having a higher concentration of USD mismatches than Europe or North America.

⁷⁷ This annex was prepared by the Secretariat of the International Association of Insurance Supervisors (IAIS).

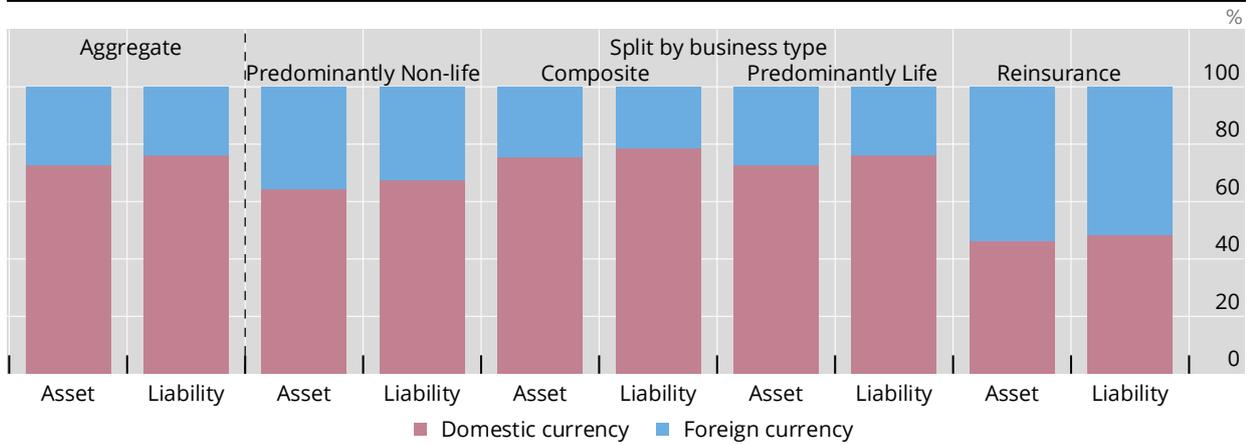
⁷⁸ Importantly, these large insurance groups offer liabilities in multiple currencies in different jurisdictions. This explains the non-negligible amount of "foreign" currency exposures shown in the remainder of this annex.

⁷⁹ The IAIS Global Monitoring Exercise (GME) consists of the Individual Insurer Monitoring (IIM) and Sector-Wide Monitoring (SWM) data collections. For more details on the exercise please refer to IAIS Global Insurance Market Report and to the public GME document. The analysis presented here is predominantly based on aggregate IIM year-end 2024 data, which aggregates exposures at the group level for individual insurers. The data collection focuses on the top three currency-denominated on balance sheet assets and liabilities for general accounts. Findings on potential financial stability implications and supervisory responses are based on SWM data collected by national supervisory authorities, including responses provided as part of the Feedback Loop process focusing on the impact of geoeconomic fragmentation on insurers' management of assets and liabilities.

Insurers' asset-liability composition

At year-end 2024

Graph F1



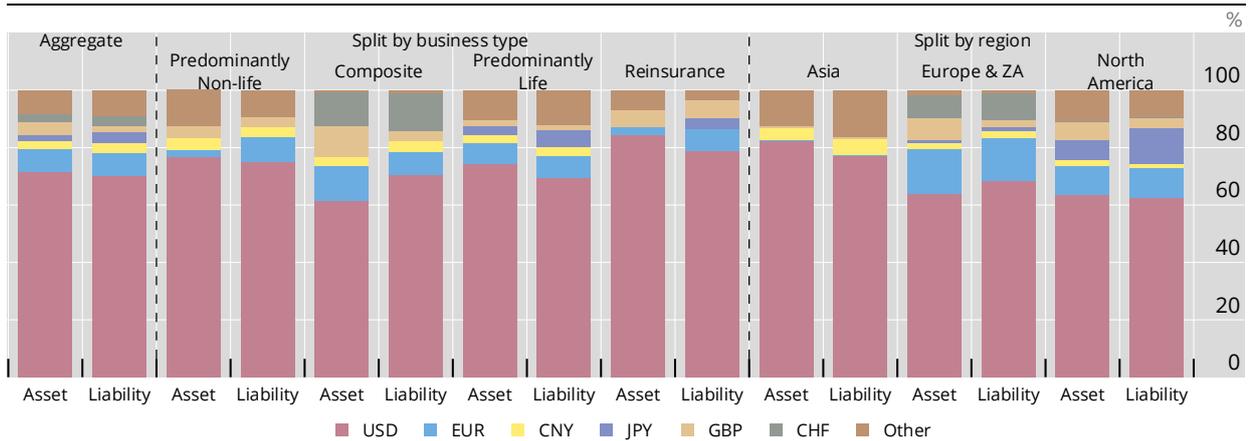
Source: IAIS IIM.

From the funding perspective, the majority of foreign currency liabilities are matched with assets in the same currency (Graph F3, negative bars). In the case of foreign currency mismatches, which amount to less than 2% of total liabilities, the USD, EUR and JPY play rather similar roles in the aggregate. In addition, foreign currency mismatches are primarily concentrated in specific insurers involved in cross-border operations, reflecting the diversity of business models and funding strategies.

Insurers' composition of assets and liabilities in foreign currency¹

At year-end 2024

Graph F2



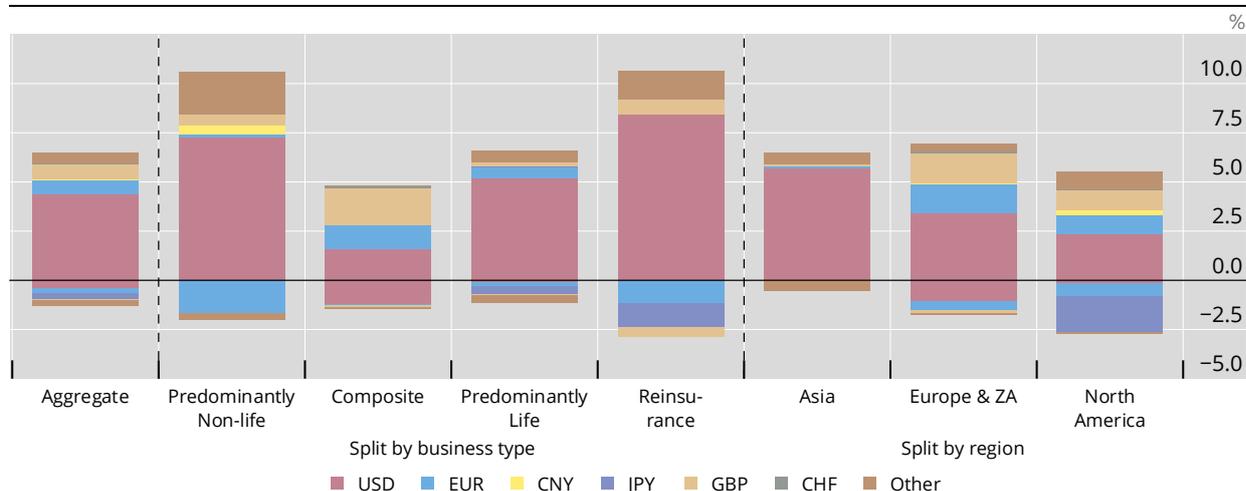
¹ Split "by region" refers to the region of the insurance groups' headquarters.

Source: IAIS IIM.

Foreign currency asset mismatch (% of assets) and funding gap (% of liabilities)¹

At year-end 2024

Graph F3



¹ Split “by region” refers to the region of the insurance groups’ headquarters. The positive part of each bar shows insurers that hold more assets than liabilities in a specific foreign currency (asset mismatch). The amount is shown relative to total assets. The negative part of each bar shows insurers that hold more liabilities than assets in a specific foreign currency (funding gap in foreign currency). The amount is shown relative to total liabilities. Each calculation is initially carried out at the level of individual insurer groups and subsequently aggregated. The aggregate total is comprised of the three main business types (predominantly non-life, composite, and predominantly life), while reinsurance is a separate category that spreads across the three main business types.

Source: IAIS IIM.

In interpreting Graph F3, one needs to keep in mind the following. First, taken together, the asset- and liability-side findings imply that insurance groups use their domestic currency to fund a small part of their foreign currency assets. Second, for most insurers, asset-liability currency mismatches are smaller than the total gross notional amount (GNA) of foreign exchange (FX) derivatives, indicating that much of on-balance sheet FX risk may be hedged.⁸⁰

Implications for financial stability

Overall, currency mismatches remain minor for insurers.⁸¹ Those that exist are addressed by insurers using derivatives and asset-liability management. These practices are closely monitored by supervisory authorities and operate within a strong regulatory framework. This includes stress tests and risk-based capital requirements, which ensure insurers hold sufficient capital for currency risks and encourage proper matching of assets and liabilities in the same currency. It also includes monitoring of cross-border funding dependencies. Moreover, in most markets, domestic investment restrictions or dissuasive capital charges for currency risk aim to reduce FX risk by limiting exposure to foreign currencies.

⁸⁰ The data collection does not distinguish between GNA of FX derivatives by currency; therefore, it is not possible to compare the GNA of FX derivatives in each single currency.

⁸¹ In the life insurance sector and participating business, where currency mismatches are larger, it should be noted that even if the liabilities are labelled in a given currency, the profit-sharing mechanisms induce an implicit currency matching if a share of the underlying assets is invested in foreign currencies.

Annex G: Central Bank foreign currency facilities in resolution⁸²

A bank resolution is a restructuring process managed by a resolution authority after the bank has been considered “*non-viable*” (a gone concern), when there are no private or supervisory measures available to restore its viability, and there is a public interest in resolving the bank. This process is implemented to safeguard public interests – notably, by ensuring the continuity of the bank's critical functions, maintaining financial stability, and minimising costs to taxpayers.⁸³ A gone concern bank is almost sure to be cut off from funding markets and, thus – while its assets are being wound down – likely need funding liquidity support from a public authority. This annex zooms in *specifically* on *central bank* facilities for providing such emergency liquidity assistance. It compares these facilities’ coverage and characteristics with those of facilities for going concerns.

According to survey responses, fewer central banks have foreign currency facilities for gone concerns than for going concern banks (Graph G1.A). Concretely, around half of the surveyed central banks have no foreign currency facility available for banks in resolution. The total number of facilities is also lower in the latter case (Graph G1.B). Almost all facilities available in resolution are also available to going concern banks: the survey responses revealed only one dedicated central bank resolution facility. Several jurisdictions explicitly state that, if the assistance is provided to a domestic parent, that entity can downstream the liquidity to other parts of the banking group, either domestically or internationally.⁸⁴

Of the central bank facilities available to fund foreign currency shortages in resolution, the majority would be offered under the same conditions as for going concern banks. In particular, this relates to maturity, size and collateral. However, the condition related to collateral may be more challenging for a gone concern than a going concern. The former would likely have exhausted its highest-liquidity collateral in the run-up to resolution, in an effort to avoid reaching the point of non-viability. And its remaining collateral, if there is any still available, would tend to incur higher haircuts. Thus, since most central bank facilities only provide funding against collateral – and only a few offer a systemic exemption clause – a gone concern bank is more likely to face collateral scarcity and tighter access conditions to funding than a going concern, all else the same.⁸⁵

Importantly, several jurisdictions reported that resolution-specific funding is available from authorities other than the central bank. In many instances, the central bank provides such support jointly with other authorities in the same jurisdiction that have no role outside resolution.⁸⁶ Specifically, deposit insurance schemes and resolution funds may supplement or substitute for central bank facilities in resolution.

⁸² This annex covers facilities providing liquidity in the following currencies: USD, EUR, JPY, GBP and CHF. It is based on jurisdictions of the Working Group with a resolution framework in place.

⁸³ The international standard for resolution regimes for banks and other financial institutions, Key Attributes of Effective Resolution Regimes for Financial Institutions (Key Attributes), was developed by the Financial Stability Board (FSB). Any financial institution that could be systemically significant or critical if it fails should be subject to a resolution regime that has the attributes set out in the “FSB Key Attributes”.

⁸⁴ This approach is generally consistent with a Single Point of Entry (SPE) resolution strategy (see below); nonetheless, in situations where funding is intended for a subsidiary located in a third country and denominated in a different currency, it may be necessary for the parent’s central bank to have - or to coordinate access to - adequate liquidity in that currency to support the effective implementation of the strategy.

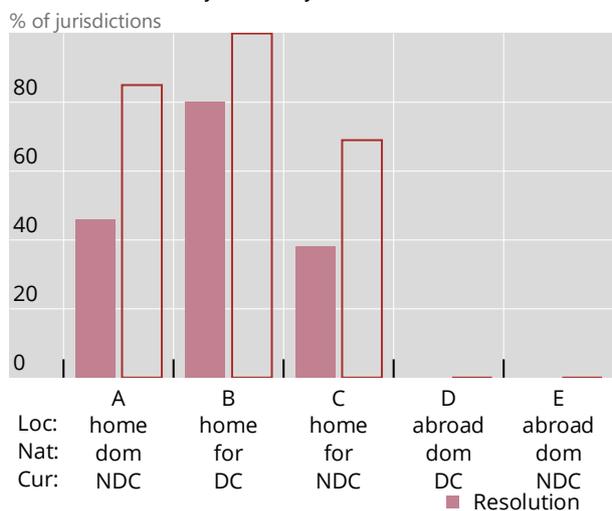
⁸⁵ For details on liquidity strains during a large bank crisis, see Annex B which discusses the 2023 Credit Suisse episode (that bank did not, however, undergo a resolution process).

⁸⁶ The FSB has for some time been conducting work on resolution frameworks and processes; see eg the “2025 Resolution report” (FSB (2026)) for a more detailed discussion of these issues.

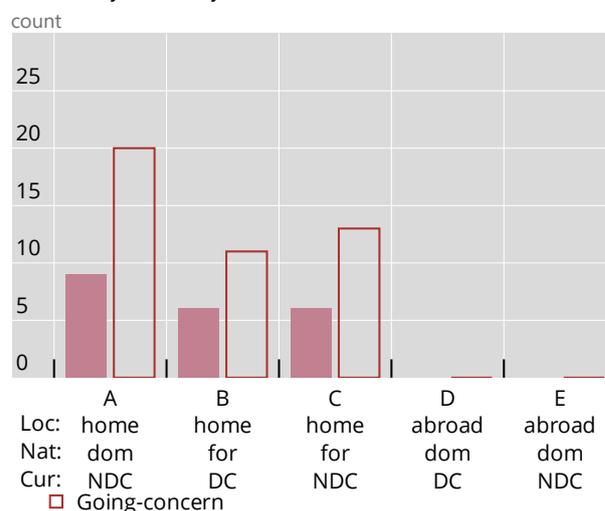
Central bank foreign currency liquidity facilities for banks in resolution¹

Graph G1

A. Proportion of jurisdictions with facilities in different location-nationality-currency cases



B. Number of facilities available in different location-nationality-currency cases



From a central bank's perspective. NDC = non-domestic currency, DC = domestic currency

¹ See Graph 18 for definitions of cases A – E. Loc = bank location (home or abroad); Nat = bank nationality (dom = domestic or for = foreign); Cur = currency. Case B is relevant only for the five central banks issuing: USD, EUR, JPY, GBP, CHF. For cases D and E, no facilities were reported.

Source: CGFS Working Group.

The set of available facilities and the way liquidity can flow throughout the group may also depend on the bank-specific resolution strategy, ie Multiple-Point of Entry (MPE) or a Single-Point of Entry (SPE) strategy. If banks follow an SPE strategy, resolution powers are applied to the top of a group by a single national resolution authority. In contrast, under an MPE strategy, resolution tools are applied to different parts of the group by host authorities. Banks following an SPE strategy are subject to centralised liquidity management, and reallocation of liquidity within the group therefore rests on internal markets and cross-border collateral flows. In assessing the adequacy of the available foreign currency liquidity facilities, it is important to adopt a holistic approach and consider all relevant authorities and the Preferred Resolution Strategy (PRS).

Access to indirect central bank liquidity support – ie when an entity receives foreign currency liquidity via internal capital markets from an affiliated entity abroad that taps a facility in that location – depends on the functioning of these internal markets. This, in turn, may differ in a resolution situation as compared to going concern. While a number of jurisdictions report no change in case of resolution, others note that limitations and restrictions to the functioning of internal capital markets and associated liquidity support may arise in resolution, including:

- limits on the transfer of collateral across jurisdictions;
- restrictions on access or reallocation of central bank liquidity to other entities within the group;
- divergent collateral eligibility criteria and even acceptability, especially for non-marketable assets;
- obstacles to the mobilisation, valuation, and conversion of collateral across jurisdictions due to operational and legal complexities;
- regulatory provisions that impede the movement of liquidity between affiliated entities, both in domestic and foreign currencies, through strict limits on inter-affiliate transactions.

Finally, the existence and design of bilateral arrangements between central banks—especially those that are activated or modified during resolution—are critical to the feasibility of cross-border liquidity support. These arrangements must be clearly defined, operationally robust, and aligned with the group’s PRS to ensure effective liquidity deployment during periods of stress.

Annex H: Liquidity facilities for NBFIs

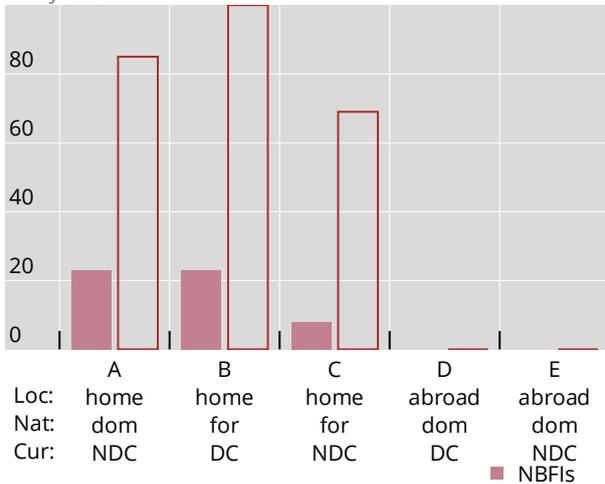
While numerous central bank facilities assist banks with foreign currency liquidity, non-banks facing foreign currency funding shortages generally have fewer options. The proportion of jurisdictions offering such facilities to NBFIs is a fraction of that for banks (Graph H1.A).⁸⁷ Overall, fewer than half of jurisdictions offer any foreign currency facility at all that would be open to non-banks.⁸⁸ The few NBFIs facilities that are available are only accessible for institutions located in the same jurisdiction as the central bank (cases A-C). The total number of individual facilities paints a similarly restrictive picture (Graph H1.B).

Central bank foreign currency liquidity facilities for NBFIs¹

Graph H1

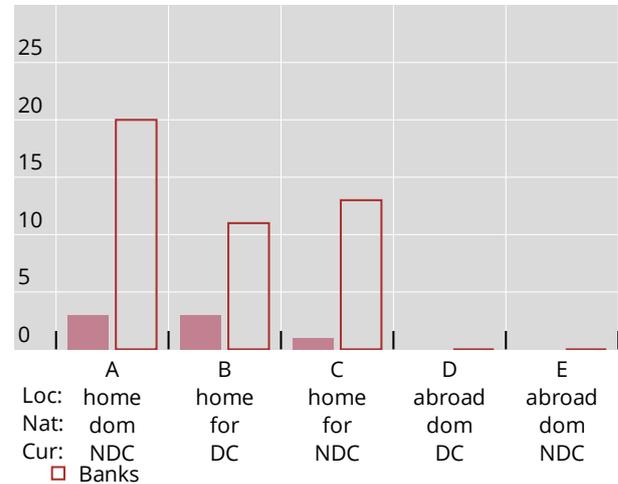
A. Proportion of jurisdictions with facilities in different location-nationality-currency cases

% of jurisdictions



B. Number of facilities available in different location-nationality-currency cases

count



From a central bank's perspective. NDC = non-domestic currency, DC = domestic currency

¹ See Graph 18 for definitions of cases A – E. Loc = bank location (home or abroad); Nat = bank nationality (dom = domestic or for = foreign); Cur = currency. Case B is relevant only for the five central banks issuing: USD, EUR, JPY, GBP, CHF. For cases D and E, no facilities were reported.

Source: CGFS Working Group.

Only specific types of non-bank appear to be able to access the few available foreign currency facilities. Survey responses explicitly mention only brokers and dealers having access in a few instances. However, some hint at broader access and a more flexible approach, suggesting that non-banks could have access if they meet relevant eligibility criteria, or that emergency lending might be available in some cases.

⁸⁷ Of course, to the extent that NBFIs in need can obtain foreign currency funding via the banking system, the need for dedicated facilities would be reduced.

⁸⁸ Here, 'non-banks' include broker-dealers, which technically are NBFIs but often are part of banking groups.

Annex I: Additional material

A. Decomposing foreign currency exposures

This sub-annex outlines the calculations for the various decompositions in Section 4.

Calculations underlying Graph 17

Graph 17 juxtaposes measures of potential exposure to foreign currency funding risk and information on the type of past restriction – or the absence of a restriction – on internal capital markets (ICM). It combines survey information on past ICM restrictions with data on foreign currency positions from the BIS locational banking statistics by nationality (LBSN). The survey information refers to two scenarios from the perspective of the central bank answering the survey. The first involves past restrictions on upstream transfers of domestic banks, ie on affiliated entities abroad providing foreign currency support to the parent. The second involves restrictions on downstream transfers of domestic banks, ie on the parent bank providing support to affiliated entities abroad. The measures of exposure to foreign currency funding risk refer to gross or (positive) net foreign currency liabilities, organised by the location in which the positions are booked and bank nationality.

For a stylised example, consider gross liabilities in CHF and assume that there are banks of only three nationalities: UK, JP and CH. Graph I1 populates this example with specific numbers, so that the total gross liabilities in CHF as a foreign currency – by either or both definitions of a ‘foreign currency’ in Section 2 – is 360, ie the sum of all entries minus the 90 for Swiss banks in Switzerland. This would correspond to the total height of the CHF bar in Graph 17.A.

Stylised gross CHF liabilities by location and nationality

Graph I1

	Nationality of banks		
	UK	Japanese	Swiss
Booked in UK	10	40	70
Booked in JP	20	50	80
Booked in CH	30	60	90

The numbers do not reflect actual positions.

Source: CGFS Working Group.

Past restrictions on *upstream* transfers of foreign currency by domestic banks are potentially relevant for banks located in their home jurisdiction. They should thus be linked with the first two diagonal elements in Graph I1. Suppose that the survey revealed that the UK and Switzerland had experienced such restrictions, but not Japan. In this case, the amount corresponding to upstream restrictions would be 10: UK banks’ CHF position held in the UK. The corresponding position for Japan, 50, would not be counted. The information that Switzerland had experienced past restrictions is irrelevant in this case because CHF is not a foreign currency for CH banks at home.

Next, consider past restrictions on *downstream* transfers of foreign currency by domestic banks. These would potentially affect exposures held by banks’ affiliates in foreign host jurisdictions. For a given bank nationality, the relevant exposure would be equal to the sum of the column corresponding to that

nationality, less the diagonal element (ie the amount booked at home). Suppose now that Japan and Switzerland reported past restrictions of this type. In such a scenario, the amount corresponding to downstream restrictions would be 250: 40+60 for Japanese banks, plus 70+80 for Swiss banks.

Ultimately, the CHF bar in Graph 17.A would, in this example, have “past restrictions” equal to 260 (ie 10+250), and “no past restrictions” equal to 100 (ie 360-260).

Calculations underlying Graph 20

Graph 20 juxtaposes measures of exposure to foreign currency funding risk with information on the existence of facilities for central bank liquidity assistance in the same currency. As conveyed by Graph 19, such facilities, if any, are only available to banks located in the jurisdiction of the central bank.

Continuing with the example in Graph 11, consider facilities for assistance in CHF. Suppose that the UK reports a CHF facility available only to foreign banks and that Japan reports a CHF facility available only to domestic banks. In addition, Switzerland reports such facilities for both foreign and domestic banks, with CHF being a domestic currency for the latter. In this case, the amount corresponding to “domestic banks, NDC” in Graph 20 would be 50 (JP banks’ CHF positions in Japan). For “foreign banks, DC”, the positions would amount to 90 (30 for UK and 60 for JP banks’ exposures in Switzerland). And for “foreign banks, NDC”, the amount would be 110 (40 for JP and 70 for CH banks’ exposures in the United Kingdom). Finally, the amount for “no direct facility” would be 110 – ie 360-50-90-110 – corresponding to 10 for UK banks in the United Kingdom, 20 for UK banks in Japan and 80 for CH banks in Japan.

Calculations underlying Graph 21

Graph 21 seeks to understand how much of the exposures not covered by direct central bank assistance could potentially be covered by indirect assistance from the home central bank via *downstream* transfers from the parent bank to its foreign affiliates. It considers the same information as that behind Graph 20.

Continuing with the stylised example relating to exposures in CHF as a foreign currency (per Graph 11), a total of 110 is not covered by direct access to central bank CHF facilities. Of this amount, 10 – ie the CHF positions of UK banks in the United Kingdom – cannot benefit from indirect assistance from the home central bank because: (i) it is booked in the jurisdiction of that central bank and (ii) that central bank is assumed to report no CHF facility for domestic banks. Likewise, the 20 booked by UK banks in Japan also cannot benefit from indirect assistance from the home central banks. By contrast, the 80 booked by Swiss banks in Japan would benefit from such assistance, down-streamed by their parents. In Graph 21, “potential downstream assistance” would therefore – in this example – amount to 80, while “remaining exposure” would be 30 (10 +20).

Calculations underlying Graph 24

Graph 24 decomposes direct coverage of exposures to foreign currency funding risk by central bank facilities according to the sources used for these facilities. It considers the same information as in Graph 20, plus survey information on the sourcing of foreign currency by central banks.

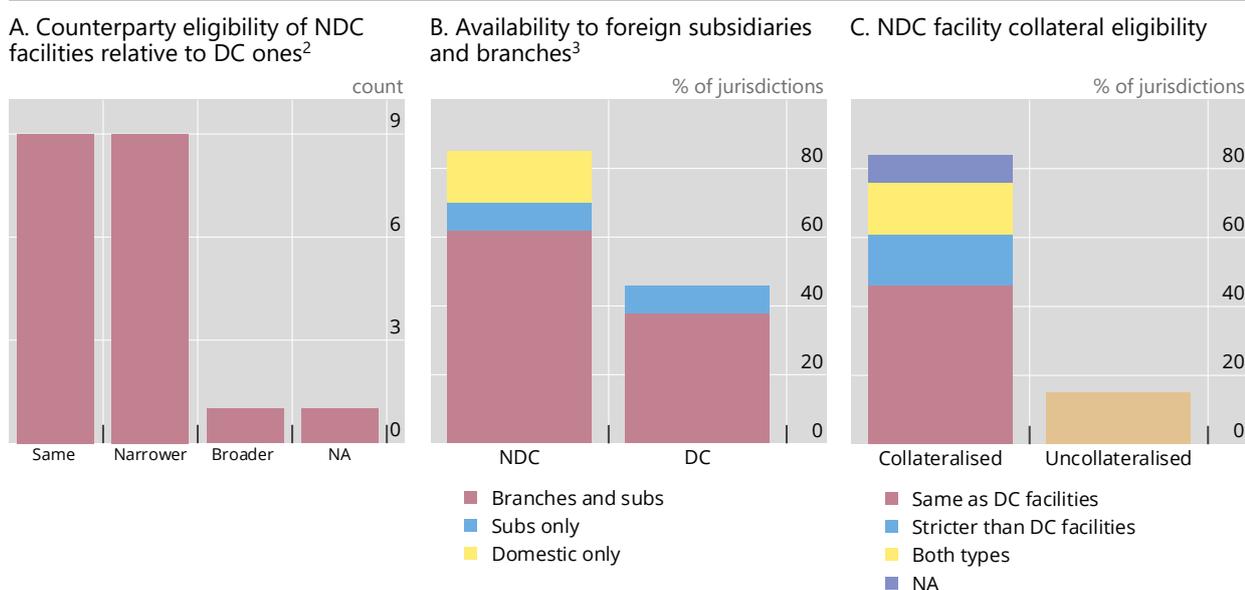
Continue with the above example, based on Graph 11. Suppose that the central bank in the UK sources its CHF by borrowing from the Swiss central bank, while the Japanese central bank relies solely on its FX reserves in CHF. With the UK assumed to have CHF facilities for foreign banks only, this would translate into “borrowing from issuing central bank” (Graph 24) of 110, ie 40 for JP and 70 for CH banks in the United Kingdom. In turn, “FX reserves” would amount to 50, corresponding to the CHF exposures of JP banks in Japan, where it is assumed that there are no CHF facilities for foreign banks. And “domestic currency” would amount to 90, ie 30 for UK and 60 for JP banks in Switzerland. The remaining 110 would, as in Graph 20, fall under “no direct facility”.

B. Characteristics of central bank foreign currency facilities

Entity type eligibility. Which banks have access to NDC liquidity facilities? Half of the reported NDC facilities impose stricter eligibility criteria than corresponding DC facilities (Graph I2.A). According to survey responses, this often involves prioritising banks over other financial institutions: eg NDC funding available only to banks, but DC funding also available to non-bank institutions. Other NDC facilities allow access only to domestic banks, in contrast to all DC facilities, which are open to foreign banks as well (Graph I2.B).

Facility counterparty and collateral eligibility¹

Graph I2



¹ NDC = non-domestic currency facilities; DC = domestic currency facilities. ² "Narrower" means that a narrower set of entity types are eligible for assistance from NDC facilities, compared to DC assistance in the same jurisdiction (and conversely for "Broader"). ³ The NDC and DC categories here includes facilities that are available both in NDC and DC simultaneously.

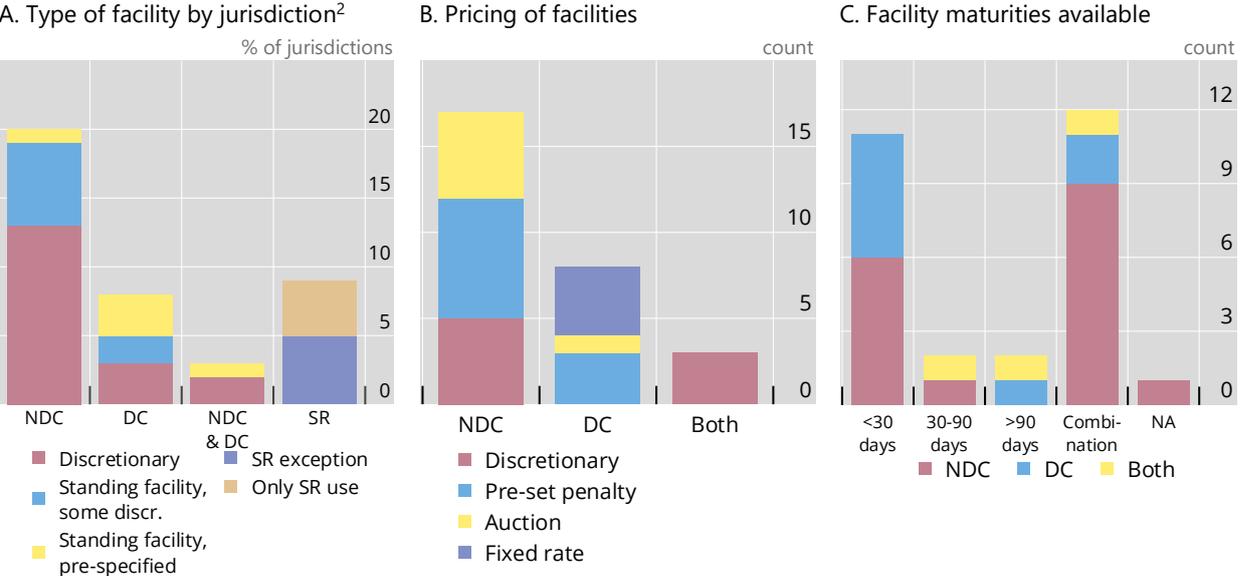
Source: CGFS Working Group.

In this context, the host central bank may treat branches and subsidiaries differently. In principle, this could reflect the different laws and regulations that apply to the two entity types. In practice, facilities in only a few jurisdictions are available to foreign subsidiaries but not to foreign branches (Graph I2.B, blue areas). It is much more common that both types of entities have access (red areas).

Collateral eligibility. For DC facilities, the availability of eligible collateral is a well-known potential bottleneck when banks need to access emergency liquidity (eg Coelho et al (2024)). In the case of foreign currency liquidity, collateral rules for assets denominated in the specific currency could further impair access, eg because difficulties in assessing the riskiness of such assets may lead to more conservative eligibility criteria. Of the jurisdictions that offer NDC facilities, around 15% provide these against a narrower set of collateral than the corresponding DC facilities (Graph I2.C, blue area). On the other hand, in some jurisdictions the central bank may extend foreign currency assistance on uncollateralised terms in emergency situations (second bar).

Central bank discretion. The prevailing types of foreign currency facilities are fully discretionary,⁸⁹ meaning that they can be deployed entirely at the discretion of the central bank (Graph 13.A, red areas in the first three bars). Even standing facilities often allow central banks to choose key conditions (blue areas). And for the domestic currency, many jurisdictions provide several types of facilities to foreign banks (purple area, second bar). To enhance central banks’ discretion, some jurisdictions have facilities that allow for systemic risk exceptions, ie they allow the central bank to override certain conditions in a systemic event (beige area, fourth bar).⁹⁰ That said, some facilities are *only* available in systemic events (grey area).

Characteristics of central bank foreign currency liquidity facilities¹ Graph 13



¹ NDC = non-domestic currency facilities; DC = domestic currency facilities. ² Combination = facilities in both NDC and DC; SR = systemic risk.

Source: CGFS Working Group.

Pricing of the facilities. Facilities involving assistance in non-domestic currencies are evenly distributed across three types of pricing: with discretionary pricing, subject to a pre-set penalty rate, or priced through an auction (Graph 13.B). Facilities that rely on central bank swap lines to source foreign currency generally impose a minimum rate, equal to the penalty rate at which the swap line is offered to the recipient central bank (typically OIS plus a fixed spread).⁹¹ By contrast, for around half of the facilities that host central banks offer in their domestic currency to foreign banks – the lending is at a fixed rate. Typically, many of these are standing facilities.

Maturity of funding. There is significant variation in the maturity of lending offered by foreign currency facilities. Among facilities with a specific maturity, most are short-term, ie below 30 days (Graph 13.C). These normally allow accessed funding to be rolled over.

⁸⁹ Note that there is not necessarily a sharp demarcation between “discretionary” facilities and “standing facilities with some discretion”, and survey respondents may therefore not always have categorised facilities fully consistently across jurisdictions. In the survey, a discretionary facility was described as one that could be “deployed at the discretion of a central bank”.

⁹⁰ The systemic risk-related facilities in the fourth bar in Graph 13.A are a subset of the ones included in the first three bars.

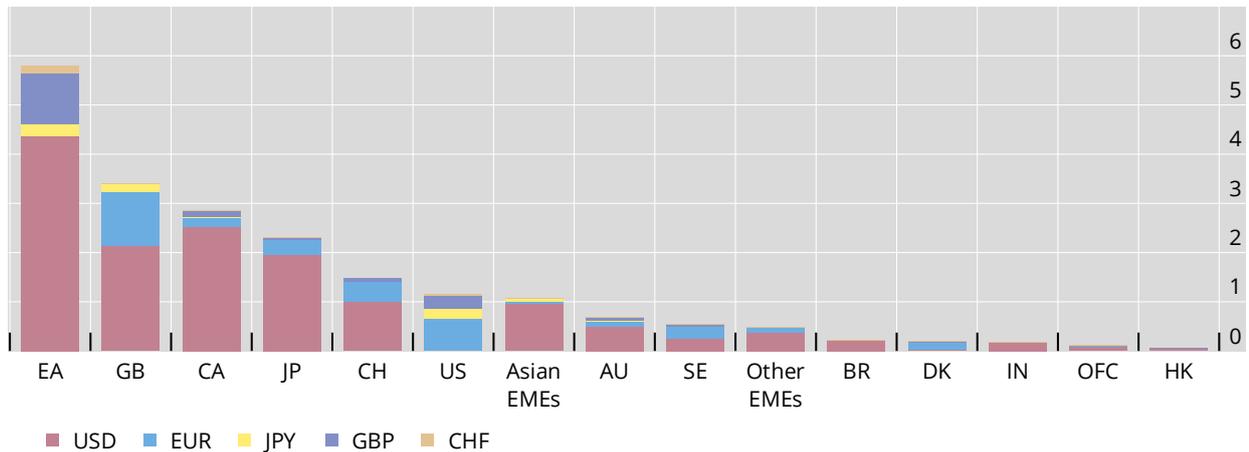
⁹¹ See eg Choi et al (2022) or Persi (2020).

C. Additional Graphs

Funding in major foreign currencies, by bank nationality¹

In USD trillions, as of Q2 2024

Graph 14



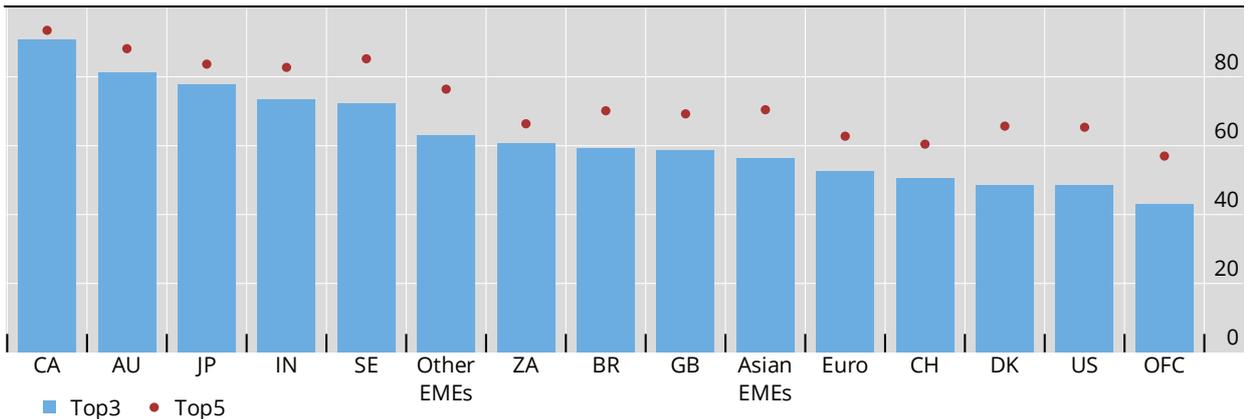
¹ Excludes interoffice liabilities. Foreign currency denominated in currencies shown in legends exclude domestic (home) currency of respective bank nationalities. EA = euro area banks; OFC = banks with parents in BH, BM, BS, IM, JE, KY and PA; Asian EMEs = ID, KR, MY, PH, TW; Other EMEs = SA, CL, MX, TR.

Source: BIS locational banking statistics (LBS); BIS consolidated banking statistics (CBS).

Geographic concentration in foreign currency funding sources, by nationality

In per cent, as of Q2 2024

Graph 15



¹ EA = euro area reporting banks; OFC = banks with parents in BH, BM, IM, JE, KY and PA; Asian EMEs = ID, KR, MY, PH, TW; Other EMEs = SA, CL, MX, TR. Data shows the liabilities in the five major currencies (USD, EUR, JPY, GBP, CHF – when that currency is not domestic for a given bank nationality) that come from the 3 or 5 counterparty locations (including the home country) providing the most of such lending to that bank nationality.

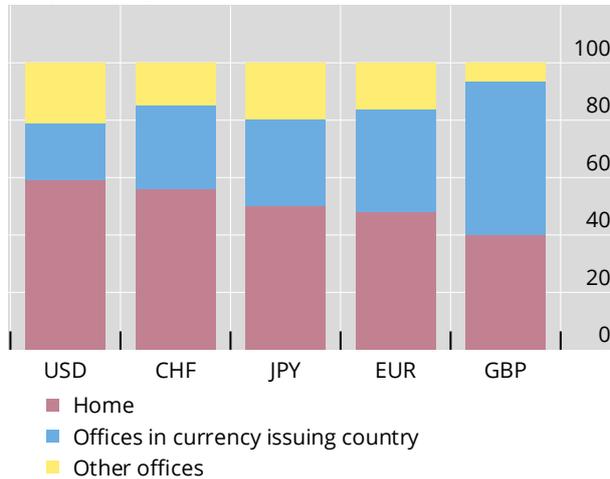
Sources: BIS locational banking statistics (LBS); BIS consolidated banking statistics (CBS).

Banks' foreign currency liabilities¹

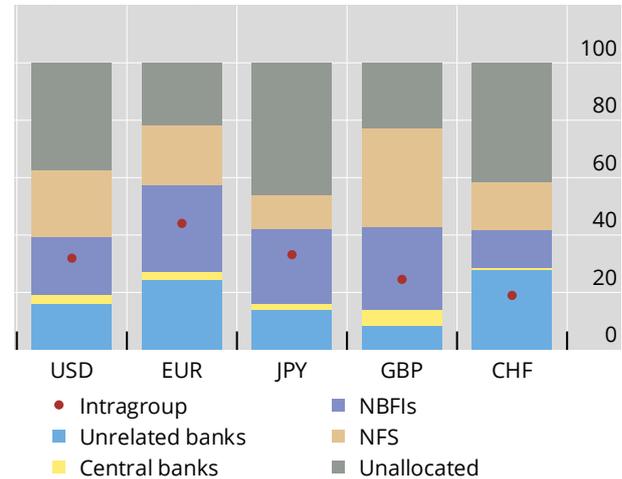
Shares in total foreign currency liabilities as of Q2 2024, in per cent

Graph I6

A. By booking location



B. By counterparty sector



¹ Totals exclude interoffice positions. Data on local liabilities for foreign offices in Japan and the United States are estimated from CBS data. Expressed as a share of foreign currency liabilities in the given currency. Banks headquartered in a country issuing a given currency are excluded from the columns for that currency.

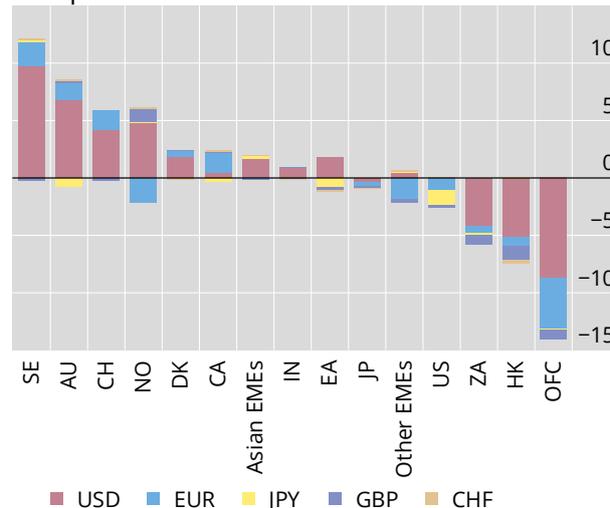
Sources: BIS locational banking statistics (LBS); BIS consolidated banking statistics (CBS).

Net on-balance sheet foreign currency positions, by bank nationality¹

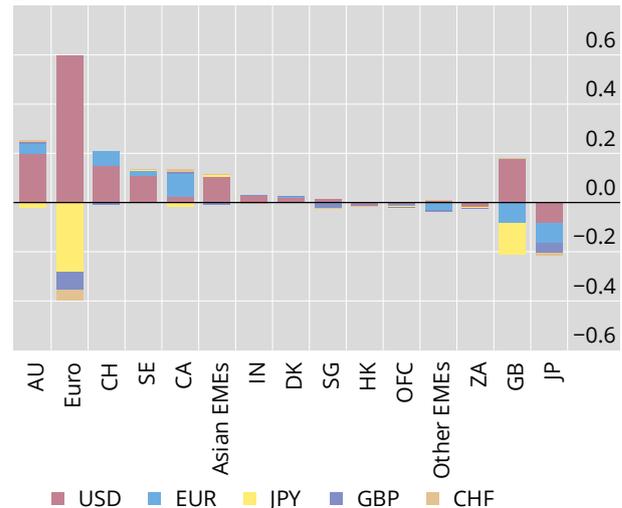
As of Q2 2024

Graph I7

A. In per cent of total liabilities



B. In trillions of US dollars

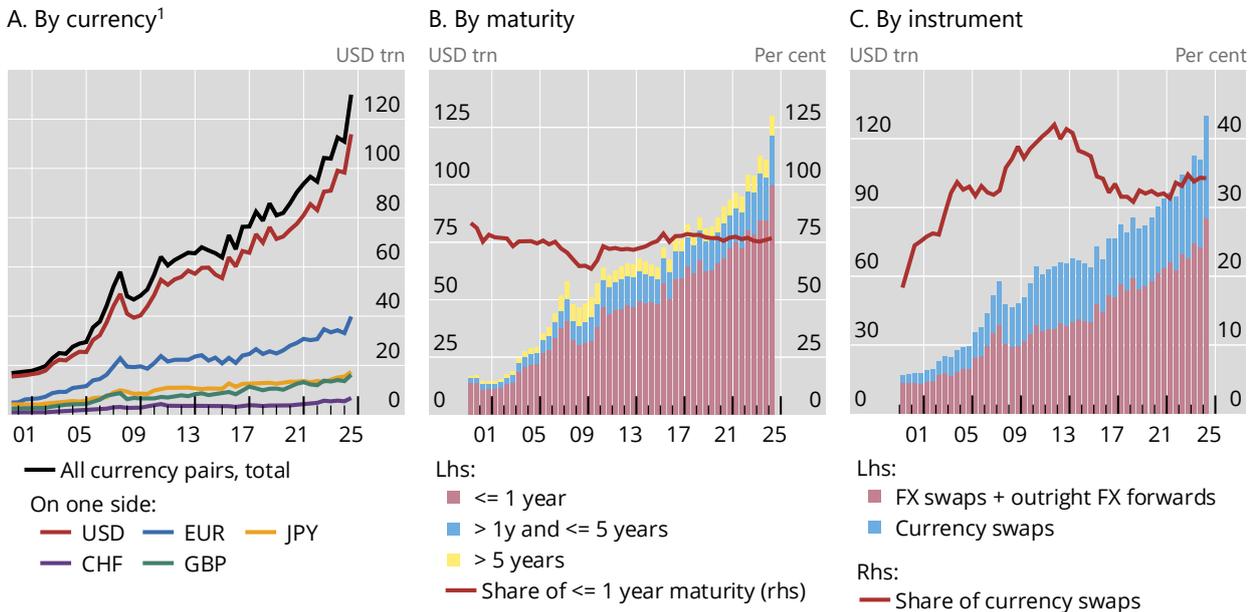


¹ Net liabilities (liabilities minus claims) in major currencies (when that currency is not domestic for a given bank nationality). The denominator in Panel A is total liabilities denominated in all currencies of each jurisdiction. Excludes interoffice positions.

Source: BIS locational banking statistics (LBS).

FX swaps, outright FX forwards and currency swaps outstanding

Graph 18

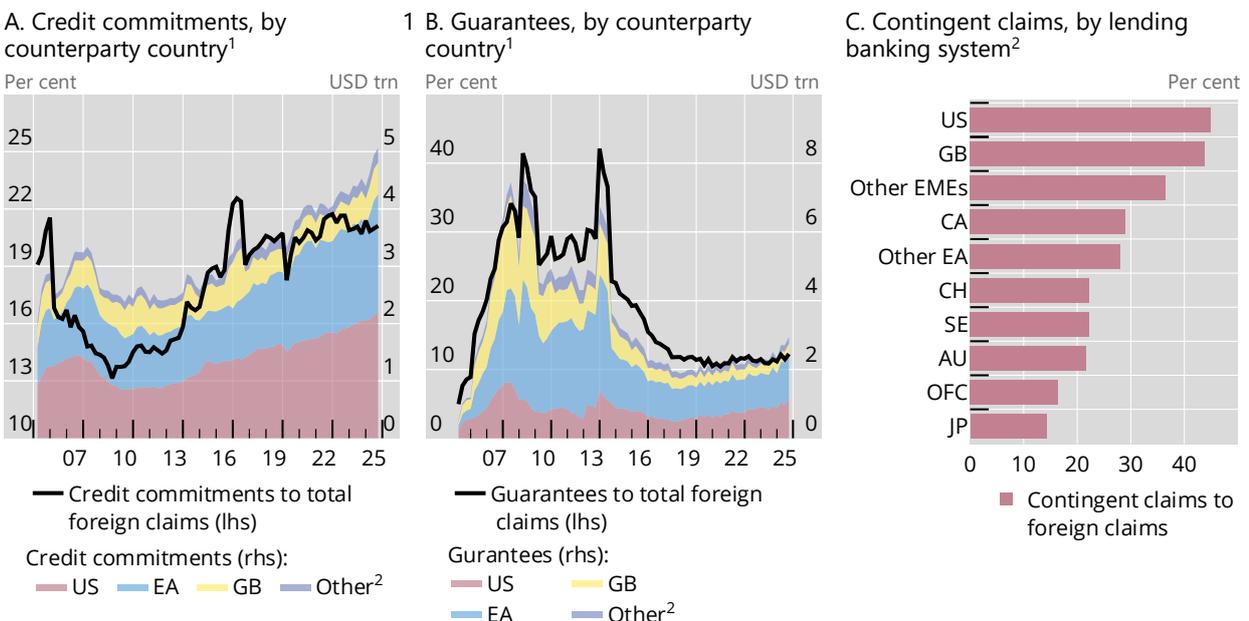


¹ The black line is the aggregate of FX swaps, FX forwards and currency swaps. The other lines are contracts in which the listed currency is exchanged.

Source: BIS OTC derivatives statistics.

Credit commitments and guarantees

Graph 19



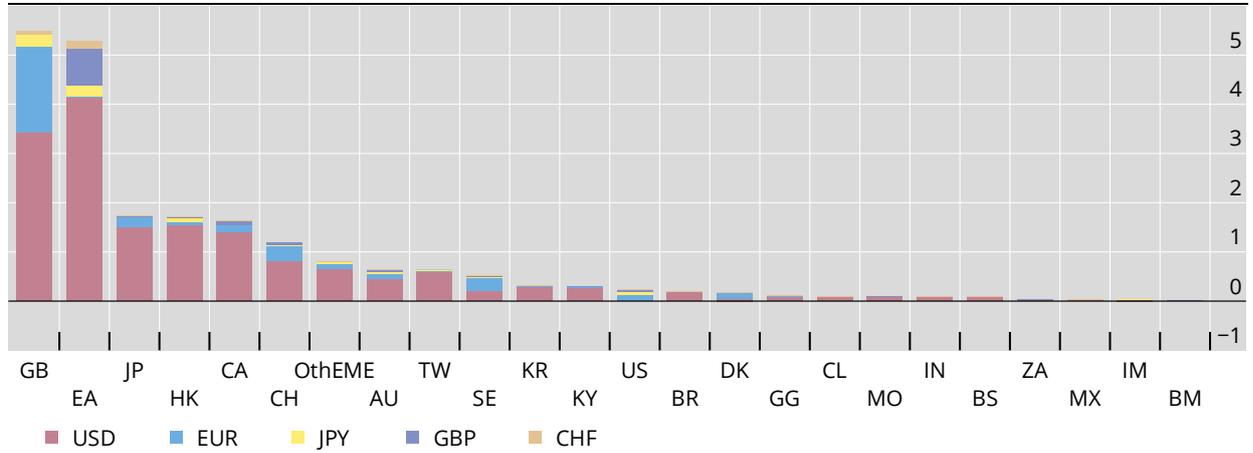
¹ Countries in the legends for credit commitments and guarantees refer to counterparty countries. ² Other = JP, CH. ³ The vertical axis represents bank nationalities. Contingent claims refer to sum of credit commitments and guarantees extended. OFC = banks with parents in IE, NL and SG. Other EMEs = banks with parents in IN, KR, TR and TW. Data as of Q2 2024.

Source: BIS consolidated banking statistics (CBS).

Foreign currency funding, by residence of banks

Amounts outstanding as of Q2 2024, in trillions of US dollars

Graph I10



"OthEME" comprises ID, MY, SA and TR. Currencies are excluded when they are issued by the given jurisdiction.

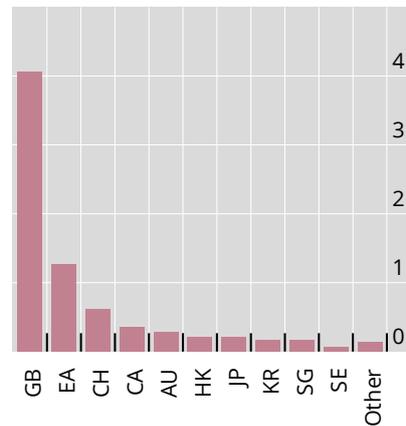
Source: BIS locational banking statistics (LBS).

Derivatives obligations owed in a foreign currency, by bank location¹

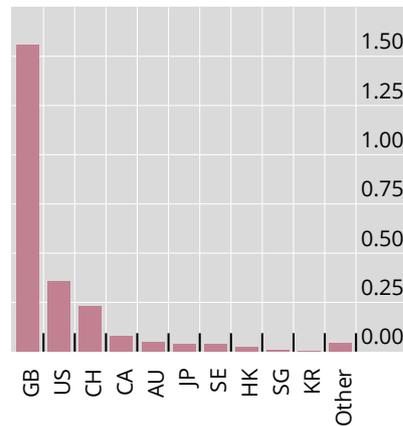
As of Q2 2024, in trillions of US dollars

Graph I11

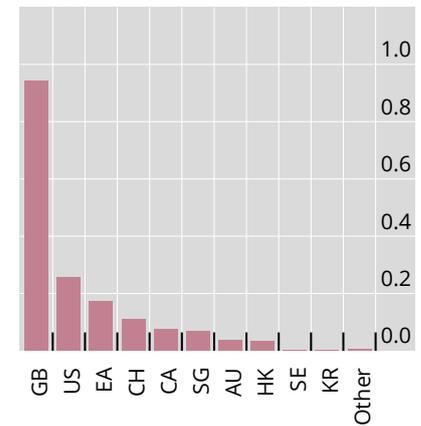
A. US dollar



B. Euro



C. Japanese yen



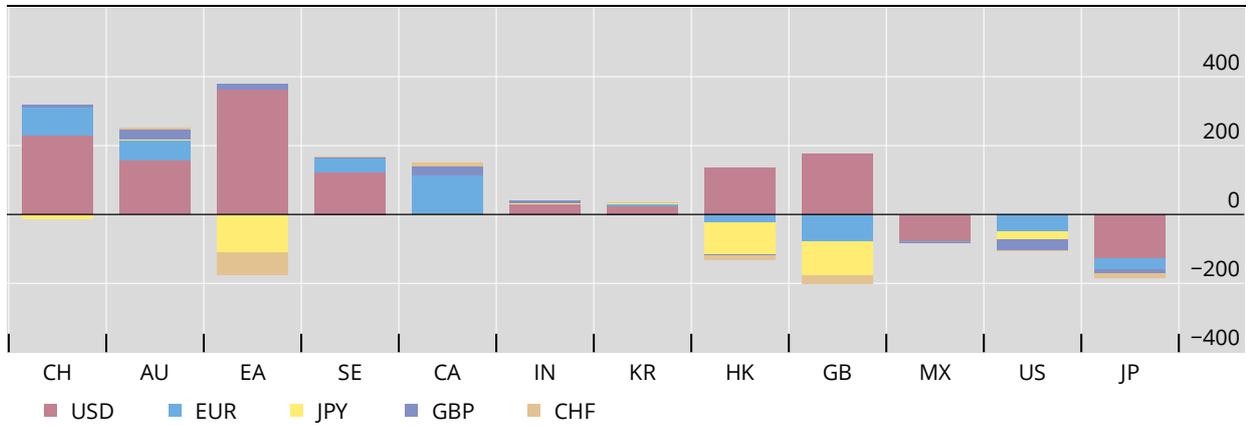
¹ Excludes banks in a location where the currency is a "home" currency. Only interdealer contracts are included.

Source: CLS.

Net on-balance sheet foreign currency positions, by bank residence

As of Q2 2024, in billions of US dollars

Graph I12



¹ Net liabilities (liabilities minus claims) in major currencies. Currencies issued in the jurisdiction are excluded.

Source: BIS locational banking statistics (LBS).

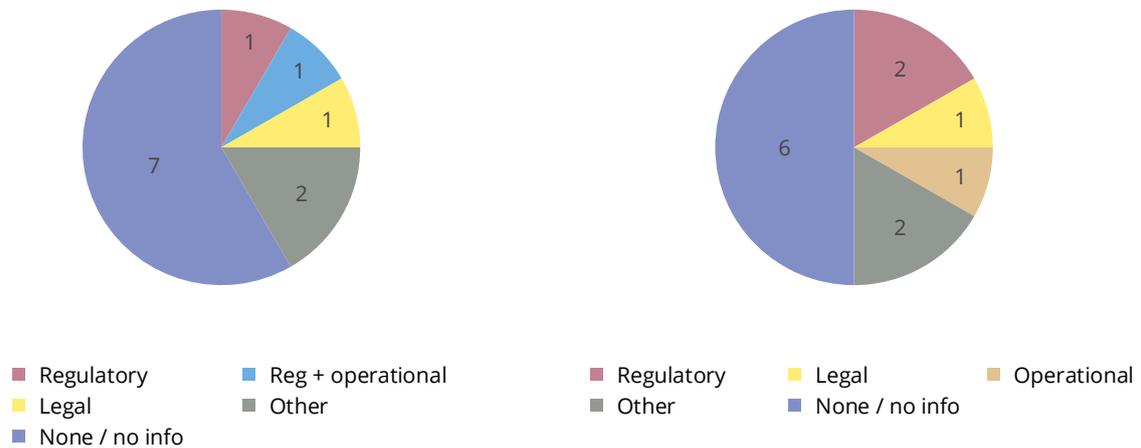
Anticipated restrictions on banks' internal capital markets

Number of jurisdictions with restrictions

Graph I13

A. On upstream transfers from foreign subsidiaries to the parent bank

B. On downstream transfers from the parent bank to subsidiaries abroad



Source: CGFS Working Group.

Annex J: Members of the Working Group

Co-Chairs	Stephanie Curcuru , Deputy Director, International Finance Division, Board of Governors of the Federal Reserve Antoine Martin , Vice-Chairman of the Governing Board, Swiss National Bank
Reserve Bank of Australia	Matthew Boge , Deputy Head, International Department
National Bank of Belgium	Sabina Bernardo , Head, Prudential Bank Regulation Division
Bank of Canada	Christian Friedrich , Senior Researcher Advisor
European Central Bank	Benjamin Klaus , Lead Financial Stability Expert, DG Financial Stability Luca Mingarelli , Financial Market Expert, DG Market Operations
Bank of France	Tarik Mouakil , Deputy Head, Risk and Financial Vulnerability Assessment Division
Hong Kong Monetary Authority	Eric Wong , Head, Market Research Division
Reserve Bank of India	Dimple Bhandia , Chief General Manager, Financial Markets Regulation Department
Bank of Italy	Marco Albori , Economist, International Relations and Economics Directorate
Bank of Japan	Mikari Kashima , Director-General for International Financial Markets, Financial Markets Department / International Department Mayuko Miki , Director, Coordination and Market Analysis Division, Financial Markets Department
Bank of Korea	Sungwan Joo , Director, Foreign Exchange Analysis Division
Central Bank of Luxembourg	Pol Simon , Deputy Head of Department, Liquidity Supervision
Bank of Mexico	Ramón Figuerola , Head, Financial Programming Division, General Directorate of Central Bank Operations
Netherlands Bank	Daniel van Schoot , Principal Economist, Monetary Operations Department, Financial Markets division

Saudi Central Bank	Yasir Alzahrani , Manager, Liquidity and Markets Division, Monetary Policy Department
Monetary Authority of Singapore	Qing Kang Tang , Head, Monetary Management Division
Bank of Spain	Alicia Aguilar Fargas , Senior Economist, Bank Resolution Analysis and Policy Division Miquel Tari Sánchez , Senior Resolution Expert, Bank Resolution Analysis and Policy Division
Swiss National Bank	Sena Benti , Economist, Financial Stability Frederik Weber , Economist, Financial Stability
Bank of England	Dennis Reinhardt , Research Advisor
Board of Governors of the Federal Reserve System	Anil Jain , Principal Economist, International Finance Division
Federal Reserve Bank of New York	Lisa Chung , Director, Foreign Exchange and Global Rates Fabiola Ravazzolo , Policy Advisor
Bank for International Settlements	Bryan Hardy , Senior Economist, Financial Stability Policy Peter Hördahl , Principal Economist, CGFS Secretariat Nikola Tarashev , Head, CGFS Secretariat

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