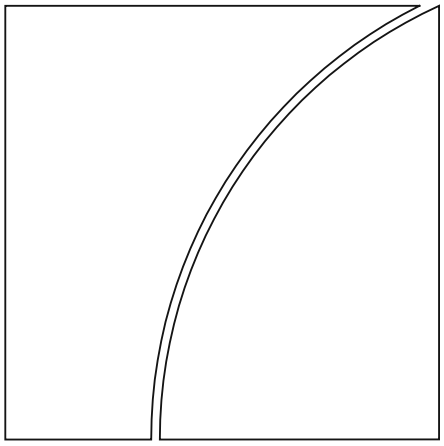


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by Catherine Casanova, Eugenio Cerutti, Swapan-Kumar Pradhan

Monetary and Economic Department

November 2026

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Banking across borders: where to lend from differs by sector

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Abstract

Where do globally active banks choose to lend from? We study the geography of cross-border bank lending using BIS international banking statistics that identify the parent-bank nationality, the location where cross-border claims are booked, and the borrower country. We document the rapid growth of bank lending to NBFIs, mostly in advanced economies and financial centers, consistent with the increasingly important role of NBFIs in global financial intermediation. Our results reveal systematic differences in the geography of cross-border lending across borrower sectors. Headquarter-based lending to non-financial borrowers is strongly associated with geographic distance and informational frictions. When lending through foreign affiliates, banking systems tend to book claims closer to borrowers, even if it implies greater distance from headquarters. The conventional negative gravity relationship therefore operates primarily on the borrower-facing side of the parent–location–borrower triangle, although its strength and broader economic ties vary across sectors. These findings highlight how borrower-side informational frictions and sectoral characteristics shape international banking.

Keywords: cross-border lending, banks, NBFIs, financial centers, offshore

JEL Codes: F34 (inter lending), F36 (econ integration), G21 (banks), G23 (NBFI)

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1 Introduction

The dynamics of cross-border bank lending have evolved markedly over the past decade, both in scale and in how lending is allocated across economic sectors. Two structural shifts stand out. First, non-bank financial institutions (NBFIs) have become a dominant counterpart in the global financial system. Their share of outstanding cross-border borrowing has risen steadily and became increasingly concentrated in advanced economies and offshore financial centres. Since 2022, cross-border bank lending to NBFIs has reached parity with lending to the non-financial sector (NFS), suggesting that bank lending to NBFIs has become an important factor in global capital flows. Second, the organizational structures through which banks intermediate this lending have grown more complex, with global banking groups operating through extensive networks of foreign affiliates rather than lending solely from headquarters.

While a large literature studies how much banks lend across borders and to whom, far less is known about *from where* they lend. A cross-border loan to a given borrower can be booked from the parent bank's headquarters, or from an affiliate the group operates in a third country. This locational decision is economically meaningful. It determines how banking groups exploit informational advantages, optimize their funding, manage regulatory constraints, and organize their international operations. It also shapes the resilience of cross-border credit by influencing how lending networks respond to shocks.

We provide the first sector-specific analysis of how global banking groups allocate cross-border claims between headquarters and individual third-country booking locations, conditional on the parent nationality and borrower country. Understanding this decision requires following three locations simultaneously: the country where the parent bank is headquartered, the country location from which the loan is booked, and the country where the borrower resides. We refer to this organizational structure as the *cross-border lending triangle*. Within this framework, a banking group can either lend directly from headquarters to the borrower or route lending through affiliates located in third countries. The choice between these alternatives is the central focus of our analysis.

The cross-border lending triangle can be interpreted not only as a framework for tracking the movement of capital across borders, but also as a framework for studying whether the geography of cross-border claim booking is consistent with borrower-related information and monitoring frictions within global banking groups.[1] While banking groups can reallocate funding internally through their affiliate networks, borrower-specific information may be more costly to acquire or transmit across geographical and organizational boundaries. As a result, the optimal location from which a loan is extended need not coincide with the headquarters of the banking group but may instead be an affiliate whose location, customer relationships, or institutional environment may reduce borrower-related information and monitoring costs.

Unlike the literature on multinational banking models, which focuses on the overall footprint of banking groups including locally funded domestic lending, we focus on the cross-border lending of banks and ask where within the banking group such cross-border lending is booked. We therefore exclude the local domestic lending that foreign affiliates extend to borrowers in their own host countries as it is often primarily funded by local liabilities. This distinction is important for both conceptual, regulatory and empirical reasons. Conceptually, locally funded domestic lending reflects a different organizational decision than cross-border lending and is a defining feature of the traditional multinational banking model. From a regulatory perspective, local lending is different from cross-border lending. Empirically, the available international banking data do not fully capture domestic lending funded with local liabilities. By concentrating on cross-border lending, we isolate the organizational choice that is genuinely international in nature and can examine separately lending to different types of borrowers.[2]

Our analysis draws on the confidential bilateral BIS locational banking statistics by nationality, which uniquely allow us to observe all three dimensions of the triangles simultaneously (with full granularity). The data cover up to 30 parent-bank nationalities, affiliates in up to 38 third-

[1] The cross-border lending triangle is conceptually developed in subsection 3.4 , together with some concrete empirical examples.

[2] In robustness exercises, we additionally consider approximations of local lending financed through cross-border funding within the banking group, but the data do not allow us to distinguish borrower sectors or fully capture domestically funded local lending.

country reporting locations, and borrowers in up to 180 countries.[3] Also, the data allow us to distinguish among three borrower sectors: the non-financial sector (NFS), non-bank financial institutions (NBFI), and unrelated banks (BXIO) as borrowers . The non-financial sector (NFS) comprises non-financial corporations, governments and households including NPISHs. We combine this information with a gravity framework to analyze both the share of lending extended directly from headquarters and the share routed via foreign affiliates in third countries.

Our analysis yields three key findings. First**,** banks systematically exploit location-specific comparative advantages when organizing cross-border lending. There is no universally optimal lending location. Instead, the optimal locational choice depends on the interplay of three different factors: bank nationality, borrower country characteristics, and borrower sector. Second, the headquarters-versus-affiliate choice is shaped by informational asymmetries. Non-financial sector lending is particularly sensitive to geographical and informational frictions, whereas lending to NBFIs and unrelated banks (BXIO) exhibits different relationships with these gravity forces. Third, conditional on a parent–borrower relationship and the existing affiliate network, the conventional gravity relationship operates primarily between the affiliate location and the borrower country. Banks systematically choose affiliate locations geographically closer to the borrower, when those locations are farther from the parent's home country: distance carries the expected negative sign on the location-borrower dimension, but a positive sign on the parent-location dimension. This pattern is consistent with borrower-facing geographical frictions playing an important role in the distribution of claims across affiliate locations. The role of bilateral economic ties is more nuanced and varies across sectors. For instance, economic ties like between the affiliate location and the borrower matter more for lending to the non-financial sector than to NBFIs.

Our paper contributions to the literature on cross-border bank lending are threefold. First, it provides a three-dimensional analysis of cross-border lending by examining lending decisions at the parent-location-borrower level and separately across borrower sectors. Second, it offers new evidence on how banks organize international lending within their affiliate networks and

[3]While the full dataset is available (with BIS coauthor), we selected the sample to protect data confidentiality. The coverage of this sample is more than 80% of the reported global total.

how information asymmetries shape these organizational choices. Finally, it links the growing importance of NBFIs in global finance to the geography of international banking, showing that the rise of NBFIs is associated not only with increasing volumes of cross-border lending, but also NBFIs' growing role in global financial intermediation.

Taken together, our results deepen the understanding of the organizational and strategic considerations that shape cross-border bank lending, with practical relevance for policymakers and financial institutions navigating an increasingly interconnected and NBFI-intensive system. The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 describes the data and documents the architecture of global cross-border lending across sectors and organizational structures. Section 4 presents our empirical approach and results for headquarter and non-headquarter shares. Section 5 concludes.

2 Literature review

Our paper connects to several strands of the literature on international banking and cross-border finance.

First, we build on analytical work on the organizational structure and complexity of globally active banks and their networks of foreign affiliates. A growing literature documents that banking groups operate as complex organizations that span many legal entities, business lines, and jurisdictions. Cetorelli and Goldberg (2014) propose measures of organizational and business complexity and show that global banks differ markedly in the number and geographic spread of their affiliates, with business models and geographic footprints that often carry strong regional characteristics linked to the nationality of the group. Correa and Goldberg (2022) further show that geographic and organizational complexity shape banks' risk profiles — generating diversification and liquidity-management benefits while also contributing to systemic risk — and that these effects interact with governance and regulation. Similarly, the literature on the internal capital markets of banks shows that global banking groups actively reallocate funding within their affiliate networks in response to shocks (Cetorelli and Goldberg (2012a), Cetorelli and Goldberg (2012b), Cerutti and Claessens (2017), and Hardy, McGuire, and von Peter (2024)) show that the way a banking group organizes its

cross-border operations shapes both the risk profile it carries and its ability to withstand funding shocks. This literature strand motivates our premise that the location where a banking system books its cross-border lending reflects an organizational choice across its heterogeneous affiliate network, rather than being a mechanical consequence of bank size.

A related literature emphasizes the role of organizational structure and distance in the production and transmission of information within banks. Stein (2002) shows that decentralized organizations have an advantage when investment decisions rely on soft information that is difficult to communicate across organizational layers, whereas more hierarchical structures are better suited to information that can be hardened and transmitted within the firm. These considerations are particularly relevant for multinational banks, where information must also travel across geographical and institutional boundaries. Mian (2006) shows that greater geographical and cultural distance between foreign-bank headquarters and local branches constrains lending to informationally difficult borrowers, highlighting the importance of proximity for relationship-based lending. Our analysis builds on these insights by examining a different organizational margin: rather than taking the location of the lending entity as given, we study where within their foreign affiliate networks globally active banks choose to book cross-border lending. This allows us to distinguish informational frictions between the parent and the lending location from those between the lending location and the borrower, and to examine whether their importance varies across borrower sectors.

A related strand of the international banking literature examines how global banks organize their foreign operations across branches and subsidiaries and how these organizational choices shape their funding and lending models. Cerutti, Dell'Ariccia, and Martínez Pería (2007) show that the choice between branches and subsidiaries reflects regulatory conditions, host-country risks, and banks' desired degree of local market penetration. Fiechter and Surti (2011) similarly emphasize that the legal and organizational form of foreign operations affects the degree of integration between foreign affiliates and their parent banking groups. This literature also distinguishes between more centralized international banking models, in which foreign lending is funded and managed primarily from the home country or major financial centers, and multinational models that rely more heavily on locally funded foreign affiliates (McCauley and von Peter (2010)).

Our analysis is related to, but distinct from, this literature. The international-versus-multinational distinction generally characterizes the overall foreign footprint of banking groups, including locally

funded domestic lending by foreign affiliates. Instead, we focus exclusively on cross-border lending. This distinction allows us to examine whether the choice of lending location reflects informational and other frictions between the parent, the lending affiliate, and the borrower, rather than treating the degree of centralization of the banking group as the main object of interest. In addition, because locally funded domestic lending is what tends to define the multinational model, we also show that this restriction materially changes the picture: once local claims are removed, banks generally classified as decentralized — Spanish banks being the clearest case — book the bulk of their cross-border lending from headquarters and look much closer to centralized "international" banks such as Japan's.[4]

Second, our paper contributes to the fast-growing literature on bank–NBFI interlinkages. Aramonte, Schrimpf, and Shin (2021) describe how the expansion of NBFIs has reshaped intermediation and liquidity provision, laying out channels — such as leverage fluctuations and margin calls — through which systemic risk can propagate across the bank–NBFI nexus. Acharya, Cetorelli, and Tuckman (2024) argue that banks and NBFIs have become increasingly interwoven in their business lines and risks, blurring clear sectoral boundaries, and emphasize that bank liquidity provision remains essential to NBFIs. Gabriel and Sterling (2025) document changing patterns in banks' funding of NBFIs — particularly through credit lines — and underscore the systemic importance of time-varying exposures and sector heterogeneity. Albuquerque, Cerutti, Chen, and Firat (2026) document that tighter macroprudential policies induce banks, particularly those with weaker capital positions, to reallocate lending toward NBFIs and away from NFCs. They find supporting evidence for this reallocation in cross-border bank claims using BIS consolidated banking statistics, suggesting that regulatory incentives may contribute to the growing interconnectedness between banks and NBFIs. We complement this work by showing that the rise of NBFIs as cross-border borrowers is not only a matter of volume but also of structure: banks lend to NBFIs from different locations, and according to different gravity forces, than they do to non-financial or interbank borrowers.

Third, our empirical strategy connects to the literature that applies gravity models to cross-border finance, in which geographical distance and bilateral economic ties proxy for the information

[4]Spanish banks, with their strong local presence and locally funded positions in regions such as Latin America, are used as an example of decentralized operations. Instead, Japanese banks, whose claims are largely booked cross-border from Tokyo and funded through domestic deposits, exemplify the international or centralized model

asymmetries that govern international financial flows. The "geography of information" is central here: Portes and Rey (2005) show that informational frictions, proxied by distance and information-transmission variables, are the dominant determinant of cross-border equity flows, and Okawa and van Wincoop (2012) provide theoretical foundations for applying gravity specifications to financial holdings (see also Buch (2003); Lane and Milesi-Ferretti (2008); Aviat and Coeurdacier (2007)). In bank lending, proximity can facilitate the collection and use of borrower-specific soft information (Agarwal and Hauswald (2010)), while geographical and cultural distance between a foreign bank's headquarters and its local branches can constrain lending to informationally difficult borrowers (Mian (2006)). Related work shows that international banking geography reflects differences in banking-sector efficiency (Niepmann (2015)), distance (Brei and von Peter (2018)), and borrower information and regulatory incentives in loan-location decisions (DemirgüçKunt and Huizinga (2023)). Building on these insights, we apply gravity variables separately to the parent–location and location–borrower sides of the international lending relationship, allowing us to distinguish these two geographical margins within the same cross-border lending triangle. This distinction allows us to ask whether the relevant geographic friction lies primarily inside the banking group or between the lending office and the borrower.

Taken together, these literatures suggest that the geography of global banking reflects not only the allocation of funding and balance-sheet capacity, but also frictions in acquiring and transmitting borrower-related information. Our contribution is to identify a previously unobserved organizational margin within this geography. By observing the parent country, the location from which lending is booked, and the borrower country simultaneously, we distinguish distance within the banking group from distance between the lending location and the borrower. The results show that the conventional negative gravity relationship operates primarily on the borrower-facing side of this triangle and is strongest for lending to the non-financial sector. We interpret this evidence as consistent with banking groups selecting lending locations partly to reduce borrower-side informational and monitoring frictions, while recognizing that geographical distance may also capture broader operational, cultural, and institutional costs.

3 The Architecture of Global Cross-Border Lending

Cross-border lending can be very complex, as banks can choose from where to extend cross-border loan often involving affiliates in third countries apart from the headquarters. The BIS international locational banking statistics (LBS) capture the complexity of these operations which varies significantly across bank nationalities and borrower sectors— consistent with the wide dispersion in organizational and geographic complexity documented for globally active banks (Cetorelli and Goldberg (2014); Correa and Goldberg (2022)). Within the LBS, the nationality-based locational banking statistics (LBSN) attribute cross-border claims of resident banks in a (host) reporting country to the parent-nationality of the bank—that is, the country in which the parent bank is headquartered—and report these exposures vis-à-vis each borrower country. For every parent bank–borrower country pair, the statistics distinguish between lending extended directly from the headquarters and lending originated through a foreign affiliate of the same banking group located in a third (host reporting) country, while also classifying borrowers into NBFIs, non-financial sectors (NFS), and unrelated banks (BXIO).

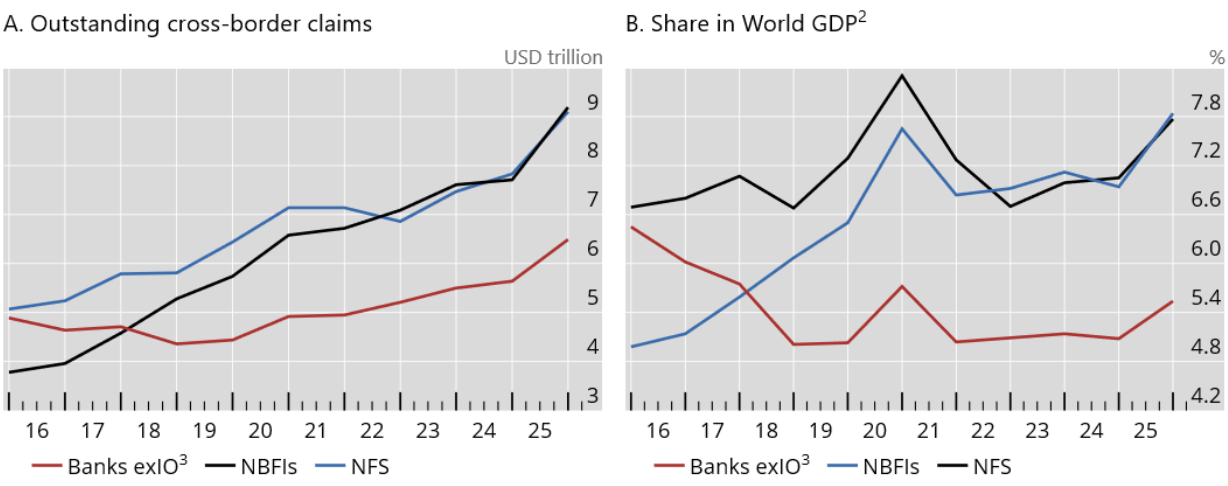
A key contribution of the enhanced version of the LBSN is that it allows us to observe the three dimensions of what we refer to as a *cross-border lending triangle*: the nationality of the parent bank, the location from which the cross-border loan is extended, and the borrower country. On average for more than three quarters of total cross-border lending, the location from which the loan is extended coincides with the headquarters of the banking group. For the remaining one-quarter, the loan is originated by an affiliate located in a third country. Observing these three dimensions simultaneously makes it possible to analyze how global banks organize their cross-border lending networks and whether this organizational choice differs across borrower sectors.

In this section, we use the data to characterize the cross-border lending triangle. We document key patterns in cross-border lending across borrower sectors, highlight how these patterns differ across parent bank nationalities and borrower countries, and identify the main third country locations from which cross-border loans are extended.

3.1 Cross-Border Lending Trends: NBFI borrowing at levels of the non-financial sector (NFS)

The BIS data reveal a significant shift in the volumes of cross-border bank lending to NBFIs. Since 2022, global cross-border lending to non-bank financial institutions (NBFIs) has reached levels comparable to those of lending to the non-financial sector (NFS) (See **Graph 1**). The expansion of cross-border lending to NBFIs over the past decade has been particularly pronounced, with outstanding claims more than doubling during this period. By comparison, lending to the non-financial sector—which comprises both public and private non-financial borrowers—increased by approximately 70 percent, while interbank lending (BXIO) grew by around 55 percent. These trends point to a significant shift in the volumes of cross-border bank lending toward NBFIs. Lending to this sector has increased not only in absolute terms, but also relative to the size of the global economy, as measured by its share of the world GDP (right-hand side of **Graph 1**).

Graph 1: **Cross-border lending by borrowing sector**



NBFIs = Non-bank financial institutions; NFS = Non-financial sector, comprising non-financial corporations, governments and households.

[1] Sample comprises 30 bank nationalities, 38 reporting locations and 180 counterparty countries, excluding claims on home country. [2] World GDP. [3] Counterparty sector banks excluding related offices.

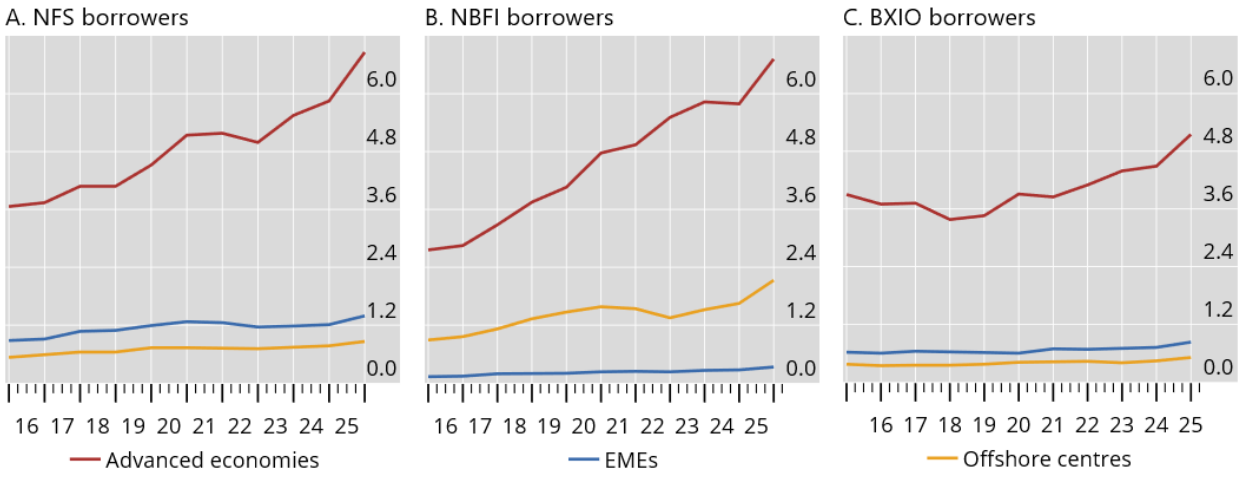
Sources: World Bank; BIS locational banking statistics (by nationality); Authors' calculations.

The convergence of lending to NBFIs and to the non-financial sector becomes even more apparent when borrower countries are grouped into advanced economies (AEs), emerging market

economies (EMEs), and offshore financial centres (**Graph 2**).[5] The regional distribution of borrowing differs clearly across sectors. While lending to the non-financial sector is focused mostly on AEs and then EMEs, NBFI borrowing is heavily concentrated in AEs and then offshore financial centres, with borrowing by NBFIs in EMEs remaining comparatively very small.

Graph 2: **Cross-border lending by borrowing sector and region**

In USD trillion



BXIO = Counterparty sector banks, excluding related offices; NBFIs = Non-bank financial institutions; NFS = Non-financial sector, comprising non-financial corporations, governments and households.

[1] Sample comprises 30 bank nationalities, 38 reporting locations and 180 counterparty countries, excluding claims on home country.

Sources: BIS locational banking statistics (by nationality); Authors calculations.

This pattern highlights the increasingly important intermediation role played by NBFIs in global finance. NBFI borrowing occupies an intermediate position: although recorded as lending to a specific borrower sector, its geographical concentration suggests that much of it supports a broader chain of international financial intermediation. Unlike lending to the non-financial sector, which is distributed across both advanced and emerging economies, cross-border lending to NBFIs is overwhelmingly concentrated in advanced economies and offshore financial centres. In fact, offshore financial centres account for the second-largest volume of NBFI borrowing, while NBFI borrowing in EMEs remains comparatively small. This pattern is striking given the limited size of the domestic economies of many offshore centres. Rather than reflecting final financing needs

[5] We follow the erstwhile (pre-2025) country classification of the BIS in which countries were grouped into advanced countries, emerging markets and developing economies and offshore centres.

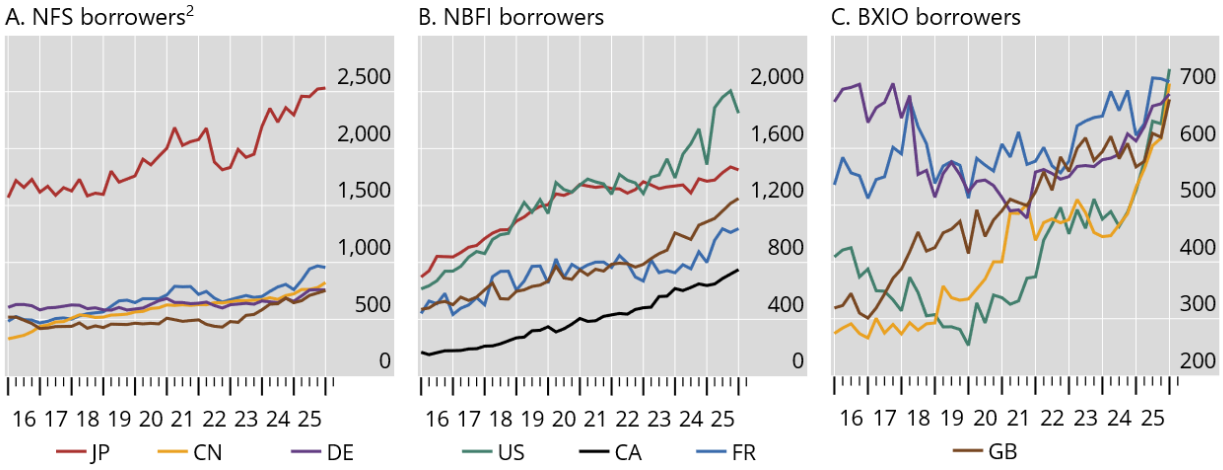
in those jurisdictions, it is consistent with NBFIs using them as platforms for pooling, managing, and reallocating funds across borders. The geographical distribution of NBFI borrowing therefore points to an important intermediation role within the global financial system, whereby a significant share of cross-border bank lending to NBFIs is directed toward financial hubs that facilitate the movement of capital across countries rather than toward the ultimate users of finance.

3.2 Top five cross-border lenders differ across borrowing sectors

The top five lending bank nationalities differ markedly across borrower sectors (**Graph 3**). These variations reflect the interplay of regulatory environments, market opportunities, and strategic priorities, shaping the global landscape of cross-border banking. In cross-border lending to the non-financial sector, Japanese, French, Chinese, German, and British banks are among the top five lenders. [6]

Graph 3: **Cross-border lending:Top 5 lending parent banks by borrowing sector**[1]

In USD billion



BXIO = Counterparty sector banks, excluding related offices; NBFIs = Non-bank financial institutions; NFS = Non-financial sector, comprising non-financial corporations, governments and households.

[1] Top 5 lending bank nationalities by counterparty sector; Sample comprises 30 bank nationalities, 38 reporting locations and 180 counterparty countries, excluding claims on home country. [2] Japanese figures include trust accounts in which banks hold and manage funds or securities on behalf of third parties. These claims are significant for Japan (see Saito, Hiyama, and Shiotani 2018).

Sources: BIS locational banking statistics (by nationality); Authors calculations.

[6] See Cerutti, Koch, and Pradhan (2023) and Casanova, Cerutti, and Pradhan (2024) for further insight in the cross-border lending expansion of Chinese banks, which have focused mostly on EMDE borrowers. For trustee positions of Japanese banks see Saito, Hiyama, and Shiotani (2018).

The ranking of the top five changes substantially for NBFI lending. US banks are the largest lenders, consistent with their deep ties to hedge funds, asset managers, and insurers. They are followed by Japanese, British, French, and Canadian banks, the latter reflecting a relative specialization in lending to financial-market participants.

In interbank lending, European banks dominate the top five positions. French, German, and British banks compete closely at the top of the ranking, while Chinese banks have emerged as major lenders, challenging US banks and highlighting their also growing role in global interbank intermediation.

3.3 U.S. Borrowers in the NBFI and non-financial sector (NFS) attract largest volumes

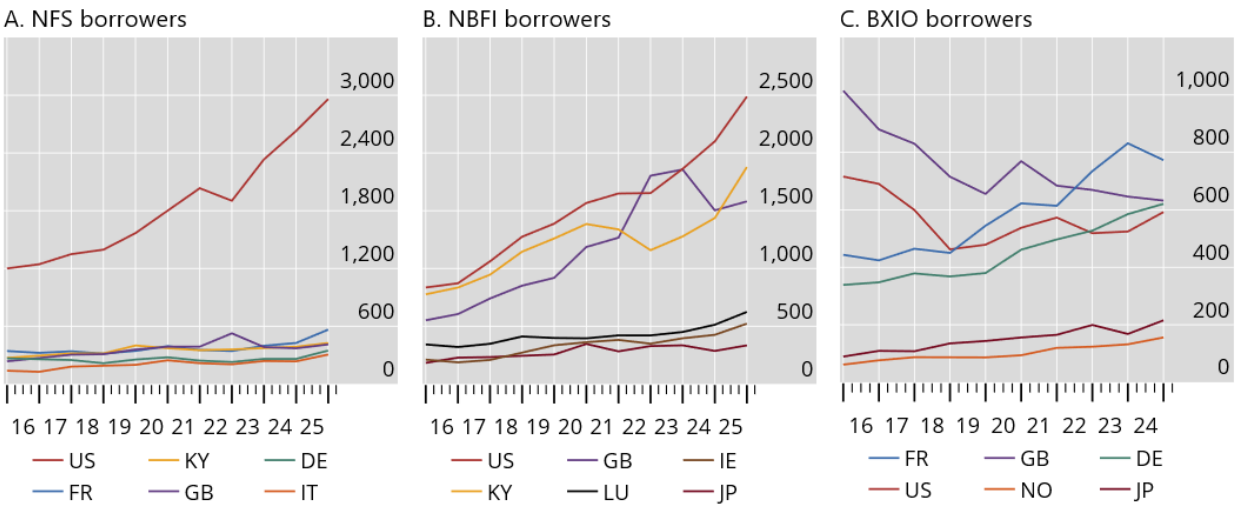
Flipping the angle to the borrower country, although US counterparties dominate cross-border borrowing in both the NBFI and non-financial sector (NFS), the ranking of the other major borrower countries differs by sector, as shown in **Graph 4** .

For NBFIs, the largest borrower locations are the United States, Cayman Islands, and the United Kingdom, closely followed by Luxembourg and Ireland. Given the relatively small size of the latter jurisdictions, their prominence as major borrowing locations underscores their central role in global non-bank financial intermediation. The importance of these centres likely reflects their function as hubs through which funds are intermediated internationally rather than final destinations of investment.

The pattern differs in the interbank market, where borrowing is concentrated in large banking systems. France, the United Kingdom, Germany, and the United States rank among the largest borrower countries, followed by Japan and Luxembourg. The increase in interbank claims on Germany and France since 2019 appears closely linked to the post-Brexit reorganization of international banking activities. In particular, lending to these countries increased more strongly from headquarters than from affiliates located in the United Kingdom, suggesting a partial reallocation of interbank activity away from London.

Graph 4: **Cross-border lending: Top borrower locations by sector**

In USD billion



BXIO = Counterparty sector banks, excluding related offices; NBFIs = Non-bank financial institutions; NFS = Non-financial sector, comprising non-financial corporations, governments and households.

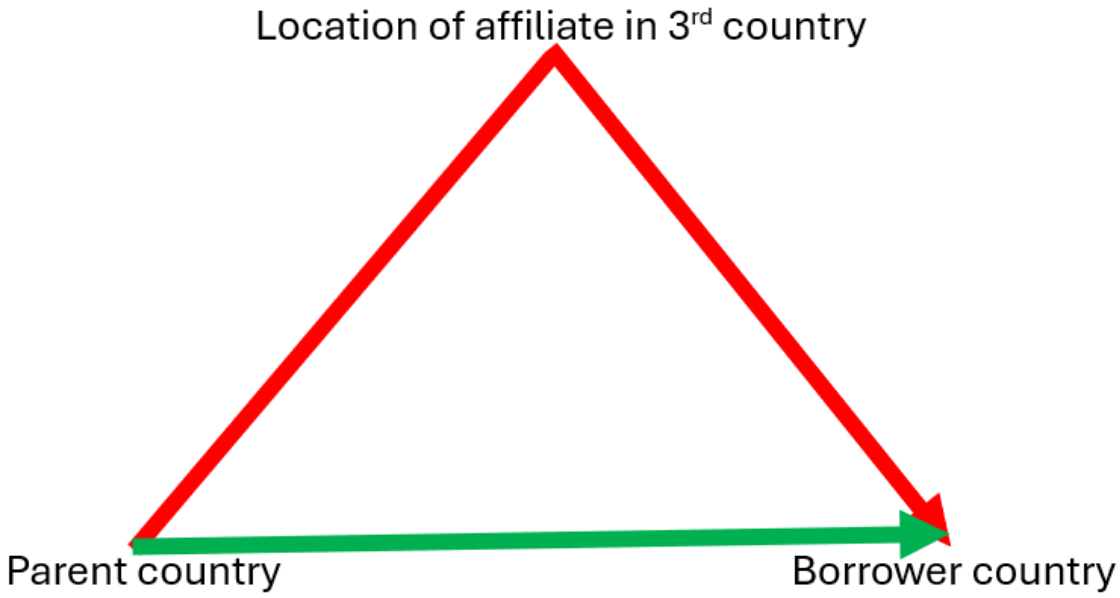
[1] Sample comprises 30 bank nationalities, 38 reporting locations and 180 counterparty countries, excluding claims on home country.

Sources: BIS locational banking statistics (by nationality); Authors calculations.

3.4 From where do banks extend their cross-border loans?

When extending cross-border loans, banks have a choice. They can either lend directly from their headquarters or route lending through affiliates located in third countries. As discussed before, the enhanced LBSN captures the three distinct dimensions of each cross-border lending relationship: the nationality of the parent bank, the location of the affiliate through which the loan is originated (or booked), and the borrower country, with the latter further disaggregated by borrowing sector.

Graph 5: **Cross-border bank lending triangle**

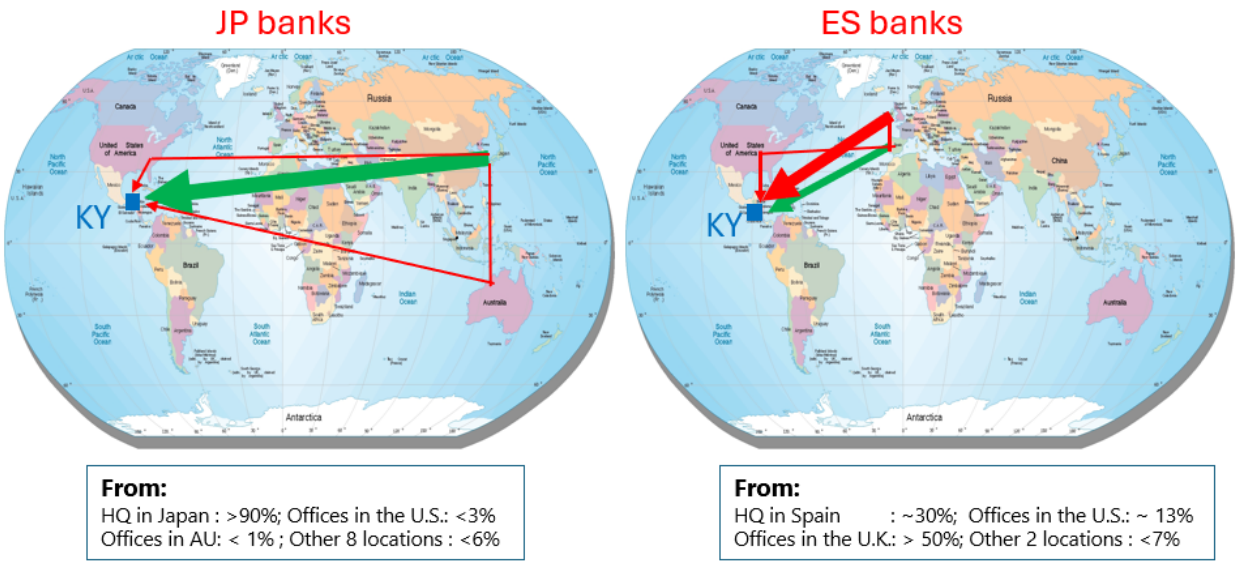


We summarize these choices through a cross-border lending triangle consisting of three locations: the parent bank's home country, the country where a lending affiliate is located, and the borrower country. Graph 5 illustrates this structure. Within this triangle, globally-operating banks can extend cross-border loans through two distinct channels: (i) directly from the parent bank's home country to the borrower country, represented by the green side in Graph 5, or (ii) indirectly through an affiliate located in a third country, represented by the two red sides in Graph 5 that link the parent bank to the affiliate location and the affiliate location to the borrower country. Importantly, the cross-border lending triangle only captures cross-border lending relationships. Lending by an affiliate to borrowers located in the affiliate's own host country is excluded because, by construction, it is domestic lending rather than cross-border lending.[7]

[7]In a robustness exercise (see **Annex Table 4**), we augment headquarters' lending shares using affiliates' net local positions, which provide an approximation of local lending financed through cross-border funding within the banking group. Because the BIS data do not identify the borrower sector of local lending and do not separately report lending funded by domestic deposits, the exercise should not be interpreted as capturing total local lending by foreign affiliates. The robustness results indicate that our conclusions about headquarter lending shares remain unaffected.

The relative importance of direct cross-border lending from headquarters versus cross-border lending from third-country affiliates reflects a parent banks' choice of organizational structure. **Graph 6** illustrates these differences while contrasting the Japanese and Spanish banks' different booking-location distributions for the same borrower sector, NBFIs, and the same borrower country, the Cayman Islands (KY).

Graph 6: **Triangles for cross-border lending to NBFIs in Cayman Islands differ by parent bank**



Note: Percentages are indicative only and do not represent actual values.The use of this map does not constitute, and should not be construed as constituting, an expression of a position by the BIS regarding the legal status or sovereignty of any territory or its authorities, the delimitation of international frontiers and boundaries, and/or the name and designation of any territory, city or area.

Japanese banks display a relatively centralized cross-border business model. In their cross-border lending to NBFIs in the Cayman Islands, more than 90 percent of cross-border claims are extended directly from headquarters (thick green arrow), with only a small share routed through affiliates located in the US and Australia. By contrast, for this specific lending corridor, Spanish banks exhibit a more decentralized cross-border business model, channeling more than 50 percent of their cross-border lending through affiliates located in the United Kingdom (thick red arrow).

The organizational structure and geographical reach of cross-border lending vary substantially not only across banking systems but also across borrowing sectors. Table 1 highlights this heterogeneity by reporting both the number of locations from which cross-border lending is extended for each parent-bank nationality and the geographical reach measured by the number of borrower countries served. For example, US banks use up to 31 lending locations—including the home country and 30 foreign affiliates (column 1)—to extend cross-border credit to banks in 92 borrower countries (column 4). When lending to the non-financial sector, they rely on a somewhat smaller network of third-country affiliates (25 lending locations) while serving an even broader set of borrower countries (116).

More generally, there is no systematic relationship between the number of locations from which cross-border lending is originated and the geographical reach of cross-border lending. Banking systems operating through relatively small affiliate networks can nevertheless maintain an extensive global lending footprint. For example, Turkish banks provide cross-border credit to the non-financial sector in 137 borrower countries while operating through only 5 lending locations.

This disconnect foreshadows a central theme of the empirical analysis: the location from which cross-border lending is originated is not mechanically determined by the size of a bank's international affiliate network. Rather, it reflects an organizational choice that varies across banking systems and borrowing sectors.

Table 1: **Number of host and borrower countries by parent country**

PC	Number of host locations			Max. borrower countries		
	BXIO (1)	NBFI (2)	NFS (3)	BXIO (4)	NBFI (5)	NFS (6)
US	31	25	25	92	83	116
FR	29	22	25	127	61	161
GB	29	20	25	98	73	130
CN	29	18	24	82	25	164
DE	25	20	23	104	55	131
ES	24	18	20	95	52	158
JP	21	18	18	81	88	98
CH	23	15	17	113	95	165
NL	18	13	14	95	78	140
IT	15	11	13	86	45	150
IN	15	9	14	48	13	173
KR	17	6	14	118	42	139
CA	15	10	10	72	59	162
AU	13	8	13	57	50	139
SE	12	9	11	77	34	125
BR	11	7	10	41	24	38
DK	7	8	9	62	51	129
BE	8	4	7	101	59	131
ID	7	2	7	53	3	7
TR	6	4	5	64	12	137
FI	6	4	4	61	22	138
MY	7	2	5	43	21	136
LU	5	3	5	42	36	90
NO	5	2	6	55	18	98
PT	4	3	5	61	38	130
AT	5	3	4	77	50	125
GR	3	4	4	20	19	45
PH	5	2	3	46	17	38
IE	4	3	3	44	22	80
PA	3	1	2	65	10	26

Note: NBFIs = Non-bank financial institutions; NFS = Non-financial sector, comprising non-financial corporations, governments and households. As of end-2025. The number of host locations includes both the home country and other reporting countries. The maximum number of borrower countries refers to the total number of counterparty countries receiving credit from one or more host locations.

3.5 The distribution of cross-border claims across lending locations differs by borrower sector

Banks' choices of the organization structure can make cross-border lending operations very complex. Table 2 documents substantial heterogeneity in the share of cross-border claims booked by home-country offices. These shares differ both across parent-bank nationalities and, within nationality, across borrower sectors. The variation indicates that the use of home-country and third-country offices is not a fixed attribute of a banking system but depends partly on the type and location of the borrower. It lists the number of borrower countries with affiliates of a given lending nationality (Column 1), outstanding amounts of cross-border lending (Columns 2-4) and the share of cross-border lending extended by the the headquarters both split by borrower sector, respectively. Accordingly, banking systems such as the Japanese and several smaller European (like Scandinavian and Benelux) maintain a strong home-country focus, booking the large majority of their cross-border lending from headquarters under a cross-border model that centralizes decision-making and risk management (e.g., with headquarter market shares above 90 percent in most cases). In contrast, large banking systems often from English speaking countries like the US or the UK operate more decentralized structures, especially when lending to non-financial borrowers and other banks, booking often less than half of their cross-border lending from home and relying on foreign affiliates to intermediate the remainder. Spanish banks are an example of intermediate centralization from headquarters, with headquarter market shares above 75 percent, and roughly in line with the sample average (last row of Table 2).

The degree of headquarter booking share of each bank nationality often varies largely by sector. For the non-financial sector (NFS), while we have low booking-location shares from headquarters in the case of US (42 percent of the total including claims of affiliates group), Swiss (56 percent), UK (48 percent) banks, there is high headquarters' market share from Japanese (94 percent), German (86 percent), and French (85 percent) banks.

Table 2: **Cross-border claims by counterparty sector and presence of affiliates**

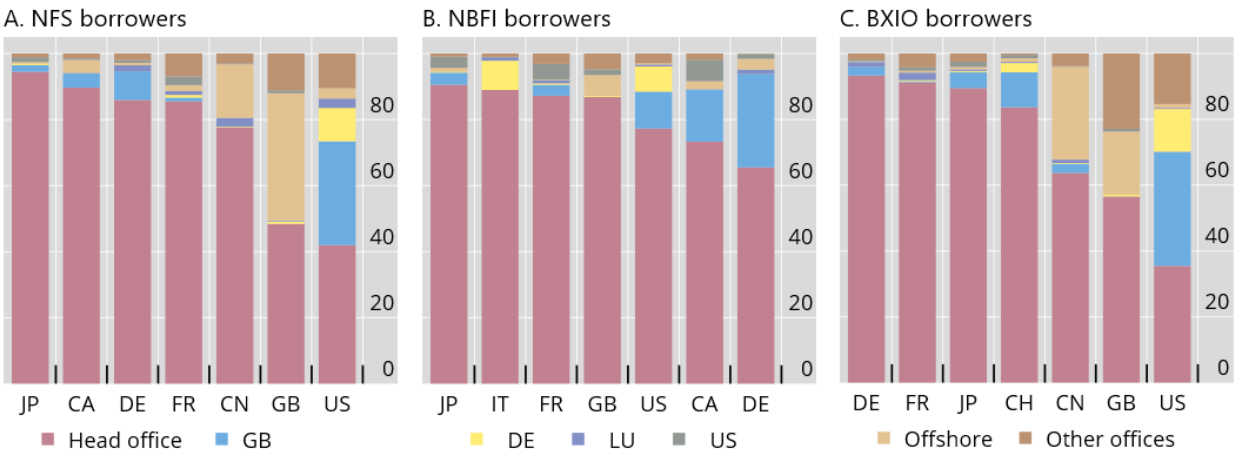
PC	NoAff	Amount in USD billion			Share of HQ		
		BXIO	NBFI	NFS	BXIO	NBFI	NFS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GB	149	731	1331	775	56.6	86.8	48.3
FR	144	827	1074	989	91.2	87.2	85.5
US	137	757	2076	670	35.5	77.3	41.9
SE	110	43	125	84	93.7	90.8	93.7
DE	109	720	728	778	93.3	65.5	85.9
CA	102	221	798	535	62.5	73.3	89.6
CN	100	853	213	912	63.7	69.2	77.0
ES	100	345	259	381	83.6	76.6	76.5
CH	91	520	313	309	83.7	50.0	55.6
AU	86	139	133	91	80.9	73.7	73.1
IN	82	73	5	44	68.9	1.8	52.6
DK	81	69	73	41	95.6	89.6	92.8
IT	73	336	401	329	88.0	89.0	71.5
NL	72	144	370	372	89.5	90.7	84.2
IE	65	28	8	33	88.0	91.4	89.4
JP	59	619	1479	2553	89.5	90.6	94.5
KR	54	69	27	82	79.1	91.9	86.6
BR	54	55	8	58	12.0	42.2	42.3
LU	42	38	10	35	99.9	100.0	99.4
GR	41	30	45	38	96.7	91.6	82.5
AT	36	52	52	99	97.1	98.3	99.7
BE	35	92	23	63	99.8	100.0	99.3
ID	34	10	0	8	92.7	0.0	66.2
TR	30	16	2	10	95.3	66.7	51.2
PT	26	17	8	65	100.0	87.9	95.9
MY	24	18	3	20	78.0	97.9	97.1
FI	21	60	51	66	93.5	86.2	71.4
NO	15	50	35	30	100.0	100.0	97.5
PH	14	16	3	18	97.2	100.0	97.1
PA	14	13	0	2	99.1	0.0	90.5
TOTAL	175	6961	9653	9490	75.4	81.2	79.9

Note: NBFIs = Non-bank financial institutions; NFS = Non-financial sector, comprising non-financial corporations, governments and households. The table is based on the regression sample that includes 38 reporting locations, 30 parent countries, and 180 counterparty countries. The number of affiliates as of end-2025 is derived using multiple sources, including interoffice claims (locational banking statistics), local claims and local liabilities (locational/consolidated banking statistics), and 2024 banking list exercise. Columns 2–4 present the total outstanding amounts of cross-border lending by a specific parent entity to the sector indicated at the top of the column. Columns 5–7 show the respective shares of cross-border claims by headquarters for each sector as a percentage of total cross-border lending by all offices in the sample.

The heterogeneity in concentration is also present in the case of cross-border (unrelated) interbank lending. From the low headquarters' booking share of US (35 percent), UK (57 percent), and Canadian (62 percent) banks, to the high headquarters' share for German (93 percent), French (91 percent), and Italian (88 percent) banks. Finally, cross-border lending to NBFIs displays the widest dispersion across banking systems: some groups serve NBFIs predominantly from headquarters, such as Korean (92 percent), Dutch (91 percent), and Japanese (91 percent), while banking systems, such Swiss (50 percent), German (65 percent), and Australian (74 percent) banks, rely heavily on foreign affiliates to reach the hedge funds, asset managers, and insurers concentrated in global financial hubs.

Graph 7: **Top bank nationalities differ in their organizational structure**

End-2025, share by office location (in %)



BXIO = Counterparty sector banks, excluding related offices; NBFIs = Non-bank financial institutions; NFS = Non-financial sector, comprising non-financial corporations, governments and households.

[1] Top 5 bank nationalities by size across three sectors with two additional ones that are not necessarily the 6th and 7th largest in across sector. Sorted in decreasing order of share (in %) by head office; Sample comprises 30 bank nationalities, 38 reporting locations and 180 counterparty countries, excluding claims on home country.

Sources: BIS locational banking statistics (by nationality); Authors calculations.

Lending by banking systems from their affiliates in third (host reporting) country is also heterogeneous. Affiliates in financial hubs such as the UK, Germany, Luxembourg, and offshore centers hold sizable cross-border positions and act as intermediation nodes for several banking systems, although the intensity of this reliance varies widely across nationalities. This is visible in

Graph 7, which provides information on cross-border lending strategies reported by the largest bank nationalities from different office locations, split by borrower sector: non-financial sector (NFS), non-bank financial intermediaries (NBFI), and non-affiliated, interbank (BXIO).

Aggregating at the borrowing sector level across all bank nationalities, it is clear that on average cross-border lending to all the borrowing sectors are very headquarters-centric. Interbank lending is, on average, the lowest headquarter booking share, with roughly 75 percent. Instead, non-financial sector and NBFIs register 80 and 81 percent, respectively.

4 Empirical Approach

This section presents our empirical approach. It looks at the different factors that might be correlated with the heterogeneity across sectors in the analysis of cross-border lending shares for two distinct sets of dependent variables. First, we look at the factors that can affect the shares lent from headquarters as captured by the green side in the triangular relationship (Graph 5) before turning to the shares lent from affiliates located abroad in third countries as captured by the two red angles of that figure. In general, our empirical approach captures up to 30 lending parent banks, their affiliates in up to 38 reporting locations from third countries, and 180 borrowing countries. Based on the objective of this paper, both sets of dependent variables capture cross-border lending and exclude the locally funded domestic lending of the affiliate in the borrower country when computing the shares. For each of the two dependent variables, we run regressions for cross-border lending to the non-financial sector (NFS), to NBFIs and unrelated banks (BXIO) also labeled interbank lending. For both sets of dependent variables, we follow a gravity approach. Highlighting the role of information asymmetries, the gravitational approach has been frequently applied in empirical studies of cross-border finance (e.g. Aviat and Coeurdacier (2007); Buch (2003); Lane (2006); Lane and Milesi-Ferretti (2008);Portes and Rey (2005)). In addition, a series of theoretical contributions has supported such models for financial holdings (e.g., Okawa and van Wincoop (2012)). More directly, Brei and von Peter (2018) document a substantial distance effect in international banking, while DemirgüçKunt and Huizinga (2023)

show that borrower information and regulatory differences help determine where multinational banks originate syndicated loans. Motivated by these findings, we distinguish gravity forces along the parent–borrower, parent–location, and location–borrower dimensions.

4.1 Headquarter Shares

Our baseline regression for headquarter shares follows a gravity approach as described below:

$$HQ\ Share_{p,b,t} = \alpha + \beta_p \ln(Dist_{p,b}) + \beta_p' \ln(ECON_{p,b,t-1}) + FE_p + FE_b + FE_t + \epsilon_{pbt} \qquad (1)$$

The dependent variable represents the cross-border share of loans lent from the parent bank's headquarters to a foreign borrower country for each pair of bank parent country p (parent bank's home country) and b (borrower's country) for a given year period t. [8] The key independent variables include the bilateral distance, $Dist_{p,b}$, which captures the geographic proximity between the parent bank and the borrower, measured in kilometers. A larger distance typically indicates higher costs and frictions in cross-border lending, capturing information asymmetries. The vector of bilateral economic ties, $ECON_{p,b,t-1}$, includes the lagged values of key economic ties in logs between the parent and borrower countries, such as trade as the sum of import and export volumes, foreign direct investment (FDI), and the total value of portfolio investment capturing debt plus equity investment. These variables are expected to reflect the economic integration and financial linkages that may facilitate or hinder cross-border lending. Additionally, the model accounts for unobserved heterogeneity through fixed effects: FE_p represents parent bank-specific effects, FE_b captures borrower-specific effects, and FE_t controls for time-varying factors that could influence cross-border lending, such as macroeconomic shocks or global financial conditions. The error term, ϵ_{pbt}, captures unobserved factors that may affect the shares lent from headquarters.

[8] FX- and break-adjusted changes remove exchange-rate valuation effects and correct for breaks in series arising from changes in reporting methodology, practices, or population. The adjusted end-2025 stock is constructed by adding the cumulative adjusted changes during 2025 to the end-2024 amount outstanding. See Cerutti (2015) for an earlier application of exchange-rate and break-in-series adjustments to cross-border banking exposures.

4.2 Non-Headquarter Shares

For the analysis of non-headquarter shares, we extend the gravity approach to capture both dimensions represented by the red sides of the triangle in Graph 5. The first side connects the parent bank's home country with the location that hosts a foreign affiliate of that parent bank. The second side connects the location of the affiliate and the borrower country. We then compute the shares that each affiliate in location l accounts for in the total cross-border lending of parent bank country p to borrower country b. Please note that we include zeros if a parent bank operates an affiliate in location l but does not use it to extend a cross-border loan to the specific borrower country b. Thus, our analysis of non-headquarter shares is conditional on a parent–borrower relationship and the existing affiliate network: it examines how cross-border claims are distributed across locations in which the parent banking system already operates.

$$\begin{aligned} NonHQ\ Share_{p,l,b,t} = \alpha + \beta_l \ln(Gravity_{l,b}) + \beta_l' \ln(ECON_{l,b,t-1}) \\ + \beta_p \ln(Gravity_{p,l}) + \beta_p' \ln(ECON_{p,l,t-1}) + FE_{pbt} + FE_l + \epsilon_{plbt} \end{aligned} \tag{2}$$

Otherwise, specification 2 proceeds in parallel to specification 1 with the exception of fixed effects. Here, we include location and parent-by-borrower fixed effects to absorb any patterns that are specific to this parent bank-borrower pair in a specific period.

4.3 Results

A gravity framework provides a useful lens for analyzing the organizational structure of cross-border banking, with the location-borrower dimension capturing more informational asymmetries than the parent–location dimension. This section presents the empirical results in greater detail while starting with a cross-sectional analysis. We begin by examining headquarters' shares before turning to non-headquarters' shares. Within each subsection, we first discuss the implications of the parent–location–borrower triangle for the estimated distance coefficients and then examine the role of bilateral economic ties and lending through affiliates located in third countries.

4.4 Headquarter Shares

4.4.1 Headquarters' shares decline with parent–borrower distance

Our results show that geographic distance helps to explain the shares lent from the headquarters while highlighting some differences between sectors (**Table 3**). While drawing on specification (1), Table 3 present our results for cross-border lending to the non-financial firms (NFS, columns 1 and 2), non-bank financial institutions (NBFI, columns 3 and 4), and non-related banks (BXIO, columns 5 and 6). The gravity framework performs well. We view distance as a broad proxy for informational asymmetries, including geographic frictions, one element of which may be the cost of obtaining and transmitting information about borrowers. The coefficients of bilateral distance between the home country and the borrower country in columns 1, 3 and 5 are negative and statistically significant for lending to all three sectors, indicating that the greater the distance between the home country and the borrower country, the lower the share of cross-border lending from their home countries. While this result is based on the full sample of 30 lending parent countries, our robustness checks indicate that it holds for all parent countries except those from emerging market economies (EMDEs). The negative effect of distance tends to be stronger for parent banks from advanced economies, in particular for parent banks with a non-headquarters focused, cross-border business model like US, German, Swiss and Brasilian banks. Also, for all borrowing sectors, restricting the sample to borrowers in different sets of offshore and financial centres does not alter our findings for the distance variable.

4.4.2 Bilateral economic ties matter especially for lending to the non-financial sector

The relationship with bilateral economic variables differs across borrower sectors, with portfolio investment and FDI exhibiting particularly strong correlations with cross-border lending to the non-financial sector. This result is consistent with our descriptive evidence indicating that, at the aggregate level, lending to the non-financial sector tends to be concentrated at headquarters. For cross-border lending to the non-financial sector, the coefficients for bilateral FDI and portfolio investment are positive and statistically significant, suggesting that some other information asymmetry

channels are at work. More FDI and/or portfolio investment can reduce information asymmetries between home and borrowing countries, as indicated by a higher share of cross-border lending from the headquarter country. The results differ for cross-border bank lending to NBFIs and interbank lending with FDI and portfolio coefficients being statistically insignificant. Interestingly, the relationship between bilateral trade and the shares of the headquarters is insignificant across all borrowing sectors in (**Table 3**). Similarly, when examining individual parent countries, no consistent pattern emerges in the trade coefficient estimate regarding centralized versus decentralized organizational structures.

4.4.3 Local affiliates can substantially reduce information asymmetries

Even if lending is not booked domestically, the presence of affiliates located in the borrower's country can also help reduce information asymmetries in cross-border lending from headquarters. To explore the role of foreign affiliates in the borrower country, we add a dummy variable and we interact that dummy with our gravity variables.[9] Column 2 (**Table 3**) shows that the presence of an affiliate in the borrower country increases the share originated from the home country by a significant proportion (almost 50 percent) and it is not present in the case of cross-border lending to NBFIs and interbank.

This result suggests that having an affiliate in the borrower country can significantly reduce information asymmetries in the case the non-financial sector borrowers, where information asymmetries seem larger due to the characteristics of the borrowers.[10] It is worth noting that the dependent variable only captures cross-border lending while excluding the domestic local lending issued by the affiliate in the borrower country that was funded with external intra-banking group

[9] We do not have data on lending that split foreign affiliates into branches and subsidiaries operating in a borrower country, but we know the presence of affiliates from the available data. Our dummy does not cover the presence of representative offices

[10] It turns out that distance as a standalone variable turns insignificant while its interaction with the affiliate dummy comes out as negative and statistically significant for NFS lending. This finding points out that a large part of the negative distance effect is actually driven by bank nationalities that have an affiliate in the respective borrower country. Having an affiliate increase significantly the cross-border lending from headquarters, but there are still asymmetries of information still captured by geographical distance even in those cases with affiliates

resources. In a robustness check, we take into account the domestic local lending of affiliates in the borrower country that is funded from abroad (**Annex Table 4**). Our results are almost identical at the aggregate level. [11]

Table 3: Cross-border bank lending: Headquarter shares

Dependent variable: Adjusted stocks[1]

	NFS		NBFI		BXIO	
	(1)	(2)	(3)	(4)	(5)	(6)
Parent-Borrower						
Distance	-3.855***	0.319	-6.869***	-4.188	-3.443***	-2.394
	(0.977)	(1.391)	(1.355)	(2.679)	(1.069)	(1.630)
Trade	0.112	0.204	-0.401	-0.517	-0.098	-0.647
	(0.239)	(0.318)	(0.392)	(0.630)	(0.293)	(0.423)
FDI	0.751***	0.969***	0.100	-0.219	-0.532	-0.567
	(0.277)	(0.334)	(0.562)	(0.853)	(0.371)	(0.453)
PFI	1.752***	1.223***	0.839	0.185	0.744	0.424
	(0.337)	(0.396)	(0.662)	(0.910)	(0.454)	(0.518)
Affiliate in bor. country dummy		53.188***		12.277		-0.836
		(12.307)		(24.560)		(14.350)
Interactions						
Distance*Affiliate		-6.377***		-3.204		-1.710
		(1.342)		(2.472)		(1.532)
Trade*Affiliate		-0.196		0.291		0.976**
		(0.375)		(0.659)		(0.458)
FDI*Affiliate		-0.566		0.635		0.240
		(0.485)		(0.989)		(0.610)
PFI*Affiliate		1.191***		0.783		0.713
		(0.410)		(0.901)		(0.545)
Observations	0.274	0.274	0.274	0.274	0.274	0.274
Adj.R-squared	0.274	0.274	0.274	0.274	0.274	0.274
PCs	30	30	30	30	30	30
BCs	180	180	112	112	152	152

[1] Amount outstanding of end-2024 plus fx- and break- adjusted changes during 2025.

Note: This table shows the estimation results for a cross-sectional regression analysis based on in specification (1). Results refer to 2025 for 30 lending parent countries (PCs) and up to 180 borrower countries (BCs). The dependent variable is the share in total lending extended from the headquarters relative to all lending extended by a particular parent country to a borrower across all affiliates worldwide. Trade, FDI, PFI and distance enter the analysis in logs with with ln(X+1). Affiliate is a dummy indicating whether the parent bank nationality runs affiliates in the respective borrower countries (although the lending by that affiliate is not taken into account in our analysis of cross-border lending. All regressions include separate lender and borrower country fixed effects. Standard errors in parentheses are clustered by lending parent country. Robust standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1.

[11] As the local lending of affiliates funded from abroad cannot by broken down by sector, this robustness check can only by run for lending to all sectors as explained in the Annex

4.5 Non-Headquarter Shares

Applying the gravity framework to both the parent–location and the location–borrower dimension shows that the borrower-facing geographical frictions appear more strongly associated with affiliate allocation. Table 4 describes our results while distinguishing between the location-borrower dimension (top panel) and the parent-location dimension (centre panel). To explore whether an affiliate in the borrower country can reduce information asymmetries between the location and the borrower country, the bottom panel shows interaction effects.

4.5.1 Banks prefer lending from foreign affiliates that minimize borrower distance

Conditional on a parent–borrower relationship and the existing affiliate network, cross-border claims are more heavily booked in affiliate locations closer to the borrower. As reported in **Table 4**, the estimated location-borrower distance coefficients are consistently negative across *all* borrowing sectors, confirming the standard prediction that geographical proximity mitigates information asymmetries between the lender and the borrower. By contrast, the parent–location distance coefficients are consistently positive and statistically significant for lending to each of the borrowing sectors, non-financial firms (NFS, columns 1 and 2), non-bank financial institutions (NBFI, columns 3 and 4), and non-related banks (BXIO, columns 5 and 6). This suggests that information asymmetries relevant for non-headquarter lending operate primarily along the location–borrower dimension rather than between the parent bank and its foreign affiliate. Consequently, cross-border lending triangles are systematically skewed toward the borrower, with the affiliate positioned closer to the borrower country than to the parent bank.

Our robustness checks show that the positive parent-location distance coefficient can be explained by the different roles of financial centers. As the positive parent–location distance coefficient is observed across all borrowing sectors, we examine heterogeneity across affiliate locations, and borrower countries. Starting with the borrower economies, the positive coefficient remains largely unchanged after excluding financial centers such as the Cayman Islands, Luxembourg, and the

United Kingdom (including Channel Islands).[12] By contrast, when the sample is restricted to financial centers as borrower countries, the parent–location distance coefficient becomes statistically insignificant. This result is consistent across all borrowing sectors. Finally, we examine the role of financial centers as locations that host foreign affiliates. Excluding cross-border lending by affiliates located in financial centers leaves the positive parent–location distance coefficient virtually unchanged across borrowing sectors. However, when the analysis is restricted to lending from financial centers as locations, a different pattern emerges for lending to NBFIs: the parent–location distance coefficient becomes either negative and statistically significant or statistically insignificant. One might infer from these findings that, when lending to different sectors located in financial centers or from financial centers to the NBFI sector, banks do not minimize the distance between the location and the borrower while accepting that the location might be further away from the headquarters. Instead, other factors might act as dominant drivers that don't necessarily relate to information asymmetries.

4.5.2 Economic ties between affiliates' locations and borrowers matter for organizational structure

Turning to economic ties, our results indicate again that location–borrower frictions are more important than the parent–location ones. On the location–borrower side, the effects of bilateral economic ties vary only modestly across borrowing sectors and are generally stronger than those observed for headquarters-based lending. In particular, portfolio investment and FDI flows are positively and significantly associated with cross-border lending to non-financial firms. However, focusing on non-headquarter lending shares, **Table 4** reveals some sectoral differences. In general, lending shares from a given location increase with the strength of bilateral trade, FDI, and portfolio investment links between the host and borrower countries. This relationship is strongest for lending to the non-financial sector. By contrast, for lending to NBFIs and unrelated banks(BXIO), only bilateral portfolio investment remains consistently positive and statistically significant, while the coefficient on bilateral FDI is frequently insignificant. According to our robustness checks, no

[12] We explore different sets of up to 14 financial centers including offshore centers like Hong Kong SAR or Singapore and/or advanced economies like Ireland, Switzerland and Luxembourg that act as hosts to global banks and NBFIs.

systematic differences emerge across alternative samples of parent countries. By contrast, when restricting the sample to lending from financial centers—such as Luxembourg, the Cayman Islands, Ireland, the United Kingdom, and Switzerland—we find that stronger bilateral FDI ties between the lending location and the borrower country are not associated with higher shares of lending to banks and only weakly for lending to NBFIs. In a similar vein, when looking at cross-border lending to financial centers, our robustness checks show that other economic ties between the location and the borrowing often turn out as being insignificant.

On the parent–location side, bilateral FDI and portfolio investment are generally positively associated with the share of lending extended by affiliates in a given location, while bilateral trade is negatively associated with these lending shares. As shown in **Table 4**,, the coefficients on FDI and portfolio investment are positive and statistically significant across borrowing sectors and remain robust across the alternative parent-country subsamples considered in the robustness analysis. These findings suggest that stronger bilateral ties between the parent country and the affiliate's host country increase the share of lending routed through foreign affiliates. In contrast, stronger bilateral trade ties are associated with lower affiliate lending shares for lending to NBFIs and other banks, while the coefficient is insignificant for lending to the non-financial sector. Our robustness checks broadly confirm these findings for different parent-country samples. By contrast, when turning to financial centers as borrowers or location, we find that trade relationships between the parent and the location are either insignificant or positive and significant. This finding might again point to the fact that different factors are at play once financial centers are involved .

4.5.3 Affiliates in borrower country have little impact

Unlike for headquarter shares, shares of affiliates abroad affiliates have only little impact on the shares of cross-border lending extended by affiliates in third countries. To explore their role, we again add a dummy variable and interact that dummy with our gravity variables for the location-borrower side in Table 4. That said, as specification (2) includes parent-by-borrower fixed effects, they absorb the standalone indicator variable of a specific bank nationality having local affiliates in the borrower country.

We find that affiliates in third countries have only a limited additional effect on reducing information asymmetries beyond what is already captured by trade mostly for lending to non-financial sector (NFS) and unrelated banks (BXIO). This positive interaction effect with trade indicates that affiliates in host countries that report stronger trade relationships with the borrower countries account for higher shares, if there is an affiliate of the same bank nationality in the borrower country. That finding might well be explained by trade finance with a foreign bank providing that service in a specific host country to local firms and their trading partners in the borrower country. For distance as a proxy for information asymmetries, we only find a significant interaction when it comes to cross-border interbank lending. Here, the interaction effect dampens the information asymmetry between the third-country affiliate and the bank receiving the loan in the borrower country. Remarkably, the comparison between columns 5 and 6 shows, that the negative coefficient estimate for the distance variable becomes much stronger in column 6 for those bank nationalities that don't have an affiliate in the borrower country.

4.5.4 Common language or currency can increase the shares lent by affiliates in third countries

Sharing a common currency or language can also increase the share of cross-border lending extended by a particular affiliate across borrowing sectors. We augment the gravitational analysis and examine the role of location-specific relationships (e.g., contiguity, common language, and common currency) along both the location–borrower and the parent–location dimensions.

Table 4: Cross-border bank lending: Non-headquarter shares extended by foreign affiliates

Dependent variable: Adjusted stocks[1]

	NFS		NBFI		BXIO	
	(1)	(2)	(3)	(4)	(5)	(6)
Location-Borrower						
Distance	-0.903***	-1.063***	-0.760***	-0.733***	-0.736***	-1.276***
	(0.072)	(0.142)	(0.089)	(0.204)	(0.078)	(0.226)
Trade	0.091***	0.022	0.073***	0.046	0.043*	-0.038
	(0.018)	(0.031)	(0.025)	(0.063)	(0.022)	(0.041)
FDI	0.114***	0.116***	0.072**	0.068	0.046*	0.011
	(0.022)	(0.034)	(0.036)	(0.068)	(0.027)	(0.045)
PFI	0.178***	0.128***	0.242***	0.210***	0.173***	0.150***
	(0.023)	(0.039)	(0.036)	(0.072)	(0.028)	(0.051)
Parent - Location						
Distance	0.205***	0.201***	0.285**	0.288**	0.525***	0.510***
	(0.069)	(0.069)	(0.114)	(0.115)	(0.084)	(0.084)
Trade	-0.016	-0.017	-0.086***	-0.086***	-0.044**	-0.046**
	(0.017)	(0.017)	(0.029)	(0.029)	(0.020)	(0.020)
FDI	0.575***	0.571***	0.534***	0.532***	0.651***	0.647***
	(0.038)	(0.038)	(0.075)	(0.075)	(0.050)	(0.051)
PFI	0.103***	0.103***	0.364***	0.365***	0.406***	0.404***
	(0.033)	(0.033)	(0.069)	(0.069)	(0.048)	(0.048)
Interactions with Location-Borrower						
Distance		0.191		-0.039		0.650***
		(0.151)		(0.216)		(0.224)
Trade		0.108***		0.032		0.100**
		(0.033)		(0.069)		(0.041)
FDI		-0.017		0.004		0.037
		(0.041)		(0.075)		(0.052)
PFI		0.064		0.036		0.012
		(0.042)		(0.074)		(0.052)
Observations	55,164	55,164	23,042	23,042	36,473	36,473
Adj. R-squared	0.096	0.096	0.069	0.069	0.072	0.073
PCs	30	30	30	30	30	30
RCs	38	38	38	38	38	38
BCs	180	180	137	137	165	165

[1]Amount outstanding of end-2024 plus fx- and break- adjusted changes during 2025.

Note: This table shows the estimation results for a cross-sectional regression analysis based on specification (2). Results refer to 2025 for 30 lending parent (PCs), 38 reporting locations and up to 104 borrower countries (BCs). The dependent variable is the share in total lending extended from affiliates in a specific location relative to all lending extended by a particular parent country to a borrower across all affiliates worldwide. Trade, FDI, PFI and distance enter the analysis in logs with with ln(X+1). Affiliate is a dummy indicating whether the parent bank nationality runs affiliates in the respective borrower countries (although the lending by that affiliate is not taken into account in our analysis of cross-border lending). To explore the role of foreign affiliates in the borrower country, we interact the dummy with our gravity variables for the location-borrower side. All regressions include separate location and parent-by-borrower-by-time fixed effects fixed effects. Standard errors in parentheses are clustered by lending parent country. Robust standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1.

Table 5 reports the results for these gravity variables in columns 2, 4, and 6 by augmenting the baseline specifications from **Table 4** with indicator variables. Overall, a common language is

positively and significantly associated with affiliate lending shares along both dimensions. The only exception is lending to NBFIs, where the common-language coefficient for the location–borrower dimension is insignificant. To assess whether these results are driven by particular locations, we repeat the analysis for selected subsets of countries. When restricting the sample to affiliates located in financial centers, the common-language effect becomes insignificant along the location–borrower dimension but remains positive and significant along the parent–location dimension. By contrast, when restricting the sample to borrowers located in financial centers, the positive common language effect remains unaffected.

Our results on the common currency indicator also show that it's comparative advantage along both the location–borrower and the parent–location dimensions. Our baseline results in Table 5 show a positive and significant effect for lending to the non-financial sector across both dimensions while for NBFI lending only the location-borrower and for interbank lending the parent-location dimension turns out to be signfiicant. When isolating locations in financial centers either as locations or borrower countries, these findings remain unchanged. We conclude from these findings, that a common currency can bring about a comparative advantage that is unrelated to the appeal of financial centers per se.

For contiguity, the last traditional gravitational variables considered, there seems to be an interplay with the distance variable while differences across sectors and dimensions come out starker. For NFS lending, locations neighboring the parent country tend to generally account for higher shares, while neighboring the borrower country is not a comparative advantage. Our parallel results for the distance variable might rationalize that finding. The negative distance effect for the location- borrower dimension dominates and geographical considerations, leaving no additional explanatory power for the contiguity indicator. By contrast, for the parent-location dimension, there is a positive and significant distance effect. Against that backdrop, contiguity has a role in our triangular relationship as neighbouring locations still benefit while banks apparently minimize distance to the borrower. For NBFI lending, contiguity has the opposite effect. It only comes out as significantly positive for the the location-borrower dimension. For interbank lending contiguity between the parent and and the location can even have a negative effect. That said, when lending to

financial centers or for financial centers as locations, the contiguity variable is mostly insignificant for both the location-borrower and the parent-location dimension.

Table 5: Cross-border lending shares from Non-Headquarters of Banks: More gravity variables

Dependent variable: Adjusted stocks[1]

	NFS		NBFI		BXIO	
	(1)	(2)	(3)	(4)	(5)	(6)
Location-Borrower						
Contiguity		0.182		1.594**		0.023
		(0.374)		(0.651)		(0.439)
Common Language		0.752***		0.136		0.681***
		(0.201)		(0.332)		(0.232)
Common Currency		0.806**		1.863***		0.230
		(0.367)		(0.516)		(0.413)
Distance	-0.903***	-0.843***	-0.760***	-0.449***	-0.736***	-0.716***
	(0.072)	(0.091)	(0.089)	(0.116)	(0.078)	(0.100)
Trade	0.091***	0.092***	0.073***	0.076***	0.043*	0.041*
	(0.018)	(0.019)	(0.025)	(0.026)	(0.022)	(0.023)
FDI	0.114***	0.110***	0.072**	0.079**	0.046*	0.041
	(0.022)	(0.022)	(0.036)	(0.037)	(0.027)	(0.027)
PFI	0.178***	0.180***	0.242***	0.232***	0.173***	0.172***
	(0.023)	(0.023)	(0.036)	(0.036)	(0.028)	(0.028)
Parent-Location						
Contiguity		0.651***		0.019		-0.463**
		(0.196)		(0.311)		(0.215)
Common Language		0.617***		0.754***		1.624***
		(0.151)		(0.249)		(0.204)
Common Currency		1.978***		0.230		1.098***
		(0.193)		(0.346)		(0.210)
Distance	0.205***	0.469***	0.285**	0.315**	0.525***	0.639***
	(0.069)	(0.082)	(0.114)	(0.135)	(0.084)	(0.098)
Trade	-0.016	-0.028*	-0.086***	-0.085***	-0.044**	-0.041**
	(0.017)	(0.016)	(0.029)	(0.029)	(0.020)	(0.020)
FDI	0.575***	0.566***	0.534***	0.517***	0.651***	0.633***
	(0.038)	(0.037)	(0.075)	(0.075)	(0.050)	(0.050)
PFI	0.103***	-0.009	0.364***	0.367***	0.406***	0.333***
	(0.033)	(0.035)	(0.069)	(0.071)	(0.048)	(0.049)
Observations	55,164	55,164	23,042	23,042	36,473	36,473
Adj. R-squared	0.096	0.099	0.069	0.070	0.072	0.076
PCs	30	30	30	30	30	30
RCs	38	38	38	38	38	38
BCs	180	180	137	137	165	165

[1]Amount outstanding of end-2024 plus fx- and break- adjusted changes during 2025.

Note: This table shows the estimation results for a cross-sectional regression analysis based on specification (2). Results refer to 2025 for 30 lending parent (PCs), 38 reporting location and up to 180 borrower countries (BCs). The dependent variable is the share in total lending extended from affiliates in a specific location relative to all lending extended by a particular parent country to a borrower across all affiliates worldwide. Trade, FDI, PFI and distance enter the analysis in logs with with ln(X+1). All regressions include location and parent-by-borrower-by-time fixed effects fixed effects. Standard errors in parentheses are clustered by lending parent country. Robust standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1

5 Conclusions

This paper studies the geography of cross-border bank lending by exploiting BIS international banking statistics that jointly identify the nationality of the parent banking system, the location where cross-border claims are booked, and the borrower country. This parent–location–borrower perspective allows us to examine how cross-border claims are distributed between headquarters and individual third-country booking locations of foreign affiliates and how these patterns differ across borrower sectors. We also document the rapid expansion of cross-border bank lending to NBFIs. Since 2022 it has reached levels comparable to the cross-border lending lending to the non-financial sector and it is concentrated in advanced economies and offshore financial centres, consistent with the growing role of NBFIs and financial hubs in global financial intermediation.

The geography of cross-border lending differs systematically across borrower sectors. Headquarters shares decline with parent–borrower distance across sectors, with lending to the non-financial sector displaying particularly strong relationships with geographical distance and bilateral financial ties. These differences indicate that the distribution of cross-border claims across booking locations is not a fixed characteristic of a banking system but varies with the characteristics and sector of the borrower. Lending to NBFIs and banks exhibits different relationships with these gravity forces, consistent with differences in the information, monitoring, and broader economic ties relevant for lending to different types of borrowers.

The parent–location–borrower triangle is particularly informative when cross-border claims are booked through foreign affiliates in third countries. Conditional on a parent–borrower relationship and the existing affiliate network, claims are often booked in locations closer to the borrower. Location–borrower distance is negatively associated with shares booked by affiliates in third-country locations across all borrower sectors, whereas parent–location distance is positively associated with these shares. This pattern indicates that geographic frictions facing the borrower are more closely associated with the allocation of claims across foreign affiliates than the distance between the parent country and the booking location. Bilateral economic ties also matter, particularly for lending to the non-financial sector, while their role is more heterogeneous for NBFIs and banks. Overall, these

findings are consistent with borrower-related information and monitoring frictions being one factor associated with the geography of cross-border claim booking, while geographical proximity may also capture broader operational, institutional, and financial linkages.

Taken together, our findings show that understanding global banking requires looking beyond who lends to whom to also consider from where cross-border claims are booked. The conventional negative gravity relationship operates primarily on the borrower-facing side of the parent–location–borrower triangle, although its strength and the role of broader economic ties vary across borrower sectors. The rapid growth and geographical concentration of NBFI borrowing further underscore how changes in the composition of global finance interact with the organizational geography of international banking.

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ANNEX TABLES

Annex Table 1: List of 30 Parent or Headquarter Economies of Banks

Code	**Country**	**Code**	**Country**	**Code**	**Country**
AT	Austria	FI	Finland	LU	Luxembourg
AU	Australia	FR	France	MY	Malaysia
BE	Belgium	GB	United Kingdom	NL	Netherlands
BR	Brazil	GR	Greece	NO	Norway
CA	Canada	ID	Indonesia	PA	Panama
CH	Switzerland	IE	Ireland	PH	Philippines
CN	China(mainland)	IN	India	PT	Portugal
DE	Germany	IT	Italy	SE	Sweden
DK	Denmark	JP	Japan	TR	Turkey
ES	Spain	KR	Korea	US	United States

Annex Table 2: List of 38 Reporting (host) Economies

Code	**Country**	**Code**	**Country**	**Code**	**Country**
AT	Austria	ES	Spain	LU	Luxembourg
AU	Australia	FI	Finland	MX	Mexico
BE	Belgium	FR	France	MY	Malaysia
BM	Bermuda	GB	United Kingdom	NL	Netherlands
BR	Brazil	GR	Greece	NO	Norway
BS	Bahamas, The	HK	Hong Kong SAR	PA	Panama
CA	Canada	ID	Indonesia	PH	Philippines
CH	Switzerland	IE	Ireland	PT	Portugal
CL	Chile	IN	India	SE	Sweden
CN	China(mainland)	IT	Italy	TR	Turkey
CY	Cyprus	JP	Japan	US	United States
DE	Germany	KR	Korea	ZA	South Africa
DK	Denmark	KY	Cayman Islands		

Annex Table 3: Country Codes and Corresponding Economies

Code	**Country**	**Code**	**Country**	**Code**	**Country**
AE	United Arab Emirates	CO	Colombia	HR	Croatia
AF	Afghanistan	CR	Costa Rica	HT	Hait
AL	Albania	CV	Cabo Verde	HU	Hungary
AM	Armenia	CY	Cyprus	ID	Indonesia
AO	Angola	CZ	Czech Republic	IE	*Ireland*
AR	Argentina	DE	Germany	IL	Israel
AT	Austria	DJ	Djibouti	IN	India
AU	Australia	DK	Denmark	IQ	Iraq
AZ	Azerbaijan	DM	Dominica	IR	Iran
BA	Bosnia and Herzegovina	DO	Dominican Republic	IS	Iceland
BB	**Barbados**	DZ	Algeria	IT	Italy
BD	Bangladesh	EC	Ecuador	JM	Jamaica
BE	Belgium	EE	Estonia	JO	Jordan
BF	Burkina Faso	EG	Egypt	JP	Japan
BG	Bulgaria	ER	Eritea	KE	Kenya
BH	**Bahrain**	ES	Spain	KG	Kyrgyz Republic
BI	Burundi	ET	Ethiopia	KH	Cambodia
BJ	Benin	FI	Finland	KM	Comoros
BN	Brunei Darussalam	FJ	Fiji	KR	Korea
BO	Bolivia	FR	France	KW	Kuwait
BR	Brazil	GA	Gabon	KY	**Cayman Islands**
BS	**Bahamas, The**	GB	United Kingdom	KZ	Kazakhstan
BT	Bhutan	GD	Grenada	LA	Lao P.D.R.
BW	Botswana	GE	Georgia	LB	Lebanon
BY	Belarus	GH	Ghana	LC	St. Lucia
BZ	Belize	GM	Gambia, The	LK	Sri Lanka
CA	Canada	GN	Guinea	LR	Liberia
CF	Central African Republic	GQ	Equatorial Guinea	LS	Lesotho
CG	Congo, Republic of	GR	Greece	LT	Lithuania
CH	*Switzerland*	GT	Guatemala	LU	*Luxembourg*
CI	Cote d'Ivoire	GW	Guinea-Bissau	LV	Latvia
CL	Chile	GY	Guyana	LY	Libya
CM	Cameroon	HK	**Hong Kong SAR**	MA	Morocco
CN	China(mainland)	HN	Honduras	MD	Moldova

Annex Table 3: List of Borrowing Economies (concluded)

Code	Country	Code	Country	Code	Country
ME	Montenegro	PE	Peru	SY	Syria
MG	Madagascar	PG	Papua New Guinea	TD	Chad
MH	Marshall Islands	PH	Philippines	TG	Togo
MK	FYR Macedonia	PK	Pakistan	TH	Thailand
ML	Mali	PL	Poland	TJ	Tajikistan
MM	Myanmar	PT	Portugal	TM	Turkmenistan
MN	Mongolia	PW	Republic of Palau	TN	Tunisia
MO	**Macao SAR**	PY	Paraguay	TO	Tonga
MR	Mauritania	QA	Qatar	TR	Turkey
MT	Malta	RU	Russia	TT	Trinidad and Tobago
MU	**Mauritius**	RW	Rwanda	TW	Chinese Taipei
MV	Maldives	SA	Saudi Arabia	TZ	Tanzania
MW	Malawi	SB	Solomon Islands	UA	Ukraine
MX	Mexico	SC	Seychelles	UG	Uganda
MY	Malaysia	SD	Sudan	US	United States
MZ	Mozambique	SE	Sweden	UY	Uruguay
NA	Namibia	SG	**Singapore**	UZ	Uzbekistan
NE	Niger	SI	Slovenia	VC	St.Vincent and the Grenadines
NG	Nigeria	SK	Slovak Republic	VE	Venezuela
NI	Nicaragua	SL	Sierra Leone	VN	Vietnam
NL	Netherlands	SM	San Marino	VU	**Vanuatu**
NO	Norway	SN	Senegal	WS	**Samoa**
NP	Nepal	SO	Somalia	YE	Yemen
NZ	New Zealand	SR	Suriname	ZA	South Africa
OM	Oman	ST	Sao Tome and Principe	ZM	Zambia
PA	**Panama**	SV	El Salvador	ZW	Zimbabwe

Note: Financial centres comprising 11 offshore centres are shown in bold and 3 advanced economies in italics.

Annex Table 4: Robustness of Lending From Headquarters

Dependent variable: Adjusted stocks[1]

	NFIS	NBFI	BXIO	ALLS	ALLN	NFIS	NBFI	BXIO	ALLS	ALLN
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Affiliates						53.19***	12.28	-0.84	36.88***	31.99**
						(12.31)	(24.56)	(14.35)	(12.76)	(12.61)
Parent-Borrower										
Distance	-3.85***	-6.87***	-3.44***	-1.99**	-1.70*	0.32	-4.19	-2.39	1.21	1.49
	(0.98)	(1.36)	(1.07)	(0.92)	(0.90)	(1.39)	(2.68)	(1.63)	(1.27)	(1.26)
Trade	0.11	-0.40	-0.10	0.12	0.22	0.20	-0.52	-0.65	0.14	0.10
	(0.24)	(0.39)	(0.29)	(0.24)	(0.24)	(0.32)	(0.63)	(0.42)	(0.30)	(0.30)
FDI	0.75***	0.10	-0.53	0.66**	0.81***	0.97***	-0.22	-0.57	0.78**	0.77**
	(0.28)	(0.56)	(0.37)	(0.28)	(0.27)	(0.33)	(0.85)	(0.45)	(0.31)	(0.31)
PFI	1.75***	0.84	0.74	1.86***	2.07***	1.22***	0.18	0.42	1.11***	1.30***
	(0.34)	(0.66)	(0.45)	(0.35)	(0.35)	(0.40)	(0.91)	(0.52)	(0.39)	(0.39)
Interactions:										
Distance * Affiliate						-6.38***	-3.20	-1.71	-4.90***	-4.18***
						(1.34)	(2.47)	(1.53)	(1.38)	(1.36)
Trade X Affiliate						-0.20	0.29	0.98**	-0.05	0.16
						(0.37)	(0.66)	(0.46)	(0.39)	(0.39)
FDI * Affiliate						-0.57	0.64	0.24	-0.39	-0.14
						(0.48)	(0.99)	(0.61)	(0.52)	(0.51)
PFI * Affiliate						1.19***	0.78	0.71	1.69***	1.53***
						(0.41)	(0.90)	(0.55)	(0.41)	(0.40)
Observations	3,496	1,243	2,201	3,707	3,707	3,496	1,243	2,201	3,707	3,707
Adj. R-squared	0.33	0.33	0.27	0.25	0.22	0.34	0.33	0.27	0.25	0.23
PCs	30	30	30	30	30	30	30	30	30	30
RCs	30	30	30	30	30	30	30	30	30	30
BCs	180	112	152	180	180	180	112	152	180	180

[1]Amount outstanding of end-2024 plus fx- and break- adjusted changes during 2025.

Note: This table shows the estimation results for a cross-sectional regression analysis based on specification (2). Results refer to 2024 for 30 lending parent countries (PCs) and up to 178 borrower countries (BCs). The new dependent variables in columns 4, 5, 9 and 10 are defined as ALLS = BXIO + NBFI + NFS + Unallocated while ALLN = ALLS + Net local lending from Consolidated Banking Statistics. For the covariates, Trade, FDI, PFI and distance enter the analysis in logs with with ln(X+1). Affiliate is a dummy indicating whether the parent bank nationality runs affiliates in the respective borrower countries (although the lending by that affiliate is not taken into account in our analysis of cross-border lending). All regressions include separate lender and borrower fixed effects. Standard errors in parentheses are clustered by lending parent country. Robust standard errors in parentheses with *** p<0.01, ** p<0.05, * p<0.1.

Our baseline analysis focuses exclusively on cross-border claims and therefore excludes lending by foreign affiliates to borrowers located in the same country as the affiliate. This restriction is consistent with the objective of the paper, which is to study where banking systems book their cross-border claims. Nevertheless, some local lending by foreign affiliates may ultimately be supported by funding obtained from abroad, including funding from other entities within the banking group. To assess whether excluding these positions materially affects our results on headquarters shares, we

construct an alternative measure that incorporates an approximation of such cross-border-funded local lending.

Annex Table 4 reports this robustness exercise. We first aggregate cross-border claims across borrower sectors, including unallocated claims (ALLS). We then augment these claims with affiliates' net local lending positions from the BIS consolidated banking statistics (ALLN), available for 30 parent banking systems. Net local lending provides an approximation of the portion of affiliates' local claims that is not funded by local liabilities and may therefore rely on funding obtained from outside the host country. This measure should not be interpreted as capturing total local lending by foreign affiliates since the data do not identify the borrower sector of these local positions and do not allow us to trace their precise funding source.

The results indicate that incorporating this approximation of cross-border-funded local lending does not materially alter the main findings for headquarters shares. In particular, the estimated relationship between geographical distance and the share of claims booked from the home country remains broadly unchanged. The results therefore suggest that the baseline findings are not driven by the exclusion of local affiliate lending that may be financed from abroad. At the same time, because the adjustment is only an approximation and cannot be constructed separately for NFS, NBFI, and interbank borrowers, we retain the cross-border measure used in the main analysis as our preferred specification.