Chapter 7. Geography and Business Models of global banks

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Abstract

Since the 2007-09 Global Financial Crisis (GFC) financial geography research has witnessed a growing body of literature addressing the implications of the amplified power of the financial institutions and markets, or financialisation, on the economic systems. The literature on international financial centres (IFCs) has also regained momentum amid the increase in size and concentration of their service provisions witnessed in the last few decades. Globalization and technological advances have fostered locational financial deepening and the agglomeration, complexity, and network interconnectedness of IFCs and their embeddedness into worldwide production systems and wealth accumulation and distribution. This chapter provides empirical evidence on the geographical organization within foreign branches of US global banks. The focus is on examining how the activities conducted in these branches in 62 different countries contribute to defining the business model adopted in specific regions. The underlying premise is that analyzing business models based on geographical location enables for a more precise assessment of the relative risk exposure in each country.

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I. Introduction

Financial globalization witnessed in the last three decades has occurred jointly with the exceptional growth of global banking groups (Crockett 2000; Moshirian 2008; Bruno and Shin 2015). These multinational conglomerates, depicting networked relationships with other banks, financial markets and countries, have facilitated international financial integration via the provision of a wide range of financial services by their foreign offices established in third countries. The internationalization of banking activities has become a prominent reality for a number of large banks and banking systems. Financial institutions such as Santander (headquartered in Spain), Credit Suisse (Switzerland) and Standard Chartered (UK) provide more than 70% of their services outside their countries of origin.

This chapter is related to the limited literature on the geographical pattern of banking services provision. Financial geography research in the last two decades has put forward several arguments in support of the view that geography still matters in financial service supply notwithstanding the global patterns of deregulation and digitalization in banking and finance. The 'end of geography' thesis advanced by O'Brien (1992) following the unprecedented increase in financial globalization in the last decades has been indeed highly challenged. For instance, Tschoegl (2000) argues that decentralization in financial services does not necessarily need to occur in parallel with global financial integration. Banking activities, in particular, feature an important locational dimension due to the fact that not 'all locations are equally attractive for all activities' (Tschoegl, 2000; p. 2). The reorganization pattern of the global banking industry witnessed in the last three decades has indeed been geographically uneven. The transition towards large and international banking institutions offering a large scale of products globally, regardless of their location of implantation, has simply not happened. On the contrary, the expansion of international banking has bolstered the central, systemic role of international and offshore financial centers in the global financial system. At the same time, banks are still an excellent example of multinational enterprises featuring, put in Dunning's (1998, 2009) terms, low transaction costs of traversing distance and high benefits arising from spatial proximity. Indeed, in some countries, global banks compete with

domestic financial institutions in providing retail banking services to local customers. Cultural, regulatory and informational frictions have been put forward as factors shaping the geography of the banking industry since the 1990s (Berger et al., 2000; De Young et al., 2004; Haberly and Wojcik, 2020). Yet, the lack of comprehensive geographically segmented data on banking activities prevents the full account of what global banks do and where they do it and how this has evolved over time.

Focusing on the on and off-balance sheet activities of foreign branches of US banks, this chapter aims to improve our understanding of the geography of the international operations of global banks using unpublished data obtained from the prudential regulator. We analyze and compile a geographical mapping of the activities of foreign branches of US banks in 62 foreign locations over the 1990-2017 period. The mapping is based on the theory of the strategic positioning of financial services as advanced by Walter (1988) and Saunders and Walter (2012) characterizing the space occupied by financial institutions according to three criteria: client, geographic arena and product provision. These three dimensions capture the type of clients targeted, their geographical provenance and the product the banks wish to provide, respectively. The countries in which US banks operate via their foreign branches are mapped according to the clients targeted and the product provision. In particular, within the product provision host country classification, we are able to identify funding, lending, onshore and offshore centres. The latter are further divided into functional and non-functional roles of foreign offices of US banks. We also provide a more general mapping distinguishing wholesale and retail locations.

The chapter is divided into four sections. The next section reviews the literature, followed by the methodology in section III. Section IV discusses the results and main findings and section V concludes.

II. Literature Review

Background

Since the early 1990s, systemic risk arising from international activities has notably increased for US global banks as they have expanded abroad through their branches, upon which they have unlimited liability. Over the period 1990-2013 total assets of foreign offices of US banks increased 12-fold, reaching a staggering $13.2 trillion. The post-2013 retrenchment in foreign activities of US banks has shown activities bouncing back to 2006 levels.

Since the 1980s, succeeding waves of mergers and acquisitions have allowed US banks to adapt to the new competitive and strategic conditions brought about by financial innovation and deregulation through a consolidation process comprising both new product markets and geographical areas (DeYoung et al, 2009). Under the 1987 Section 20 Subsidiary Act, banks were allowed to carry out investment-banking activities via wholesale securities subsidiaries allowing banks to gradually shift the focus away from less profitable interest margin generating activities. The 1999 Gramm-Leach Bliley Act provided further incentives to financial conglomerations expanding the latitude of their activities by repelling substantial parts of the 1933 Glass-Steagall Act which had separated commercial from investment banking activities. While these successive liberation waves have stimulated the widespread adoption of a universal banking business model by a large share of US banks, the increase in the geographical latitude of US banks was boosted by the 2001 Regulation K, streamlining the procedures for opening up foreign branches for US banking institutions and expanding notably the range of permissible activities abroad. Branching abroad has however allowed the US banks to centralize decisions regarding operations and capital and liquidity reallocations at the headquarters level. Yet, this globalization of the banking sector in the US has concerned only a handful of banks: the “big four” own over 80% of the totality of all foreign branches of all chartered US commercial banks. Citigroup owns more than half of all foreign branches as of the latest 2022 regulatory data, with its foreign assets constituting 40% of total foreign assets held by US banks. Foreign branching operations, while highly concentrated among the largest systemically important US universal banking groups, depict a noteworthy geographical spread. Since 2000, foreign branches of US banks have substantial activities in over 70 foreign countries, depicting the largest assets in international and offshore financial centers.

England and the Cayman Islands are the two jurisdictions in which foreign branches have the largest activities.

a. Banking and finance literature on business models of banks

The notion of a business model in banking typically refers to the emphasis intermediaries place on their activities and how these are funded. Different business models observed across banking institutions can be a reflection of their risk preference, strategic objectives, locational comparative advantage and/or targeting a niche market. Understanding the implications of different business models has been a high priority for regulators since the GFC.

In the banking and finance literature, business models are identified either through simple financial accounts-based ratios, permitting in most cases to measure the degree of diversification of products provisions of banks (such as in Everett et al., 2020), or via data mining techniques, such as clustering (Farnè and Vouldis, 2021).

At the broader level, consolidated business models in banking are identified as either retail specialized, that is, depicting the textbook deposit-taking loans-issuing function, or as diversified or universal. Several seminal contributions have expanded and developed the latter group given the heterogeneity of financial intermediaries populating the classification. Martel et al. (2012) distinguish between commercial banking and investment oriented universal banking groups, depending on the relative prevalence of either retail or investment banking type of activities, respectively. The authors argue that US banks have been the precursors of the universal banking model since the overturning of the separation of between commercial and investment banking activities following the 1999 Gramm-Leach-Billey Act. To this extent, the authors, in order to capture the heterogeneity of business models of internationally active systemic important banks, put forward two more narrow definitions for each of the specialised and universal banking business models: (1) commercial banking specialized, (2) investment banking specialized, (3) commercial banking-oriented diversified and (4) investment banking-oriented diversified. Functionally, the specialized model refers to the almost exclusive provision of either investment or commercial banking product.

Some other hybrid versions of these business models, some of which account also for the type of debt (deposits versus wholesale) have also been put forward in the literature. Carletti et al.,

(2020) suggest that there are four distinct business models that characterize banking activity. The first two business models relate to commercial banking in which activities involve the traditional retail-funded and wholesale-funded models. The third proposed business model is trading-oriented, in which banks engage more in trading rather than originating loans. The universal business model is a hybrid business model which identifies those banks that do issue deposits but are less active in making loans. Furthermore, they have a high portfolio and interbank activity, interacting as both borrowers and lenders.

Farnè and Vouldis (2021) applying a clustering method to a sample of European banks find that a diversified business model depicting a mix of retail loans and securities holdings financed with retail deposits is the most recurrent business model. Relatedly, Cernov and Urbano (2020), using balance sheet data for a sample of European banks, propose a classification that relies on hierarchical clustering. Most sampled banks are found to depict a traditional retail business model, with high proportions of retail loans and deposits. The authors also find a relatively high prevalence of diversified business models combining retail activities and wholesale funding. Everett and al. (2020) examine how the bank business model of euro banks affects their international activity, in reference to the retrenchment in post-GFC. Using confidential bank-level data for a sample of banks located in Europe, they identify five business models, including corporate wholesale, retail lender, specialised lender, universal, and globally systemic important banks (G-SIB) using cluster analysis algorithm. Their findings suggest that G-SIB exhibit different activity patterns than the other four identified models. Indeed, they find that G-SIB maintained their foreign assets in the euro area unlikely the other banks with different business models which reduced their foreign asset holdings.

b. ***Expansion of the model to account for internal liquidity***

Very few contributions have focused on the business models of global banks, accounting explicitly for the strategic form of overseas banking operations. Heinkel and Levi (1992) classify foreign offices' business models in strict relation to the services intermediated on behalf of US customers: to ease export transactions, to broker loans and to access local capital markets. While this classification was well-suited to describe the early stages of the banking internationalization in the 1980s and 1990s, foreign offices of modern global banks are primarily used by the banks

themselves to access local liquidity pools, capital markets and to efficiently allocate liquidity and capital across their network of related offices. One notable exception is the work by Gambacorta et al. (2019) which recognises two different business models for international banks: centralized and decentralized. In particular, the centralized business models is featured by relatively larger cross-border transactions carried out at the level of the headquarter. If instead, the global bank prefers to decentralize its operations at the foreign office level, this model is referred as the decentralized model. While the authors identify the very important funding role that internal capital markets have in the decentralized model allowing the headquarters to import liquidity from foreign offices, data unavailability does not allow them to observe the relative reliance on internal capital markets of foreign offices. For instance, they cannot observe from the BIS data the extent of interoffice assets and liabilities of US offices located in Japan, the UK or France. Only the cross-border interoffice positions of the US-located banks vis–a-vis offices located in the rest of the world (all locations confounded) can be observed.

In this chapter, we argue that internal capital markets explain a very important proportion of transactions carried out by foreign offices of global banks and this information should be incorporated in the definition of local business models. The banking literature recognizes the crucial role of internal capital markets of international banks, especially with regard to liquidity management within the global network of offices of international banks. Interoffice liquidity reallocations, which are largely centralized at the headquarter level for foreign branches, are found to create a functional interdependence among foreign offices (De Haas and Lelyveld, 2010). Indeed, internal capital markets' liquidity channeling stimulates cross-border transmission of shocks through the effect they can have on the activities of foreign branches of a global bank in any given location. Cetorelli and Goldberg (2012a, 2012b) find that US global banks actively reallocate their liquidity through internal capital markets following US-based macro, financial and monetary policy shocks. The authors also find a significant reallocation of internal liquidity when these shocks occur in the country of implantation of the foreign offices. To some extent, the presence of internal capital markets is also found to be beneficial for the local economies. Navaretti et al. (2010) and De Haas and Lelyveld (2010), using bank-level data, advance evidence of a stabilizing effect in lending when foreign banks have access to interoffice transactions. That is, compared to local banks, foreign banks that have access to internal capital markets depict relatively more stable levels of lending. De Haas and Lelyveld (2014), however, add that this lending

stabilization broke down in 2007-09 period in which the lending of foreign offices fell more than the credit provision of the local banks. These findings are consistent with the evidence advanced by Gambacorta et al (2019) using country-level BIS data on 12 advanced economies, showing a greater reliance of headquarters on cross-border funds raised from related offices.

While the above literature recognizes the functional role of internal capital markets and the drivers and implications, it is unable to provide a full picture of localized gross interoffice positions of a given banking group or banking system around the globe. This shortcoming is largely due to the very incomplete nature of the geographical data on the activities of global banks both at the micro and aggregate level. In particular, data on interoffice positions (assets and liabilities) are typically consolidated at the global level. Therefore, the following questions remain unanswered: What is the relative share of interoffice assets in the total activities of global banks? To what extent do interoffice positions characterize the business model of foreign offices? In which locations are interoffice positions more important?

III. Data and methodology

As discussed above, business model identification and classification put forward in the existing literature are based on banks' consolidated data, disregarding the heterogeneity in banks' activities that may arise in different locations. Locational business models of global banks identified using geographically unconsolidated data allow to better monitor exposures and risks arising from foreign activities. The consolidated balance sheet for Citigroup Inc, for instance, reveals a well-balanced diversified model with net revenues raised almost equally from the retail banking division and the non-retail segment comprising investment banking, transactions and securities activities and a deposit base nearing 60% . A well-diversified, deposit-funded business model of this type can be associated with lower risk and higher resiliency to shocks (Demirguc-Kunt and Huizinga, 2010). A very different picture, however, arises from looking at the business model of Citigroup at the locational level. Branches located in jurisdictions such as Belgium, Lebanon, Jersey, and Jordan, to cite a few, depict mainly wholesale-funded investment banking and securities services, exposing the group to geographically concentrated high-risk activities. The systemic importance within the global banking network of foreign offices of this type remains thus overlooked when

using data geographically consolidated at the headquarters level. Generally, we believe that business models by location allow us to assess with more accuracy the relative risk exposure in a given country.

We here propose an identification and classification of business models that reflect the multitude of operations that global banks may have in the different countries of implantation. Geographically segmented balance sheet data available from the FFIEC030 reports allows to identify the products and, to some extent, the clients in line with the C-A-P opportunity set put forward by Ingo and Walter (2012) characterizing the strategic positions of global banks in foreign countries. Foreign offices implanted in any foreign jurisdictions can indeed be characterized by the chosen combination of clients (C), geographical arena (A) and products (P). Although the reconstruction of three-dimensional opportunity using real-world data is not without difficulties due to the incomplete nature of locational activities and clients' data (Ingo and Walter, 2019), it offers a comprehensive and flexible benchmark for business model classifications by country of implantation of foreign branches of US banks. We use the above classifications of business models and provide a spatial mapping for the geographical arena without imposing priors on our data. Based on the available data on activities from the asset side of the banks' balance sheet by location, we identify the following products: loans, securities, interbank claims and interoffice outflows. On the liability side, we consider three funding means: retail deposits, wholesale deposits (mainly interbank) and internal liquidity. The relative proportion of each of these items, in relation to total assets, allows for the identification of the different types of business models (see Methodological Appendix for details):

Specialized. This refers to the specialization in one of the main products (lending, securities or interbank).

Diversified. The business model features a mix of loans, securities and interbank claims (at least two among these items). Debt can be raised through retail and/or wholesale deposits.

Internal liquidity. Interoffice assets, liabilities or both are the prevalent items among the assets and/or liabilities.

The above broad, or level one, classification allows us to adequately capture and classify the business models in the 62 countries for which we have data. In the *specialized* class, we further identify three narrower business models. The *retail focused* model refers to the textbook banking model featuring high loans (all clients confounded) and traditional deposits. The *securities focused*

and the *interbank focused* refer to the business models featuring as predominant products securities and interbank claims, respectively. In the *diversified* group, which is the most heterogenous of all, we use the information on the client base allowing us to obtain a narrower classification within each class, based on the relative major exposure. Available data allows for the identification of the following clients: private sector, other banks, financial markets and related offices. The *internal liquidity* business model is further segmented into:

Liquidity importing featuring high interoffice debt

Liquidity exporting featuring high interoffice claims

Liquidity channeling featuring high interoffice assets and liabilities.

In the *liquidity importing* case, we further identify the main client exposure on the asset side to gather how this internal liquidity is used in the host country. In the case of the *exporting liquidity* business model, the main clients are related offices.

This narrowing down of the internal liquidity business model allows us to account for the diversity of operations carried out by branches located in international and offshore financial centers. Very little is indeed known about the different functional roles across the international and offshore financial centers. Whilst the literature points to the use of the internal capital market model by global banks they do not account for the diversity within the model. Liquidity management within the internal capital markets can indeed have different forms and not all financial centers behave equally when it comes to the global reallocation of internal liquidity. Also, there may be differences in terms of what the internal liquidity is raised or used for, i.e., in terms of geography, clients and/or products. For example, the business model of foreign branches of US banks located in London and Tokyo, although both reflect a high reliance on internal capital markets, depict distinct features possibly due to their geographical and strategic positioning. Foreign branches located in offshore financial centers, which do not have large or developed financial markets, also depict very heterogeneous business models albeit their active roles in internal capital markets. They can be used either as pure booking centers (liquidity channeling) or to exploit the local clustering of financial intermediaries to obtain quick liquidity and export it to the rest of the banking group (liquidity exporting). Moreover, in these jurisdictions, foreign branches may pool liquidity coming from the rest of the banking group with the intent to lend to other financial intermediaries located offshore.

Table 7.1 below reports a summary of all the proposed business model classifications.

Table 7.1: Types of business models

Broad	*Narrow*	*Main client*
Specialised	Retail focused	Private sector
	Securities focused	Financial markets
	Interbank focused	Non-related banks
Diversified		Private sector
		Financial markets
		Non-related banks
		Related offices
		Private sector
		Financial markets
		Non-related banks
		Related offices
Internal liquidity	Liquidity exporting	Related offices
	Liquidity channeling	Related offices
	Liquidity importing	Private sector
		Financial markets
		Non-related banks
		Related offices

Each foreign location in which branches of US banks are located is associated with a broad and narrower/client classification based on indicators constructed using average balance sheet variables over the 2015-19 period in order to capture the cross-sectional spatial distribution of business models. Furthermore, for each business model classification, we specify whether US banks in a given location have substantial derivative exposure (greater than 100% of on-balance sheet assets). For the broad classification, the *specialized* business model is identified when one single activity among loans, securities and interbank claims exceeds 50% of total assets. Depending on the prevailing activity, we can then identify the type of specialized narrow business model: retail, securities or interbank. Furthermore, we also consider the prevailing type of debt for each of these business models. The *specialized retail* features retail deposits exceeding 50% of total assets, while in the *specialized securities and interbank* business models, assets are primarily financed by a mix of retail and wholesale deposits. The *diversified* business model is characterized by no one item (across loans, securities and interbank claims) exceeding 50% of total assets and a mix of retail or non-wholesale deposits. Depending on the prevailing activity, we identify the main client: private sector (prevailing loans), non-related banks (prevailing interbank claims) or

financial markets (prevailing securities). The *internal liquidity* business model is identified as occurring when at least one of the following exceeds 40% of total assets: inter-office claims and inter-office liabilities. *Liquidity importing* branches feature inter-office liabilities in excess of 40% of total assets while liquidity exporting features more than 40% of their assets as inter-office claims. We further identify how the liquidity imported from related offices is employed by the branches located in the host country: to finance loans (exposure private sector), securities (exposure financial markets) or interbank claims (exposure non-related banks). If both inter-office claims and liabilities exceed 40% of total assets, we define the business model as *liquidity channeling*. Full details of the classifications and variables used are reported in the Methodological Appendix.

IV. Findings and discussions

In this section, we report the cross-sectional spatial mapping of the broad and narrow business models using geographically segmented balance sheet data averaged over the 2015-19 period. The most frequently observed broad business model for US banks abroad is the internal liquidity model adopted in 29 foreign locations, followed by the diversified business model observed in 24 jurisdictions. Only in 10 foreign countries, foreign branches of US global banks followed a specialized business model.

As Figure 7.1 shows the internal liquidity model prevails in most European countries as well as in Canada, Brazil and in most (developing or emerging) International Financial Centres in South East Asia. The foreign branches of US banks located in offshore financial centres, such as the Bahamas and Cayman Islands[‡] also follow an internal liquidity model. The global reach of this model adopted by foreign branches of US banks also appeared to have a regional geographical pattern. As can be seen, US banks that follow an internal capital market are located in North and South America, Europe and South East Asia. A furthermore obvious pattern perhaps is the presence of US banks in regions of the globe that share similar time zones. For instance, Canada, Brazil and Chile have a small difference in their time zones. Countries located in Europe also share similar time zones followed by countries in South East Asia. These patterns could also be

[‡] Most of the Offshore Financial Centres are very small and are not noticeable in the map in Figure 7.1

explained by the strategy of the banking group. Given the increased development and integration of financial markets in most South-East Asian countries (Ananchotikul et al 2015) US banks can manage internal liquidity more efficiently vis-a-vis branches located in Taiwan, South Korea, Singapore and Hong Kong.

The diversification model also seems to be followed by US banks located in Asia Pacific countries, such as Australia, New Zealand, China and India. A shared characteristic of this business model is the derivative exposure they depict. US banks located in Australia, China and India highly engage in derivative trading, reflecting their developing capital markets. In particular, the derivative market in China and India has expanded rapidly making their respective financial markets a good strategic positioning for the provision of financial services by US banks. Other countries in South East Asia reflecting the diversification model are the Philippines, Vietnam, Indonesia and Thailand. According to the Financial Development Database (GFDD) by the World Bank, these are lower-income countries, with the expectation of Thailand which is an upper middle-income country and in which US bank branches follow a diversified business model with a relatively high derivative trading exposure. Net interest margins are much higher in the lower-income countries which could indicate a profitability driven business model employed by US banks in these locations. The diversification model is also observed in countries located in Africa, namely, in Algeria, Kenya and South Africa. The presence of US banks in Africa mainly concentrated in these three countries could be a reflection of the relative capital market development which characterises their respective financial markets. For instance, the stock market capitalisation as a proportion of GDP in South Africa is relatively high and double that of the US reaching 300% in 2019. US banks located in most Latin America countries, such as Argentina, Venezuela, Ecuador, Panama, Guatemala and the Dominican Republic, also depict a diversified business model. The geographical proximity, in the region, could explain the shared business model US banks follow in Latin America countries.

The least observed business model foreign branches of US banks follow is the specialised business model. The model is mainly followed by banks present in countries in the Middle East, which are Egypt, Saudia Arabia, Lebanon, Jordan and the United Arab Emirates. US banks located in Pakistan also adopt a specialised business model.

Figure 7.1: Geographical mapping of business models, broad definition

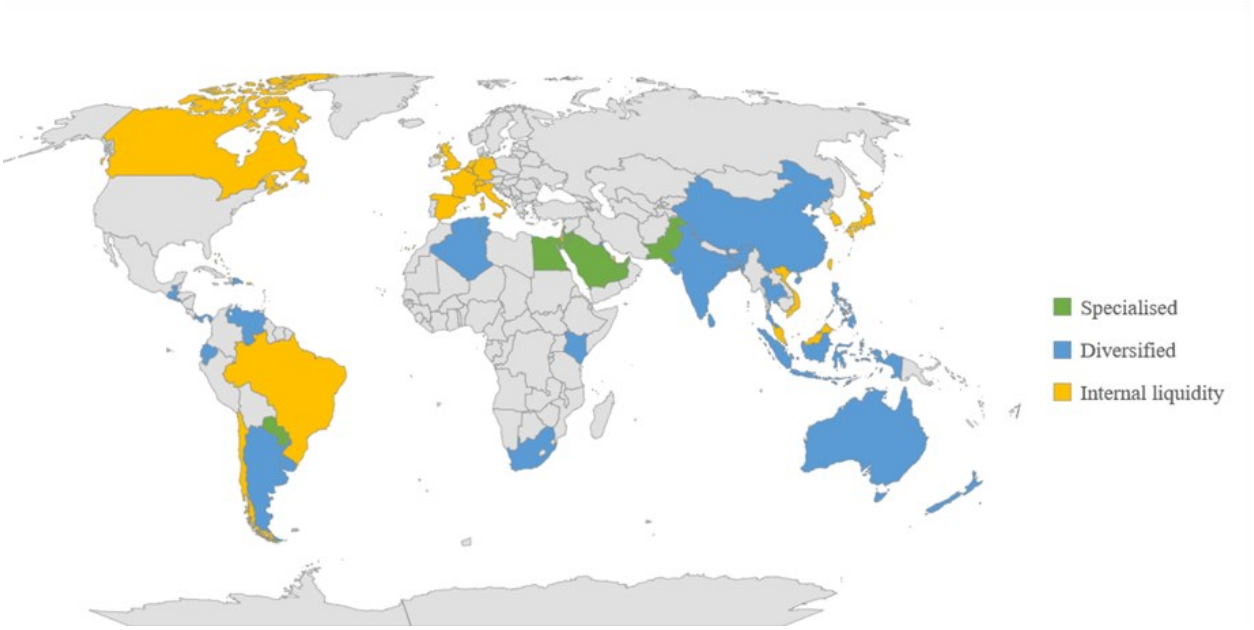
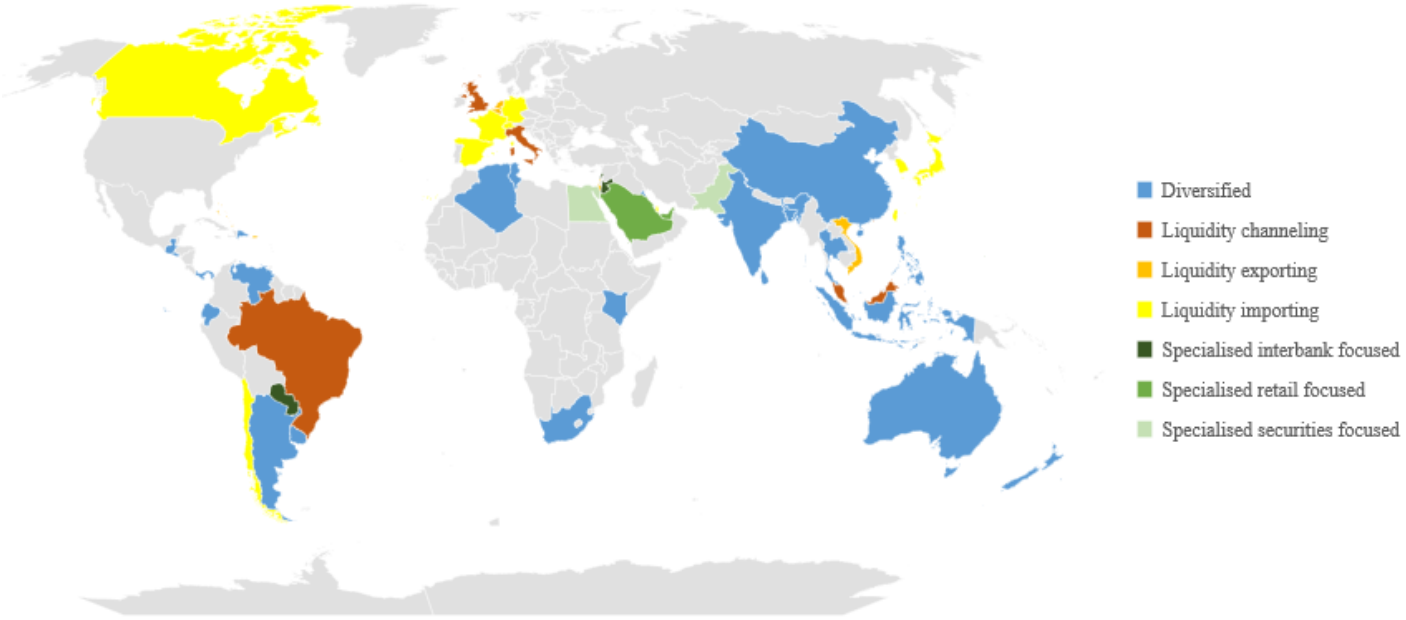


Figure 7.2 breaks down the mapping of the specialized and internal liquidity broad business model definitions into the narrower definitions. The specialized business model observed in branches localized in several Middle-Eastern countries, depicts diverse specialization focus. Within this geographical area, the specialized retail focused model is observed in Saudi Arabia and the United Arab Emirates. These two high income jurisdictions are both characterized by an extremely small sector of non-bank financial intermediaries and relatively high outstanding amounts of deposits held by the banking sector as a % of GDP. A closer look at the GFDD also reveals that these two countries depict relatively low non-performing loans to total loans when compared to global averages. Branches in the lower middle-income jurisdictions of Egypt and nearby Pakistan depict a specialized securities business model. These countries feature rather low levels of financial depth as witnessed by the private credit issued by the banking sector, not exceeding 25% of total GDP in 2019, matched with a sustained deposit base. The limited internationalization and sophistication of the local banking system may explain the competitive advantage of US banks in focusing their activities in securities holdings and trading. Foreign branches of US banks located in Jordan and

Lebanon feature a specialized interbank-focused model. Often identified as tax havens, these upper middle-income jurisdictions feature financial deepening offering a strategic geographical location allowing exposure to the financial intermediation markets in the Middle East and North Africa.

Figure 7.2: Geographical mapping of business models, narrow definition



Turning to the internal liquidity channel, some geographical patterns are observed when looking at the narrow business model definitions. The liquidity importing business model is the most widespread in this category. Foreign branches of US banks seem to depict regional hubs for this particular function. The regional hub in North-East Asia featured by Japan, South Korea and Taiwan is used by the foreign branches of US banks to import liquidity into the wider Asia region. These locations are strategic due to their proximity to China but also, as is the case of Japan, for the local structural economic fundamentals. Japanese banks rely heavily on foreign exchange derivatives, mainly swaps, to fund their overseas dollar activities. Indeed, Borio et al (2017) suggest that in 2017 Japanese banks net borrowing of US dollar via the foreign exchange swaps reached $1 trillion. The high demand of Japanese banks for US dollar might explain the business model of US banks located in Japan in which they import liquidity into the country and then lend it to other banks via the interbank market. Liquidity importing jurisdictions in Europe also feature

some degree of clustering with branches located in jurisdictions of France, Germany, Spain and Switzerland depicting this typology of business model.

Table 7.2 summarizes the business models of banks by functionality, region and client exposure. Moreover, we report in the last column the derivative exposure of branches by country of location and region. As can be observed, in Europe, East Asia and the small offshore countries in the Americas, foreign branches have very large interoffice positions. In East Asia these positions are associated with derivatives exposures as well. In the other regions of the word, foreign branches of US banks have local activities and depict different degrees of diversification of their business model.

V. Conclusions

In this chapter, we explore into the geography of US global banks using unpublished data on foreign branches operating in 62 countries. By studying the geographical distribution of activities undertaken by US banks' foreign branches, the chapter aims to uncover patterns and variations in their business models across different locations and regions.

Understanding the nuances of business models by location is essential for further research aiming at assessing risk profiles of global banks. Our analysis suggest that the internal capital markets explain a very important proportion of transactions carried out by foreign offices of global banks. Indeed, many branches of US banks operate under an internal liquidity model, with a significant presence in IFC and offshore financial centres. However, the concentration of liquidity, primarily flowing through IFC and small offshore centers in the internal capital markets, can amplify risks and potential vulnerabilities within the global financial system. Therefore, understanding and monitoring the liquidity dynamics within the network created by the worldwide offices of global banks is also important from a regulatory and policy perspective.

Table 7.2: Regional and functional patterns

Region	Country	Business Model Broad	Business Model Narrow	Client	Derivatives exposure
Europe	England	Internal liquidity	Liquidity channelling		
	Germany	Internal liquidity	Liquidity importing	Interbank	
	Channel Islands	Internal liquidity	Liquidity exporting		
	Switzerland	Internal liquidity	Liquidity importing	Interbank	
East Asia	Hong Kong	Internal liquidity	Liquidity channelling		YES
	Japan	Internal liquidity	Liquidity importing	Interbank	YES
	Singapore	Internal liquidity	Liquidity channelling		
	Australia	Diversified		Financial markets	YES
Americas	Cayman Islands	Internal liquidity	Liquidity exporting		
	Canada	Internal liquidity	Liquidity importing	Private sector	YES
	Puerto Rico	Internal liquidity	Liquidity exporting		
	Bahamas	Internal liquidity	Liquidity exporting		
Western Asia	India	Diversified		Financial markets	YES
	Pakistan	Specialised	Specialised securities		
	Bangladesh	Diversified		Private sector	
	Sri Lanka	Diversified		Private sector	
MENA	UAE	Specialised	Specialised retail		
	Israel	Internal liquidity	Liquidity exporting		YES
	Algeria	Diversified		Private sector	
	Egypt	Specialised	Specialised securities		
Africa	South Africa	Diversified		Financial markets	YES
	Kenya	Diversified		Financial markets	
Function	**Country**	**Business Model Broad**	**Business Model Narrow**	**Client**	**Derivatives exposure**
International Financial Centers	England	Internal liquidity	Liquidity channelling		YES
	Hong Kong	Internal liquidity	Liquidity channelling		YES
	Japan	Internal liquidity	Liquidity importing	Interbank	YES
Small Offshores	Cayman Islands	Internal liquidity	Liquidity exporting		
	Puerto Rico	Internal liquidity	Liquidity exporting		
	Bahamas	Internal liquidity	Liquidity exporting		
Other	Canada	Internal liquidity	Liquidity importing	Private sector	YES
	Australia	Diversified		Financial markets	YES
	India	Diversified		Financial markets	YES

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Methodological Appendix

Business models identification and definition

The identification of business models is based on ratios thresholds using balance sheet and derivatives data using 2015-19 averages. The data is obtained from the FFIEC030 report collected by the Federal Institutions Examination Council.

At the broader classification level, the *specialized* business model is identified when one single activity among loans, securities and interbank claims, exceeds 50% of total assets. The *specialized retail* features both loans and retail or non-wholesale deposits exceeding 50% of total assets, as this model reflect the traditional textbook banking function. The *specialized securities* business model, features securities holdings (including trading securities) exceeding 50% of total assets. The *specialized interbank* business model is identified whenever interbank claims (due from both foreign and US banks) are over 50% of total assets. For these latter two models, assets are primarily financed by a mix of retail and wholesale deposits.

The *diversified* business model is characterized by no one item (across loans, securities and interbank claims) exceeding 50% of total assets. Furthermore, one of the two following rules apply: (1) the second and the third largest activities exceed 20% of total assets each or (2) the combined share of the second and the third largest activities exceed 25% of total assets. On the liability side, the diversified business model features a mix of retail or non-wholesale deposits as the main financing source and inter-office debt is lower than 40% of the total liabilities. A narrower definition of the diversified business model is further considered. Depending on the prevailing activity, we identify the main client: private sector (prevailing loans), non-related banks (prevailing interbank claims) or financial markets (prevailing securities). In only one instance, for Tunisia, the prevailing activity are claims to related offices, which constitute the prevailing item but stands lower than the 40% threshold needed for the internal liquidity business model identification, as described below.

The *internal liquidity* business model is identified as occurring when at least one of the following exceeds 40% of total assets: inter-office claims (funds provided to related offices located elsewhere) and inter-office liabilities (funds raised from related offices located elsewhere). *Liquidity importing* branches feature inter-office liabilities in excess of 40% of total assets while liquidity exporting features more than 40% of their assets as inter-office claims. We further

identify how the liquidity imported from related offices is employed by the branches located in the host country: to finance loans (exposure private sector), securities (exposure financial markets) or interbank claims (exposure non-related banks). If both inter-office claims and liabilities exceed 40% of total assets (while keeping within a 20% difference band), we define the business model as *liquidity channeling*.

For all the business models above we also consider off-balance sheet derivative exposure. To this extent, we consider two variables: (1) total notional amount of interest rate swaps and (2) the sum of off-balance sheet forwards, futures and options. We identify a derivatives exposure whenever any one of these two items exceeds the average size of the balance sheet in the host country.