US Banks' International Balance Sheet Linkages: A Data Survey

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International financial linkages are mostly established through banks' foreign operations. Typically, the larger the balance sheet exposure a bank has to a counterparty country, the more will be both its risk exposure and sensibility to shocks to this latter. The latest crisis has revealed the importance of filling the existing data gaps which hinder a full understanding of the geographical composition of banks' balance sheet on a global basis. To this extent, the Committee on the Global Financial System (CGFS) has recently endorsed significant enhancements to the International Banking Statistics (IBS) collected by the Bank of International Settlements (BIS).
This paper, by focusing on US banks, reviews existing data on bilateral foreign positions on both an consolidated and unconsolidated basis. The investigation stresses the extent to which the new enhancements are going to enable to a better understanding of the global banking system and discusses other data limitations and gaps which should be addressed. In particular, policy recommendations point to enhanced foreign offices-related statistics.

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1. Introduction

International financial linkages are mostly established through banks' lending and borrowing across the borders. Still, very little is known on the actual geographical composition of banks' foreign balance sheet positions due to the fact that existing bilateral banking statistics is rather incomplete and scant both at the aggregate and micro level ((Cerutti, et al., 2011); (Fender & Patrick, 2009); (McGuire & von Peter, 2009)). At the micro level, in particular, bilateral positions of banks by location of counterparty are neither collected by the regulator nor available from commercial databases (Herrero & Martinez Peira, 2007).

At the macro level, the Consolidated Banking Statistics (CBS) published by the Bank of International Settlements (BIS) is the most complete data source publicly available on aggregate bilateral *claims* of banks, available on a comparable cross-country basis and collected according to the nationality principle[1]. The CBS is best suited to assess country risk, as it reports gross claims of home and worldwide offices reported by national banks to individual foreign countries.

The consolidation within the CBS, however, does not allow to quantify gross cross-border bilateral positions that banks have vis-à-vis their foreign affiliates. Important direct linkages can, indeed, arise through cross-border positions with banks' foreign-related entities, such as branches or subsidiaries, especially in those countries, such as the US, where foreign-related offices are the largest foreign counterparties of domestic banks.

Moreover, bilateral banking liabilities are not publicly available within the CBS preventing the assessment of other important macro risks arising from international banking activity, most notably funding and global systemic risks. The Committee on the Global Financial System (CGFS) at the the Bank of International Settlements (BIS) has recently announced that the latter limitation is being tackled in the new reporting regime in which banks must disclose also bilateral liabilities a consolidated basis with details of the instrument type (CGFS, 2012). The BIS also collects unconsolidated positions (i.e. both assets and liabilities) of banks located in a given country on all foreigners in the Locational Banking Statistics (LBS), in which bilateral positions are not publicly disclosed[2]. For the US, however, bilateral foreign unconsolidated banking assets and liabilities are available from the Treasury International Capital System (TICS)[3]. Coherent to the balance of payment residency principle, the reporting institutions are branches of foreign banks residing in the US which report their positions vis-à-vis all foreigners by foreign country, including related-offices.

[1] For more information on the CBS see (McGuire & Wooldridge, 2005) and http://www.bis.org/statistics/bankstatsguide.htm

[2] The LBS provides two types of statistics: locational by residency and locational by nationality. The former is collected on a bilateral basis but is not publicly disclosed. The CGFS has, however, announced that also the latter type of locational statistics is going to contain a vis-à-vis country dimension.

[3] Bilateral banking statistics collected by the U.S. Treasury within the TICS is then used by the BIS to construct the LBS for the US.

Residency-based statistics is ill-suited to assess bi-lateral linkages of US banks as confounding resident foreign and domestic banks does not allow to disentangle the different lending conducts and funding structures[4]. Also, the foreign counterparty includes foreign branches and subsidiaries of domestic banks as well as parents, branches and subsidiaries of foreign banks resident in the US, hindering a full understanding of the geography of banks' funding, liquidity and capital allocation.

The aim of this paper is to review all the available data at the macro level in order to both draw a map of the bilateral international balance sheet positions of US banks by counterparty country and stress the data limitations and gaps. Firstly, this paper presents an extensive survey of all available bilateral macro data on international linkages created by US banks' balance sheets. This investigation details the components and measurements (consolidated vs. unconsolidated data collection) of external positions of US banks. The survey is mainly based on the statistics provided by the Country Exposure Lending Survey (CELS) published by the Federal Financial Institutions Examination Council (FFIEC), upon which the BIS CBS for the US is based, and the US Banking claims and liabilities statistics published by the Treasury International Capital System (TICS). The second part of the paper discusses how data gaps might distort the measurement of important bi-lateral linkages and suggests how these limitations might be tackled by future research.

In the literature can be found a few papers that bring together existing available datasets to evaluate bi-lateral financial linkages, such as the works by (Lane & Milesi-Ferretti, 2011), (Milesi-Ferretti, et al., 2010) and (Cerutti, 2013). The latter study, in particular, estimates the linkages created by banks' balance sheet by combining BIS CBS with foreign office data available commercially at the micro-level with the intent of measuring foreign rollover risks.

In this paper it is stressed that consolidated and unconsolidated banking statistics should both include a vis-à-vis country dimension, other than a sectoral and instrument-type segmentation. Moreover, statistics should be segmented enough to allow mapping unconsolidated to consolidated data. In particular, consolidated banking statistics should differentiate claims booked from domestic offices to those from branches and subsidiaries, possibly by host country. Unconsolidated statistics, should disentangle positions booked from domestic banks and foreign banks and vis-à-vis related-offices, possibly identifying the nationality foreign banks. While the statistics enhancements of the CGFS are definitely going towards this direction, this paper suggests that more detailed information should be collected on the funding structure of foreign-related offices, disentangling, when possible, branches by subsidiaries by host country.

The paper is organized as follows. Section 2 presents stylized facts on international assets and liabilities of US banks on a consolidated and unconsolidated basis. Subsection 2.1.1 suggests some enhancements to the consolidated banking statistics by stressing the importance of knowing the

[4] The CGFS has announced that amendments to the LBS by nationality basis will group bilateral positions of branches, subsidiaries and domestic banks separately (CGFS, 2012). It is unknown whether these segmented positions will be reported in the TICS banking statistics.

funding structure of foreign-related offices. Section 3 advances a critical review of the available data, suggesting which variables might be needed in order to map consolidated to unconsolidated banking statistics. Section 4 concludes.

2 An overview of bi-lateral foreign exposure of US banks

The linkages created by banks via their international balance sheet positions can be assessed on either a consolidated or unconsolidated basis.

The BIS provides the framework to collect international banking claims on a consolidated basis. The Consolidated Banking Statistics (CBS) provides very useful scope for assessing country risk as its concern is to measure the exposure of the banking sector of a given country *i* on a foreign country *j* on a nationality basis: banks are grouped according to their nationality so that all branches of banks with nationality *i* located worldwide report their positions vis-à-vis the residents of a given country *j*. Total foreign exposure, namely *foreign claims*, of the banking sector in *i* on country *j* is obtained by summing the consolidated *cross-border claims* on unaffiliated foreigners in *j* and *local claims* of foreign offices established in *j*. The BIS publishes bilateral foreign claims for the reporting county vis-à-vis the rest of the world by country of location of the counterparty on a quarterly basis. For the US case, more detailed data is available from the Country Exposure Lending Survey (CELS) published by the Federal Financial Institutions Examination Council (FFIEC), upon which the BIS CBS for the US is based.

Banks' foreign exposure evaluated on an unconsolidated (or *locational*) basis, on the other hand, complies with the balance of payments principles. Banks are grouped according to their residency so that in a given country *i* the reporting banks are all those institutions operating in *i*, including the resident branches of foreign banks. Total foreign exposure is here calculated by measuring unconsolidated *cross-border claims* only, i.e. claims on all those counterparties which are not domestically located, including related offices. The BIS collects quarterly statistics on unconsolidated banking assets and liabilities, that is, the Locational Banking Statistics (LBS), for a large set of reporting countries, reporting positions broken down by currency, counterparty sector and nationality of banks. Although the BIS collects unconsolidated banking statistics by country of location of the counterparty (i.e. vis-à-vis country dimension), this information is not publicly disclosed hindering a geographical mapping of the counterparties of reporting banks. For the case of US, however, this bilateral assets and liabilities of banks on an unconsolidated basis are published by the US Treasury within the Treasury International Capital System (TICS), upon which the BIS LBS for the US is based.

Foreign claims on both a consolidated and unconsolidated basis can be summarized by the following notation. Let's assume that we are interested in the exposure that banks in country *i* have vis-à-vis a country *j*. We define:

CB_j = cross-border position vis-à-vis *j*

$local_j$ = local position of foreign offices of banks headquartered in *i* and operating in *j*

Then, the consolidated foreign exposure of country *i* on *j*, denoted as θ_{ij}^{C}, is given by:

$$\theta_{ij}^{C} = CB_{j_u}^{i,i} + CB_{j_u}^{i,row} + local_j^{i,j} \qquad (1)$$

The variables' superscripts refer to the nationality and residency of the reporting banks respectively such that $CB_j^{i,row}$ refers to claims on country j of banks with nationality *i* resident in the rest of the world (*row*, that is, in countries rather than *i* and *j*). The subscripts of country j refer to whether the counterparty resident in *j* is unaffiliated, *u*, or affiliated, *a*. The unconsolidated foreign exposure of country *i* on *j*, denoted as θ_{ij}^{U}, is, instead, given by:

$$\theta_{ij}^{U} = CB_{j_u}^{i,i} + CB_{j_a}^{i,i} + CB_j^{row,i} \qquad (2)$$

For ease of notation, cross border positions of foreign banks resident in *i*, $CB_j^{row,i}$, are for now not differentiated on whether the position is vis-à-vis an affiliated or unaffiliated foreigner.

It can easily be noticed that the consolidated and the unconsolidated positions will coincide only in the unlikely case in which country *i* has neither resident foreign banks with cross-border positions on *j* nor active foreign-related offices in *j*.

2.1 Consolidated basis

The Country Exposure Lending Survey (CELS) in the E.16 statistical release of the Federal Reserves board[5] reports statistics on consolidated bi-lateral *cross-border claims* of US banks. Table 1 reports cross-border claims, that is $CB_{j_u}^{i,i} + CB_{j_u}^{i,row}$, for the top 20 counterparty countries on both an immediate risk (IR) and ultimate (UR) basis. In the former case, claims are due from the country where the borrower resides, while in the latter, claims are due from the country of residence of the ultimate obligor, that is, the guarantor or the head office of the booking branch. Cross border claims are booked at any worldwide office so that $CB_{j_u}^{i,i}$ *and* $CB_{j_u}^{i,row}$ cannot be separately identified as well as the different locations of foreign-related offices.

It is important to note that even if interoffice claims are not explicitly accounted for by cross-border claims the final use of this debt is, at least in part, implicitly accounted for by the statistics when measured on a UR basis. For instance, let's assume that a US bank has an interoffice claim on its Japanese office. This is not accounted for in θ_{ij}^{C}. However, the Japanese office can employ the borrowed money to issue claims either on local residents or on foreign borrowers. In the former case, the claim will be captured by $local_j^{i,j}$, while in the latter it will show up in $CB_{k_u}^{i,row}$ where *k* is a third country other than *i* and *j*. If, however, the interoffice lending from the parent office is aimed to

[5] This data is reported to the BIS for CBS publication.

make up for difficulties of the foreign-office to rollover debts in the host country in the eventual case of disruption in foreign funding markets this claim does not show up in consolidated cross-border claims.

The difference between claims due from foreigners by location of residence on an UR basis and on an IR basis reveals that the Cayman Island is the largest country acting as intermediary borrower and the UK is the country that uses more third-countries intermediaries to borrow from US banks. Indeed, claims due to counterparties residing in the Cayman Islands are the largest on an IR basis, falling by almost 40% on an UR basis. This reflects the fact that although most of cross-border consolidated claims of US banks are due from counterparty located in this offshore location, an important part of this claims are just intermediated there. The still high value of cross-border claims on an UR basis on Cayman Islands is due to the high presence of investment funds (about 9000 in 2010) which are regulated within the domestic jurisdiction. For counterparties such as the UK, and Japan, on the other hand, cross-border claims on IR basis are lower than those on an UR basis, implying that those countries borrow partly from the US via third-countries intermediation. For the case of the UK, in particular, $124bn only are due directly from UK residents and as much as $110bn are due from the UK via counterparties located in third countries. Cross-border claims on an IR and UR basis are very close for counterparties such as France, implying that claims are mostly directly due to the US without third-country intermediation.

The main limitation of consolidated banking statistics for the US is that data on bi-lateral *cross-border liabilities* is unavailable, preventing to calculate the debt positions for each counterparty country and to assess some important risks arising from international borrowing, such as liquidity risk. At best, for consolidated data an approximate picture can be given by looking at cross-border claims of reporting countries vis-à-vis the US on an UR basis available from the BIS Consolidated Banking Statistics (CBS). This approach is rather incomplete since the liabilities are those of all US resident sectors (i.e. not only banks) to foreign unaffiliated banks by nationality (all worldwide branches) and excludes non-reporting countries. From Table 2 it can be seen that the ultimate lenders to US residents among BIS reporting countries are Japanese and British banks. Under the assumption that lending to the US private sector happens primarily via local positions booked by US-based branches, it can be stated that most of these claims of foreign banks' are due from US (unrelated) banks and official institutions (that is, the general government sector, central bank sector and international organizations). On a consolidated UR basis, cross-border liabilities of the US vis-à-vis foreign banks are by far much larger than the cross-border claims that US banks have vis-à-vis foreign countries. For the case of the UK, for instance, cross-border claims of US banks vis-à-vis UK residents amount $234bn while the cross-border liabilities of US vis-à-vis UK banks located worldwide amount to $1081bn. This evidence suggests that knowing the geography of international banking balance sheets linkages of US banks occurring via liabilities is of crucial importance since their magnitude is likely to be much more important than that of claims.

Lastly, banks' international balance sheet linkages, when measured on a consolidated basis, occur also via positions that foreign offices have vis-à-vis the residents of the countries where they are located, as denoted by $local_j^{i,j}$ in (1). The CELS provides data on claims on local residents of the affiliates of US banks by country of location. As shown in the second column of Table 3, foreign offices in UK have the largest claims vis-à-vis host country residents, amounting to a total of $413bn, of which almost 60% are in sterling. Data on liabilities on local residents is partly available: the CELS provide only statistics on total liabilities of foreign offices by country of location not redeemable outside the country and due to creditors residing anywhere, i.e. it is unknown how much is due to local residents. As shown in the right-hand side of Table 3, foreign offices in UK have the largest liabilities payable in the host country, amounting to over $1 trillion out of which only one-fifth is in local currency. In summary, information on foreign offices assets and liabilities provided by the CELS can be summarised in Figure 1 which shows a reconstruction of the balance sheet of foreign offices located in any given country *j* where the variables in bold are available in the CELS on an aggregated basis for each country in which foreign offices of US banks are located.

Unfortunately, the available variables prevent to assess the size of the balance sheet of foreign offices of US banks by location. Clearly, low claims on residents and payable liabilities in the host country do not mean that the activities of foreign offices of US banks located in *j* are negligible. For instance, banks located in Offshore Financial Centers (OFC) are mainly branches or subsidiaries of global banks with large sizes[6]. These offices have very little claims on local residents and limited liabilities payable in host countries, whereas, they have large claims on non-affiliated and non-local residents and liabilities payable abroad[7]. In countries such as the UK, foreign offices are active players both on local and international financial markets. Most notably, mostly all the liabilities that they undertake locally are not denominated in the local currency and are redirected abroad: only 38% of debt raised in the UK becomes claim on UK residents. At the same time, US banks have an important presence in the UK with the highest value ($413bn) of claims on host country residents among all other foreign locations.

2.1.1 The importance of the funding structure of foreign affiliates

The preceding section has identified the gaps within the CELS especially concerning the balance sheet statistics collected at the foreign-office. The CGFS ((CGFS, 2012), p.5) recognises that the importance of the funding structure of foreign offices: "*Banks' main funding, risk-taking and capital allocation decisions are typically made at the group level. But office-level data are a useful complement, as funding problems often first develop on banks' local balance sheets and because it may not be easy to transfer resources between offices, particularly during periods of financial*

[6] In Cayman Island, for instance, at the beginning of 2013, 63% of banks were foreign branches and 27% subsidiaries, mostly of North American and European banks (CIMA).

[7] As well as in structured finance and off balance sheet activities (i.e. via structured investment vehicles and conduits)

market stress. Importantly, the CGFS's Stage 1 enhancements will facilitate monitoring of these funding vulnerabilities both at a consolidated global level and at an office location level. Moreover, additional data elements will be added in the Stage 2 enhancements to further facilitate the analysis of funding risks". However, the report does not specify whether some the full balance sheet of foreign offices by location country will be disclosed by the reporting institutions.

It is here argued that knowing the funding pattern of foreign offices allows to better assess the degree of exposure due to local claims as these latter crucially depend on the funding structure of foreign offices. Figure 5 reports a stylized balance sheet foreign branches of banks with nationality *i* aggregated by country of location. Let's consider the case in which we are interested in investigating the extent of transmission of a shock originating in a foreign country *j*. In the occurrence of a local recession in *j*, there is an adverse effect on the value of local claims as well as on local liquidity availability, decreasing the debt raised from offices located there. If these latter have large local claims on *j*, then, the CELS and the CBS suggest that important spillovers from *j* to *i.* However, knowing the liabilities composition of the foreign offices can help better assess the degree of exposure on country *j*. Indeed, if local claims are financed with debt raised from domestic residents, then, a local deleveraging might occur in which the size of the balance sheet of foreign offices will be reduced. Even if this effect is reflected in the aggregated consolidated balance sheet of the global banks, the parent office is less affected by the foreign shock. In other words, the degree of spillovers on the parent balance sheet is smaller than what predicted by the CBS as parent banks are not directly involved in financing local claims. On the contrary, if banks in *i* have large cross-border claims on *j*, which also captured by the CBS, then the degree of shock spillover might be important as these are direct positions taken on country j. If local claims are, instead, financed with liquidity raised abroad from unrelated foreigners, then, foreign offices might increase the interdependence between local and global conditions. Thus, actual exposure of parent offices on *j* might be overestimated as shock transmissions to the parent is limited as global conditions affect substantially the lending strategy and funding structure of the foreign office. Lastly, financing local claims with interoffice borrowings creates direct linkages between countries *j* and *i* as parent offices take semi-direct positions which are intermediated by the affiliates in *j*. Shocks will be expected to be transmitted mutually between the countries, similarly as for cross-border claims.

Clearly, this stylized example is over simplified because funding sources are interchangeable and the assets and liabilities management of foreign offices can be re-adjusted and the parent that can centrally manage liquidity and capital, regardless of the liabilities structure of the foreign office. However, it does provide a rationale for arguing that the CELS and the CBS should report bilateral the following balance sheet statistic of foreign-related offices: gross interoffice assets and liabilities; liabilities due to locals; and liabilities due to third-country unaffiliated foreigners.

2.2 Unconsolidated basis

Bilateral unconsolidated assets and liabilities by counterparty country for US banks are available from the Treasury International Capital System (TICS) with some degree of granularity (e.g. by sector and type of security). Coherent to the balance of payment residency principle, the TICS collects bilateral unconsolidated positions statistics on all US resident banks, that is, including branches of foreign banks residing in the US, vis-à-vis all foreigners, including related-offices. These statistics, based on a residency basis principle, cannot allow drawing an accurate mapping on linkages arising from cross-border positions, since they include the activities of foreign banks operating in the US, whose financial assets holdings reach almost 17% of those of US Chartered banks (Figure 2 reports the breakdown of the nationality of foreign offices residing in the US). The main advantage of the TICS data is, however, that it provides bilateral statistics on liabilities by counterparty country, which are unavailable elsewhere. Table 4 compares the gross value of consolidated cross border claims on an IR basis with unconsolidated cross-border claims. It can be noticed that a certain pattern arises: all euro-area countries have unconsolidated cross-border claims on US resident banks that exceed the consolidated ones. Following the notations reported in (1) and (2), it can be written that for these countries it holds the following:

$$CB_{j_u}^{i,row} > CB_{j_a}^{i,i} + CB_{j}^{row,i} \qquad (3)$$

That is, claims of offices of US national banks that reside abroad on residents in euro area countries are larger than the claims that all US resident banks have on residents in these countries, notwithstanding the important presence of European banks in the US (Figure 1). This evidence implies that US banks have a preference in lending to unrelated residents in euro area countries both via cross-border lending and via their offices located in third-countries.

On the other hand, US resident banks have unconsolidated cross-border claims vis-à-vis countries such as Cayman Islands, the UK and Japan which are far larger than the unconsolidated ones. In this case:

$$CB_{j_u}^{i,row} < CB_{j_a}^{i,i} + CB_{j}^{row,i} \qquad (4)$$

This evidence points to relative more important gross lending of US resident banks to residents of these countries and to their related offices residing there. As showed in Figure 1, banks headquartered in the UK and Japan have a large share of offices in the US; part of the unconsolidated lending of foreign banks residing in the US is, thus, due from their related offices residing at home.

Table 5 shows the gross value of cross-border liabilities by counterparty country, available from the TICS. Again, the Cayman Island and the UK are the top countries which have the largest positions vis-à-vis the US. In particular, US resident banks have liabilities due to the Cayman Islands and the UK which amount to over $1.3tr and $0.9tr respectively. A closer look at the TICS statistics reveals that foreign-related offices (residing worldwide) are the largest foreign counterparty of banks residing in the US. As shown in Figure 3A, US banks' claims on own foreign offices, in particular,

constitute more than 60% of cross-border dollar claims on all foreigners since late 1990s. On the liability side (Figure 3B), the share of liabilities due to foreign-related offices is slightly lower, i.e. between 40% and 50% from late 1990s. In gross terms, however, this translates to $2.4 trillion of both banking claims and liabilities vis-à-vis foreign-related offices in the latest observed peak in August 2011[8].

In net terms, US-based banks have been primarily net lenders to their foreign-related offices. The net lending according to the TICS has reached the peak of almost $450 billion in mid-2006 (Figure 4). It is only during the crisis that US-resident banks have become net borrowers for a short-lived moment from their foreign-related offices in two instances: just before the collapse of Lehman Brothers and in 2010 with the start of the European Sovereign Debt crisis. Up to the outset of the crisis, net liabilities to foreign offices have had a pro-cyclical behavior; however, in the post-Lehman period they show very volatile flows.

While unconsolidated interoffice positions aggregated over foreign offices residing all over the world are available over a long-time span, bilateral outstanding interoffice positions have been discontinued in early 2003. Latest available data shows that more than half of assets and liabilities vis-à-vis foreign offices were due to/from those located in the Caribbean (mostly Cayman Islands), followed by those in Europe (mostly in the UK). This evidence is in line to the predictions made above regarding unconsolidated cross-border claims of UK and Cayman Island. Table 6 shows the percentage of unconsolidated claims and liabilities of US resident banks vis-à-vis related offices by the location of the latter as at the latest available data in December 2002[9]. In general it can be seen that interoffice transactions make up a large share of cross-border positions. Out of all cross-border claims on the Cayman Islands' residents, those on own foreign offices make up almost three-quarters of the total. On the other hand, liabilities to related offices are larger in gross terms but make up almost 65% of cross-border liabilities. In the UK more than half of cross-border assets and liabilities are vis-à-vis foreign related offices. Almost all the cross-border claims and liabilities vis-à-vis Bahamas, and to a lesser extent Switzerland, are on/to related offices located there.

Comparing the cross-border claims at the end of 2002 (Table 6) with those at the end of 2012 (Table 4, last column) we can notice that they have expanded massively in 10 years, although country-counterparty ranking is slightly affected. The relative growth in importance of the UK and Japan is particularly remarkable.

Bilateral net positions of foreign located offices of US-based banks by country vis-à-vis foreign related offices by location are provided by the CELS, reported in Table 7[10].

[8] Ref. cf. 1.

[9] Note that the cross-border claims data presented in Table 5 do not match to that in Table 1 because they refer to two different time periods.

[10] To note that this statistics reports all the intra-group position that the foreign office has with the related banking offices located anywhere else in the world, not only the US.

UK-located offices of US-based banks have the largest net lending vis-à-vis all its foreign offices, including the US ones amounting up to $210 Billions. These offices alone make up to more than one-third of the total net lending of foreign offices located everywhere in the world. On the other hand, the Cayman Island-located offices of US-based banks have the largest net borrowings vis-à-vis all its foreign offices, including the US ones, amounting up to $176 Billions.

3. CGFS new reporting framework

The unexpected worldwide contagion brought about by the great recession has stressed the need to fill the data gaps existing in the international banking statistics. The Committee on the Global Financial System (CGFS) at the BIS has then introduced important data enhancements in both consolidated and unconsolidated banking statistics, effective from the last quarter of 2013 (CGFS, 2012). The CGFS has identified three main areas that require reporting enhancements.

Concerning the LBS by residence, reporting banks are now broken down by type (i.e. domestic banks, foreign subsidiary, foreign branch) so that residency-based statistics can yield a better picture of the foreign operations of the different types of resident banks. The LBS by nationality has now a vis-à-vis country dimension to overcome the old reporting regime in which all counterparty countries were confounded. The main enhancement concerning the CBS involves the mandatory reporting of bilateral banking liabilities, other than a better segmentation of financial instruments. Overall, these reporting changes allow better monitoring vulnerabilities arising from foreign funding structures and better mapping the international balance sheet of global banks.

It is, however, worth noticing that most of the new collected data is not publicly available and the only bilateral positions currently available are still and only the CBS on both a immediate and ultimate risk basis.

The new reporting framework allows to identify the constituting items in both (1) and (2) so that a mapping from unconsolidated to unconsolidated and vice versa can be done.

On the liabilities side, the new reporting framework will allow identifying the constituting elements of unconsolidated liabilities, $\gamma_{i,j}^{U}$,using the above notation:

$$\gamma_{ij}^{U} = CB_{j_u}^{i,i} + CB_{j_a}^{i,i} + CB_{j}^{row,i} \qquad (3)$$

Where now CB refer to liabilities rather than claims.

On a consolidated basis, on the other hand, banks of a given nationality *i* have to report their total liabilities, broken down by instrument type and maturity, vis-à-vis a foreign country *j*. Total consolidated liabilities, γ_{ij}^{C}, can be written as:

$$\gamma_{ij}^{C} = CB_{j_u}^{i,i} + CB_{j_u}^{i,row} + local_{j}^{i,j} \qquad (4)$$

In the new reporting framework only γ_{ij}^{C} is collected, thus, the constituting elements in (4) are not explicitly reported. Using $CB_{j_u}^{i,i}$ in (3) and using the $CB_{j_u}^{i,row}$ from the LBS by nationality, however,

$local_j^{i,j}$ can be derived by substitution in (4), where $local_j^{i,j}$ constitutes the liabilities raised by foreign-related offices located in j.

The large steps taken by the CGFS are big advancements in better understanding the liquidity and credit risks in international banking from different points of views. In the medium to long term other improvements to the reporting framework are envisaged (CGFS, 2012, p. 7):

> *First, the Group agreed that a direct measurement of banks' maturity mismatches for their assets and liabilities (and by currency) is important for financial stability analysis. As discussed above, large maturity mismatches and the freeze-up of wholesale markets during the crisis created severe liquidity pressures, especially in US dollars, for many internationally-oriented banks. Moreover, the existing BIS data on banks' external funding risks are somewhat limited. However, this is a reasonably large change to the IBS and there was no clear consensus in the Group about how to proceed.*

4. Missing links

Nationality-based consolidated bilateral statistics of foreign positions of banks has the aim of evaluating the country risk of the banking sector with regard to a particular foreign country using foreign claims statistics. US residence-based unconsolidated bilateral banking statistics, on the other hand, provides a wider set of information of both assets and liabilities of the banking sector vis-à-vis a given foreign country with some degree of granularity by counterparty sector and instrument type. As to date, this dataset is ill-suited to evaluate other risks arising from banking international operations, such as funding, liquidity and systemic risks, because the counterparty foreign sector in a given county j is confounded among local, affiliated and other foreigners[11]. That is, referring to the notation in (2), it is not possible to disentangle the three components of $\theta_{ij}^U : CB_{j_u}^{i,i}, CB_{j_a}^{i,i} and\ CB_j^{row,i}$ as only θ_{ij}^U is reported. The CELS, on the other hand, confounds $CB_{j_u}^{i,i} and\ CB_{j_u}^{i,row}$ as reports statistics on $\theta_{ij}^C, CB_{j_u}^{i,i} + CB_{j_u}^{i,row} and\ local_j^{i,j}$.

This evidence implies that the two bilateral datasets cannot be mapped against each other and jointly used to evaluate a wider spectrum of risks arising from US banks' global operations.

In order to overcome this data incompatibility, the banking statistics contained in the CELS and the TICS would need to undergo some minor amendments as far as foreign claims are concerned. Most notably, the CELS should report cross-border claims of US offices located in third countries (i.e. neither in the US or in country j) on country j, that is, $CB_{j_u}^{i,row}$, so that $CB_{j_u}^{i,i}$ can be derived as follows:

$$CB_{j_u}^{i,i} = \theta_{ij}^C - (CB_{j_u}^{i,row} + local_j^{i,j}) \qquad (5)$$

[11] Also, it is not possible to disentangle between domestic and foreign resident banks.

Otherwise, $CB_{j_u}^{i,i}$ could be reported directly, so that $CB_{j_u}^{i,row}$ could be derived in a similar fashion. $CB_{j_u}^{i,i}$ is the variable that allows to link the banking claims statistics contained in the CELS to that of the TICS, as from (2) it holds:

$$CB_{j_u}^{i,i} = \theta_{ij}^{U} - (CB_{j_a}^{i,i} + CB_{j}^{row,i}) \quad (6)$$

$CB_{j}^{row,i}$ can be written as:

$$CB_{j}^{row,i} = CB_{j_a}^{row,i} + CB_{j_u}^{row,i} \quad (7)$$

That is, claims of foreign banks residents in the US can be vis-à-vis their affiliated offices ($CB_{j_a}^{row,i}$) or unaffiliated debtors ($CB_{j_u}^{row,i}$) located in j. It can then be written:

$$CB_{j_u}^{i,i} = \theta_{ij}^{U} - (CB_{j_a}^{i,i} + CB_{j_a}^{row,i} + CB_{j_u}^{row,i}) \quad (8)$$

The TICS dataset, however, should then supplement its banking assets statistics with data on any two of the following $CB_{j_a}^{i,i}, CB_{j_a}^{row,i} and\ CB_{j_u}^{row,i}$. Ideally, it should report data on $CB_{j_a}^{i,i}\ and\ CB_{j_a}^{row,i}$ as it was previously done up to end 2003, before the publication of $CB_{j_a}^{i,i} + CB_{j_a}^{row,i}$ was discontinued.

Moreover, residence-based statistics on cross-border assets vis-à-vis related offices could complement the CELS statistics, especially if gross inter-office assets and liabilities rather than net positions, were reported as argued in section 2.1.1. Consolidated gross inter-office liabilities of US foreign related offices located in j (IO_{ij}^{C}) can be written as:

$$IO_{ij}^{C} = CB_{j_a}^{i,i} + CB_{j_a}^{i,row} \quad (9)$$

While residency-based claims on related-offices, IO_{ij}^{U}, as contained in (8) are:

$$IO_{ij}^{U} = CB_{j_a}^{i,i} + CB_{j_a}^{row,i} \quad (10)$$

It follows that if (10) was available from the TICS statistics, with $CB_{j_a}^{i,i}\ and\ CB_{j_a}^{row,i}$ reported separately, then $CB_{j_a}^{i,i}$ could be plugged into (9) to obtain $CB_{j_a}^{i,row}$. Therefore, it can be concluded that a further link between the two dataset can be established via the disclosure of gross interoffice positions by foreign country. From the two datasets then be drawn a full picture of the international linkages created via internal capital markets, as the following variables can be obtained:

1. Interoffice claims of US banks resident in the US on offices located in j
2. Interoffice claims of US banks resident in third-countries on offices located in j
3. Interoffice claims of foreign banks residing in the US on offices located in j

Moreover this approach would allow to quantify the claims of foreign banks residing in the US on unaffiliated debtors located in j.

In summary, this paper suggests that improvements to the collection of bilateral banking statistics for the US should concern both the residency-based and nationality-based statistics. In particular, the CELS should report in addition to the existing data:

1. Gross interoffice assets and liabilities of offices located in j

2. Outstanding liabilities due to host country residents and other foreigners separately
3. Cross-border claims of US offices located in third countries on j or Cross-border claims of US offices located in US on j

On the other hand, the TICS statistics should be complemented with the following variables:

1. Gross claims and liabilities vis-à-vis related offices
2. Cross-border claims of US banks residing in the US on affiliates residing in j
3. Cross-border claims of foreign banks residing in the US on affiliates residing in j

5. Conclusion

This paper provides an overview of existing bilateral statistics of cross-border positions US banks both on a consolidated and an unconsolidated bases, stressing the importance of understanding the geographical dimension of banking operation. The discussion highlights the latest enhancements in international banking statistics reporting, as implemented by the CGFS, stressing possible areas of further improvements. Most notably, statistics should be segmented enough to allow mapping unconsolidated to consolidated data. This approach, however, requires close co-operation between the institutions in charge of collecting data on international banking operations of domestic banks on both an unconsolidated and a consolidated bases.

References

Cerutti, E., 2013. Banks' foreign credit exposures and borrowers' rollover risks: measurement, evolution and determinants. *IMF Working Paper,* Issue 13/09.

Cerutti, E., McGuire, P. M. & Claessens, S., 2011. Systemic risks in global banking; what avalable data can tell us and what more data are needed. *IMF Working Papers,* Issue 11/222.

Cetorelli, N. & Goldberg, L. S., 2011. Global banks and international shock transmission: evidence from the crisis. *IMF Economic Review,* 59(1), pp. 41-76.

Cetorelli, N. & Goldberg, L. S., 2012. Liquidity management of U.S. global banks: Internal capital markets in the great recession. *Journal of International Economics,* 88(2), pp. 299-311.

CGFS, C. o. G. F. S., 2012. *Improving the BIS international banking statistics,* BAsle: CGFS Papers N. 47.

Fender, I. & McGuire, P., 2010. European banks'US dollar funding pressure. *BIS Quarterly Review,* Issue June.

Fender, I. & Patrick, M., 2009. Bank structure, funding risk and the trasmission of shocks across countries: concepts and measuraments. *Bis Quarterly Review,* Issue September

Herrero, A. G. & Martinez Peira, M. S., 2007. The mix of international banks' foreign claims: Determinants and implications. *Journal of Banking and Finance,* pp. Vol. 31(6), 1613-1631.

Kubelec, C. & Sa, F., 2012. The Geographical composition of national exgternal balance sheets: 1980-2005. *International Journal of Central Banking,* 8(2), pp. 143-189.

Lane, P. R. & Milesi-Ferretti, G.-M., 2011. Cross-border Investment in small international financial centres. *International Finance,* 14(2), pp. 301-330.

McGuire, P., 2012. *Use of the BIS international banking statistics.* Basel, 2-3 May, FSB Data Gaps Workshop.

McGuire, P. & Wooldridge, P., 2005. The BIS consolidated banking statistics: structure, uses and recent enhancements. *BIS Quarterly Review,* Issue September, pp. 73-86.

Milesi-Ferretti, G.-M., Tamirisa, N. T. & Strobbe, F., 2010. Bilateral financial linkages and global imbalances; A view on the eve of the financial crisis. *IMF Working Papes,* Issue 10/257.

Tables

Table 1: Consolidated *cross-border claims* of US banks

Cross-border claims			
IR		**UR**	
Country	$Bn	Country	$Bn
CAYMAN ISLANDS	304	UNITED KINGDOM	234
FRANCE	190	FRANCE	202
GERMANY	134	CAYMAN ISLANDS	192
UNITED KINGDOM	124	GERMANY	158
NETHERLANDS	102	JAPAN	132
JAPAN	99	NETHERLANDS	98
CANADA	83	CANADA	88
IRELAND	52	BRAZIL	61
BRAZIL	52	AUSTRALIA	52
AUSTRALIA	52	INDIA	47
SPAIN	46	SWITZERLAND	46
SWITZERLAND	43	CHINA-MAINLAND	45
MEXICO	41	IRELAND	45
INDIA	41	SPAIN	44
ITALY	40	KOREA	37
CHINA-MAINLAND	38	ITALY	36
KOREA	36	MEXICO	36
LUXEMBOURG	35	LUXEMBOURG	29
OTHER LAT. AM. & CAR	33	SWEDEN	28
SWEDEN	27	RUSSIA	24

Source: FFIEC, Country Exposure Lending Survey, December 2012.

Table 2: Consolidated cross-border liabilities of US residents, UR basis

Liabilities of US residents on foreign banks by nationality	
as at December 2012	
Nationality	**$Bn**
Japanese	1 296
British	1 081
Canadian	720
Swiss	671
German	497
French	406
Spanish	204
Dutch	165
Australian	108
Swedish	103
Italian	31
Belgian	21
Austrian	11
Indian	9
Irish	7
Portuguese	5
Turkish	5
Greek	4
Chilean	2
Finish	0

Source: BIS Consolidated Banking Statistics, Table 9D.

Table 3: US Foreign offices positions

Foreign offices positions, $Bn				
	Claims on host countries residents		Total Liabilities payable in the host country	
Country	Total	% in local currency	Total	% in local currency
UNITED KINGDOM	413	59	1094	19
JAPAN	245	83	138	89
MEXICO	87	93	75	99
AUSTRALIA	69	93	60	95
CANADA	69	88	54	85
GERMANY	66	99	42	82
BRAZIL	60	76	29	98
KOREA	58	85	38	90
INDIA	33	80	11	83
SINGAPORE	33	76	62	33
SWITZERLAND	32	91	9	13
HONG KONG	32	67	56	32
CHINA-MAINLAND	30	81	28	77
CHINA-TAIWAN	25	73	22	42
NETHERLANDS	12	99	31	30
MALAYSIA	12	92	12	73
POLAND	11	90	10	83
RUSSIA	10	89	10	82
ITALY	7	95	13	90
LUXEMBOURG	4	90	41	61
CAYMAN ISLANDS	2	11	164	1
BELGIUM	2	97	49	26
IRELAND	2	66	27	26
BAHAMAS	0	78	68	0

Source: FFIEC, Country Exposure Lending Survey, December 2012. Claims are on an ultimate risk basis.

Table 4: Cross-border claims of US banks, consolidated vs. unconsolidated

Cross-border claims		
	Consolidated IR	**Unconsolidated**
Country	$Bn	$Bn
CAYMAN ISLANDS	304	772
FRANCE	190	83
GERMANY	134	65
UNITED KINGDOM	124	1194
NETHERLANDS	102	52
JAPAN	99	398
CANADA	83	274
IRELAND	52	15
BRAZIL	52	81
AUSTRALIA	52	123
SPAIN	46	10
SWITZERLAND	43	47
MEXICO	41	42
INDIA	41	23
ITALY	40	2
CHINA-MAINLAND	38	18

Source: FFIEC, Country Exposure Lending Survey and TICS US banking claims on foreigners. December 2012.

Table 5: Cross-border liabilities of US banks, residency principle

Cross-border liabilities	
on residence basis	
Country	$Bn
CAYMAN ISLANDS	1 307
UNITED KINGDOM	880
EURO AREA	573
BAHAMAS	210
JAPAN	179
CANADA	161
IRELAND	159
ASIAN OIL EXPORTERS	131
LUXEMBURG	128

Source: TIC Statistics. Data as at December 2012.

Table 6: Claims and liabilities on own foreign offices

Positions on own foreign offices, $Bn					
Cross-border claims			Cross-border liabilities		
Country	Total	% on own foreign offices	Country	Total	% to own foreign offices
CAYMAN ISLANDS	417	74	CAYMAN ISLANDS	631	64
UNITED KINGDOM	288	52	UNITED KINGDOM	203	62
SWITZERLAND	138	87	JAPAN	176	28
BAHAMAS	96	95	BAHAMAS	164	92
CANADA	94	54	SWITZERLAND	133	89
FRANC	77	51	LATIN AMERICA	110	6
JAPAN	60	64	CHANNEL ISLAND	48	94
LATIN AMERICA	59	14	FRANC	44	23

Source: TICS, December 2002.

Table 7: Net Intra-group positions

Net Intragroup positions of foreign offices of US-located banks vis-à-vis foreign-related offices, $Bn					
Country of the foreign office	Borrowings from own related offices in other countries	% total	Country of the foreign office	Lending to own related offices in other countries	% total
UNITED KINGDOM	205	34	CAYMAN ISLANDS	209	62
JAPAN	71	12	LUXEMBOURG	55	16
BELGIUM	30	5	BAHAMAS	43	13
SWITZERLAND	29	5	NETHERLANDS	21	6
GERMANY	27	5	OTHER ASIA	2	1
SINGAPORE	26	4	DENMARK	2	1
KOREA	23	4	OTHER NON G-10 DEV.	2	1
BRAZIL	23	4	GREECE	1	0
CANADA	21	4	BAHRAIN	1	0
MEXICO	19	3	NORWAY	0	0
AUSTRALIA	17	3	OTHER LAT. AM. & CAR	0	0
ITALY	14	2	MACAO	0	0
INDIA	12	2	SWEDEN	0	0
CHINA-TAIWAN	11	2	SLOVAKIA	0	0
HONG KONG	10	2	PORTUGAL	0	0
FRANCE	9	1	FINLAND	0	0
OTHER AFRICA	5	1	ISRAEL	0	0
CHINA-MAINLAND	5	1	CONGO (KINSHASA)	0	0
NETHERLAND ANTILLES	5	1	LEBANON	0	0
IRELAND	3	1	IVORY COAST	0	0
POLAND	3	1	PARAGUAY	0	0
BERMUDA	3	1	KUWAIT	0	0

Source: FFIEC, Country Exposure Lending Survey, December 2012.

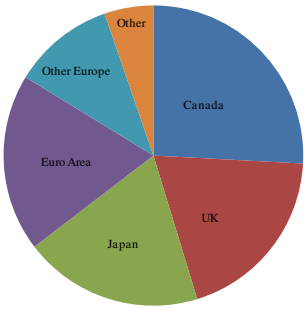
Figures

Figure 1. Balance sheet of foreign branches of US banks located in country *j*

ASSETS	LIABILITIES
Claims on local residents	**Payable in the host country**
Claims on non-affiliated and non-local residents	Payable abroad
	Net due to related offices

Notes: The balance sheet of foreign offices of US banks by country of location above has been constructed according to the CELS available variables. In bold the variables which are available in the Survey.

Figure 2: Total assets by nationality of US-based offices of foreign banks



Source: Federal Reserves Board.

Figure 3A: Dollar assets[12] of US resident banks, by counterparty sector

[12] US-located banks engage mainly in dollar positions, which account for over 90-95% of cross-border transactions (as at end 2012).

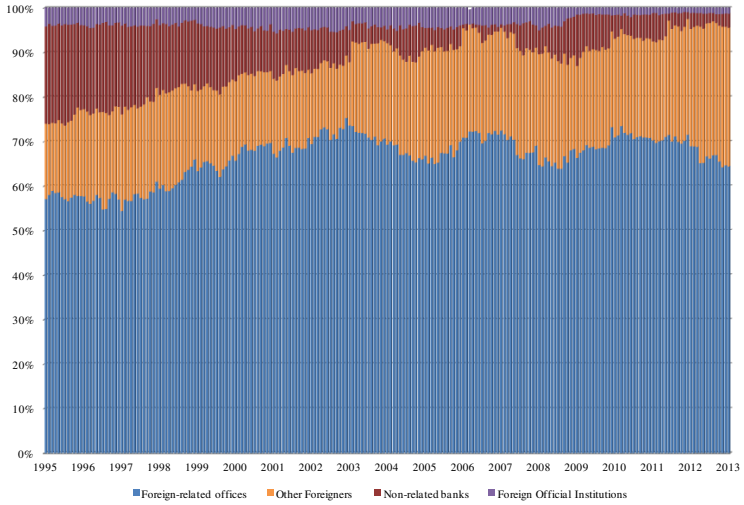
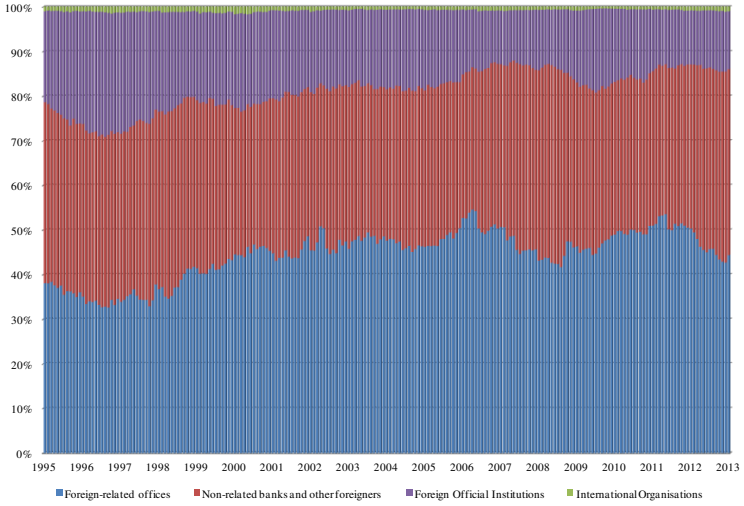


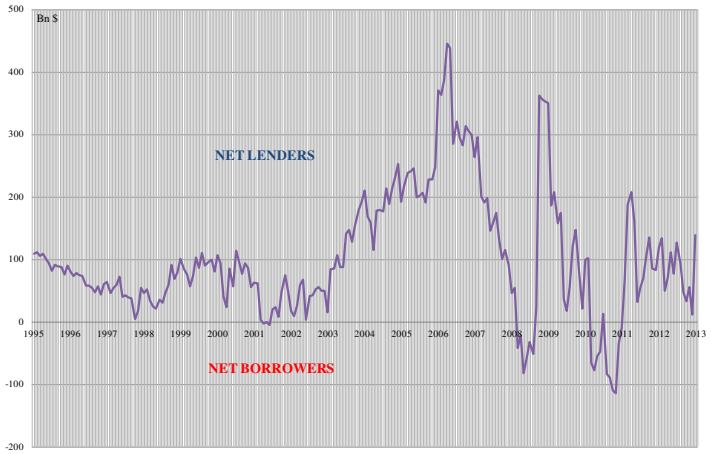
Figure 3B: Dollar liabilities of US resident banks, by counterparty sector



Source: Treasury International Capital System.

Notes: The table shows the external (cross-border) assets and liabilities of banks located in the US vis-à-vis foreign counterparties. The sample of reporting banks includes any bank office residing in US, regardless of the nationality. Dollar assets refer to the series 'Own Claims in Dollar', column 3 of the Table *Historical Claims on Foreigners by Type and Counterparty*.

Figure 4: Net Interoffice accounts of US-based banks



Source: Treasury International Capital System.

Notes: The table shows the difference between external (cross-border) dollar liabilities and assets of banks located in the US vis-à-vis their foreign related offices. A positive (negative) value means that US-based banks are net lenders (borrowers) versus their foreign-related offices.

Figure 5: Stylized balance sheet of a foreign branches located in country j

Assets	Liabilities
Local claims	Debt raised from domestic residents
Claims on foreigners	Debt raised locally from foreigners
Interoffice assets	Debt raised abroad from unaffiliated foreigners
	Interoffice liabilities