

THE BIS INTERNATIONAL BANKING STATISTICS: STRUCTURE
AND ANALYTICAL USE

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Abstract

This study provides an introductory overview of the international banking statistics (IBS) compiled and published by the Bank for International Settlements (BIS). These consist of the locational banking statistics (LBS) and the consolidated banking statistics (CBS). Both the LBS and the CBS offer specific advantages for the analysis of developments in global banking on an aggregate country basis. For example, the former are particularly suited for assessing trends in international interbank markets including interoffice positions of global banking groups, foreign currency exposures and historical breakdowns of external positions by type of instrument. The latter allow for the analysis of global banks' consolidated positions (on a country aggregated basis), in line with consolidation practices adopted in accounting and by banking supervisors, and offer historical data on maturities of external positions. It is crucial to be aware of the comparative advantages (and disadvantages) of the LBS and CBS when conducting investigations with the BIS IBS; however, they are not always clear at first sight. Hence, when starting to use these statistics, initially they may look like a big puzzle; one has to know where to find the specific pieces and how they fit together. The aim of this article is to demonstrate how this puzzle can be solved for analyses of specific dimensions of global banking.

1 Introduction

Global banking has expanded markedly over the last 30 years, both in terms of cross-border capital flows and entry in local markets overseas. This process occurred in parallel with the globalization of international trade and integration of international financial markets, while changes in the banking regulatory environment both in home and host countries played an important role as well [CGFS (2010c), Merck *et al.* (2012), Gambacorta and Van Rixtel (2013)]. The rapid advance of global banking had important repercussions for funding and liquidity management at the institutions involved, resulting in the emergence of new bank business models operating on a global scale.

The international banking statistics (IBS) compiled and published by the Bank for International Settlements (BIS) are arguably the best source available to monitor and analyze developments in global banking, using uniform and consistent statistical concepts of international banking activity across countries.¹ These statistics are reported at an aggregated country rather than individual bank level, in order to maintain the confidentiality of the individual banks that report the statistics to their respective central bank. The BIS produces the IBS under the auspices of the Committee on the Global Financial System (CGFS) and in close cooperation with central banks worldwide which provide the BIS with these data. These statistics have been collected on a voluntarily basis since the 1960s to monitor the growing international activities of banks [CGFS (2012)]. Important revisions were prompted by turmoil hitting developing countries in the 1970s and 1980s and by the Asian crisis of 1997-1998. More recently, the global financial crisis of 2007-2009 that affected advanced economies in particular led to important enhancements in order to improve the coverage of the IBS. These enhancements have been phased in over several

¹ These statistics have seen increasing use in recent years in academic investigations, for example on the determinants of the international diversification of banks and cross-border banking flows [Buch (2003), Papaioannou (2009), Blank and Buch (2010), Houston *et al.* (2012), Ongena *et al.* (2013), Shirota (2013), Reinhardt and Riddiough (2014)], banks' international portfolio and funding adjustments and global liquidity and monetary policy spillovers in the context of the 2007-2009 global financial crisis [Cetorelli and Goldberg (2011), Bruno and Shin (2015a and 2015b), Cerutti *et al.* (2015a and 2015b)], and the impact of the European Monetary Union on financial integration [Spiegel (2009)]. The IBS are also widely used in press coverage of global banking, mostly to describe very general tendencies.

years, starting from end-June 2012 [Avdjiev *et al.* (2015)] and most importantly include the reporting of domestic positions, which until then were not covered. The number of reporting countries has increased steadily over time, although several important countries do not participate yet, including Argentina, China, Poland, Russia and Saudi Arabia.²

This article provides a comprehensive overview of the structure of the BIS IBS and provides examples of their analytical use. Section 2 provides an explanation of the two main sets of data available in the IBS, which are the locational banking statistics (LBS) and the consolidated banking statistics (CBS). We discuss in detail their comparative advantages and disadvantages in analyzing developments in global banking. As these differences may be best understood by concrete examples, we assess various dimensions of global banking in Section 3 by using the actual data available in the two sets of statistics. These include the “big picture” trends in global banking (section 3.1), global banking business models (section 3.2), foreign currency exposures of sectors and countries (section 3.3) and the impact of the 2010-2012 euro area financial crisis on global banking (section 3.4). Section 4 summarizes the recent data enhancements and concludes.

2 Methodology and structure of the BIS international banking statistics

The BIS compiles and publishes two quarterly sets of statistics on international banking activity: The locational banking statistics (LBS) and the consolidated banking statistics (CBS) [BIS (2013a, 2015a and 2015b)]. In this section, we shall provide the main characteristics of these statistics and highlight their differences, which are important in order to understand their respective comparative advantages for analysis of particular aspects of global banking.

Prior to this comparative overview, we want to introduce the main methodological concepts that are used in the BIS international banking statistics (IBS). First, positions (both assets and liabilities) in the IBS are reported according to different *counterparties*. These can be a country (for example all claims of banks in Spain on the counterparty country “US”), a sector such as banks (for example all claims of banks in Spain on the counterparty sector “all other reporting banks in the world”) and a *sector of a country* (for example, all claims of banks in Spain on the counterparty “banks in the US”).

Second, data on external positions are reported following *different types of positions*. *Cross-border* positions include asset or liability positions vis-à-vis various counterparties located in a country other than the country of residence of the reporting banking office (for example, lending by banks in Spain to banks in the US would be reported as cross-border claims of banks in Spain vis-à-vis the US banking sector). *Local positions in foreign currencies* include asset or liability positions with a counterparty located in the same country as the banking office and which are denominated in a currency other than the domestic currency of the country (for example, lending by the offices of Spanish banks in the US denominated in euros to banks in the US). *Cross-border positions* and *local positions in foreign currencies* combined are reported as *international positions*. *Local positions in local currencies* include asset or liability positions with a counterparty located in the same country as the banking office and which are denominated in the domestic currency of the country (for example, lending by the offices of Spanish banks in the US denominated in US dollars to banks in the US). The *international positions* combined with the *local positions in local currencies* are reported as *foreign positions*. An overview of the various positions is presented in Table 1.

² In other words, no data are available for the external (i.e., foreign, international, cross-border) exposures of the banking systems of these countries. In contrast, exposures of the banking systems of reporting countries to Argentina, China, Poland, Russia, Saudi Arabia and other non-reporting countries are available (for example German banks on Argentina, US banks on China, etc.).

Cross-border positions

+ Local positions in foreign currencies

= International positions

+ Local positions in domestic currencies

= Foreign positions

2.1 LOCATIONAL BANKING STATISTICS (LBS)

The LBS measure claims and liabilities, including inter-office positions, of banking offices resident in reporting countries. Their coverage is the broadest of the statistics available in the IBS, capturing positions of banking offices located in 44 reporting countries on counterparties resident in each of over 200 countries [Avdjiev *et al.* (2015)]. The LBS are compiled following principles that are consistent with balance of payments statistics, meaning that their compilation is based on the residence of entities. Moreover, the data are not adjusted for intra-group positions between offices of the same banking group. In other words, the data are *not consolidated*. Table 2 provides a summary of the main characteristics of the LBS.

The LBS are particularly useful to analyze the *geography* of international banking, as they show the country of residence and the sector of the reporting banks' counterparties and the residence and nationality of the reporting banks. Hence, these statistics are best suited for analyzing interconnections in global banking at the country level, including the transmission of shocks across countries via globally operating banks [BIS (2015a), Bernanke *et al.* (2011) and Bruno and Shin (2015a and 2015b)]. We use these statistics to analyze changes in cross-border claims of all reporting banks vis-à-vis the country of residence of their counterparties in Chart 3.

A major advantage of the LBS is that they include data on the *currency denomination* of positions. This currency breakdown allows for an analysis of various dimensions of global

MAIN CHARACTERISTICS OF BIS IBS (a)

TABLE 2

	Reporting countries	Consolidated	Type of position	Residence of reporting bank	Nationality of reporting bank	Residence of counterparty	Currency of denomination	Instrument	Maturity
Locational banking statistics	44	No	Claims and liabilities	Yes			Yes		No*
Data by residence					No	Yes		Yes	
Historical data by nationality (b)					Yes	No		No	
Enhanced data by nationality (c)					Yes	Yes		No	
Consolidated banking statistics (d)		Yes	Claims*	No	Yes	Yes	No (e)	No*	
Immediate counterparty basis	31								Yes
Ultimate risk basis	25								

SOURCE: Modified from Avdjiev *et al.* (2015).

NOTE: * Some enhancements have been implemented in recent years for these dimensions, starting from end-June 2012 for the LBS and end-2013 for the CBS, and at a different pace by each reporting authority.

Hence, the new data are incomplete in the initial periods and cannot be used for historical analysis before Q2 2012 respectively Q4 2013. Therefore, we do not include the enhancements in this simplified overview table. See Avdjiev *et al.* (2015) and section 4 for more specific information on the enhancements.

- a Yes indicates breakdowns that are jointly and synchronously reported.
- b Reported prior to end-June 2012.
- c Reported since end-June 2012.
- d Details reported for claims and other potential exposures.
- e Except local positions of foreign affiliates denominated in local currencies.

banking, for example the importance of the major international currencies in cross-border credit flows, currency exposures of reporting banking systems and countries, and the role of European banks in US dollar intermediation outside the US [McGuire and Von Peter (2009), BIS (2015a), Shin (2012)]. It also allows for an analysis of currency mismatches, for example between assets and liabilities of reporting banking systems. We shall use the data on currency breakdowns in the LBS to analyze changes in the currency denomination of cross-border positions (Chart 7) and the US dollar exposures of major emerging market economies (Chart 8) in section 3.3. Another advantage of the currency breakdown available in the LBS is that it enables the BIS to calculate exchange rate adjusted changes in the amounts outstanding of the various positions covered. This is important, as the international banking statistics are reported in US dollars. Hence, the value in US dollars of positions denominated in non-dollar currencies will be affected by changes of the latter's exchange rates vis-à-vis the US dollar. For example, a given cross-border position denominated in euros will increase in US dollar terms, when the euro appreciates against the US dollar. The exchange rate adjusted flows correct for these valuation effects and hence allow for much better interpretations of developments. We shall use exchange rate adjusted data to analyze changes in cross-border positions in Charts 3, 6, 7 and 10.³

The LBS also include historical data on the non-consolidated positions of banks by their *nationality* (see Table 2), defined by the country where their headquarters is located. These statistics used to be rather limited, as the country of residence of the counterparty was not covered, but this shortcoming has been eliminated by recent data enhancements (see Table 2, in italics). The LBS by nationality data include breakdowns of interbank positions in interoffice positions (of the same banking group) and positions vis-à-vis other banks (or unrelated banks). Hence, they are particularly suited to analyze changes in the global funding of national banking systems, including their use of international interbank markets. We provide an example of this analysis in Chart 6 in section 3.2.

The LBS do not include historical coverage of a broad set of maturities of the various external positions (see Table 2). In contrast, this information is available in the consolidated banking statistics, which we discuss in the next section.

2.2 CONSOLIDATED BANKING STATISTICS

The BIS consolidated banking statistics (CBS) capture the worldwide consolidated positions of internationally active banking groups headquartered in reporting countries [BIS (2013a, 2015a and 2015b)]. Currently, banking groups from 31 countries report the CBS. These statistics are designed to analyze the exposure of internationally active banks of different nationalities to individual countries and sectors. Thus, banks are classified only by *nationality* [see Table 2; for example Spanish banks, i.e., banks with their headquarters (HQ) in Spain]; consolidated data by the residence of the banks (all banks in Spain) are not available. The global coverage of banks' affiliates in the CBS makes them more complete than the LBS, which capture only the positions of banks' affiliates in LBS-reporting countries. Consequently, the CBS offer a more useful measure of the total risk exposure of a reporting banking system than do the LBS [Avdjiev (2010)]. The consolidated data include the claims of reporting banks' foreign affiliates but exclude intragroup positions, similarly to the consolidation approach followed by banking supervisors and in line with international accounting practices. Hence, the CBS are particularly useful to compare the global banking business models adopted by different national banking systems. We provide examples of this analysis in section 3.2 (Charts 4 and 5).

³ These exchange rate adjusted changes are also adjusted for breaks in the series arising from changes in methodology, reporting practices or the population of reporting banks (for example impact of cross-border mergers and acquisitions involving reporting banks).

Unlike the LBS, the CBS do not provide currency breakdowns (see Table 2) and thus the BIS is not able to calculate exchange-rate adjusted quarterly changes. Comparisons of amounts outstanding between periods are thus affected by movements in exchange rates [BIS (2015b)]. The CBS are compiled in two different ways: by *immediate counterparty* and by *ultimate risk*. The immediate counterparty is the entity with whom the bank contracts to lend or borrow. Ultimate risk takes account of instruments that mitigate credit risk, i.e., that transfer the bank's credit exposure from one counterparty to another, such as collateral, guarantees and credit protection bought.

It is beyond the scope of this article to go into the details of these two subsets of the CBS.⁴ At this juncture, it suffices to be aware that they serve different analytical purposes. The CBS on an *immediate counterparty basis* can be used to gauge the importance on a consolidated basis of national banking systems in global credit intermediation and to assess the dependence of borrowing countries on foreign bank creditors. Examples of the former are Chart 1 (section 3.1), while Chart 2 (section 3.1) and Charts 4 and 5 (section 3.2) cover the latter dimension. Furthermore, the CBS on an immediate counterparty basis are the only statistics in the BIS IBS providing historical data on *maturities* of claims (see Table 2).

The CBS on an *ultimate risk basis* are widely used to gauge reporting banks' exposures to different countries and sectors. An advantage of these statistics is that they provide historical data on reporting banking systems' exposures to the *public sector*. Consequently, these statistics gained widespread attention in the context of the euro area sovereign debt crisis of 2010-2012, as they could be used to measure the development of banking systems' exposures to specific euro area sovereigns. An example is provided in Chart 9 in section 3.4.

3 The analytical use of the BIS international banking statistics

3.1 TRENDS IN GLOBAL BANKING

The CBS are particularly useful to analyze *major trends in global banking*, especially with respect to the contribution of *national banking systems* to global credit intermediation, as these statistics are structured by the nationality of reporting banks and reported on a worldwide consolidated basis, i.e. excluding positions between offices of the same banking group. One of the most striking trends in global banking in recent years has been the retreat of banks headquartered in the euro area. On a consolidated basis, their share in the total amount outstanding of BIS reporting banks' foreign claims⁵ fell to a historical low of 36% in the first quarter of 2015, from the record high of 52% recorded at the end of 2007 (Chart 1). Euro area banks were first hit by the 2007-2009 global financial crisis, which acted as a catalyst for major adjustments in business and funding models, resulting in significant deleveraging and reduction of international exposures. These adjustments were in many cases reinforced by the subsequent euro area financial crisis of 2010-2012. This crisis put increasing pressure on euro European banks to deleverage further, as access to short- and longer-term wholesale funding markets became strained and regulators imposed new capitalization targets [BIS (2012), Van Rixtel and Gasperini (2013)]. Markets in the euro area became segmented increasingly along national borders; in this environment, cross-border lending contracted more rapidly than domestic lending [Caruana and Van Rixtel (2012)].⁶ US and Japanese banks in particular, but also UK and other banks, have filled the gap left by the retreat of euro area banks.⁷

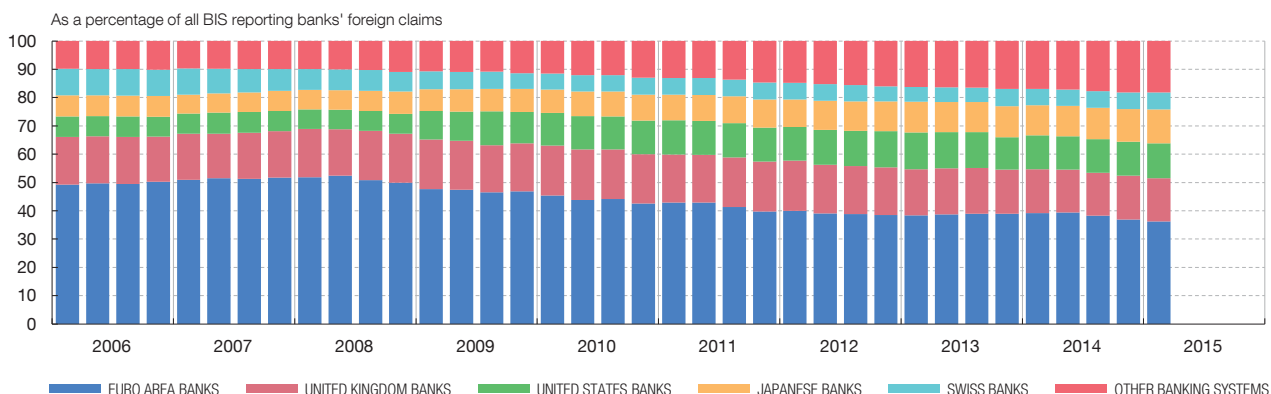
4 For more details see BIS (2013a).

5 Foreign claims comprise cross-border claims and local claims of banks' overseas offices in both local and foreign currencies.

6 For example, Avdjiev *et al.* (2012) show that euro area banks accounted for most of the contraction in cross-border credit in the second half of 2011, which was especially pronounced for emerging Europe. This decline was largely associated with the deteriorating financial soundness of euro area banks.

7 The renewed emergence of Japanese banks in global finance and their importance in the Asia-Pacific region are analyzed in Van Rixtel and Slee (2013) and McGuire and Van Rixtel (2012).

SHARE OF NATIONAL BANKING SYSTEMS IN FOREIGN CLAIMS (a)



SOURCE: BIS Consolidated Banking Statistics (Immediate borrower basis).

a Foreign claims are defined as the sum of cross-border claims and local claims in both local and foreign currencies.

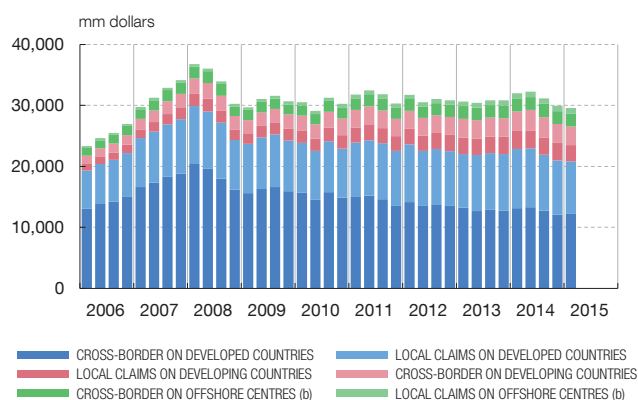
The structure of global banking can also be assessed from the perspective of the *borrowing or counterparty country* and by the breakdown of consolidated foreign claims on these countries in *cross-border* and *local positions*. The major trend here has been the steady decline in cross-border claims on developed economies after reaching a historical record high in Q1 2008, reflecting the severe impact of the global financial crisis (Chart 2, Panel A); the significance of this adjustment is even more pronounced when assessed in relative terms to GDP (Chart 2, Panel B). In contrast, local claims have remained much more stable. This different pattern between changes in cross-border and in local positions can be observed often and reflects different business strategies of globally active banks: Cross-border operations can be adjusted easily and fast from the bank's HQ or its offices in international financial centers, while the development of local operations in foreign countries requires long-term commitment to recuperate the high start-up costs. Hence, cross-border credit often plays the role of the adjustment vehicle.⁸ The relative importance of local versus cross-border positions is intrinsically linked to banks' business models, which will be discussed in section 3.2.

8 For an analysis of the role of cross-border funding in this respect see for example CGFS (2010a).

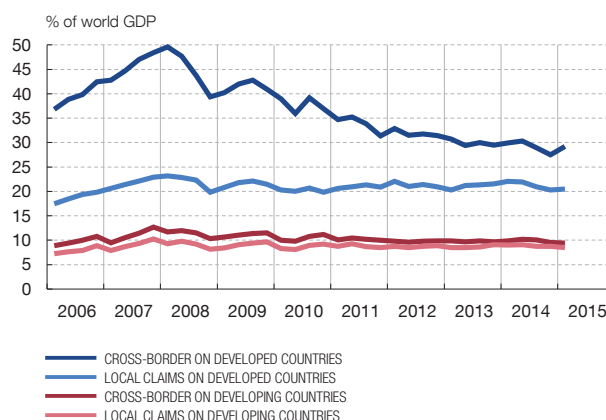
BREAKDOWN OF FOREIGN CLAIMS BY COUNTERPARTY COUNTRY (a)

CHART 2

A AMOUNT OUTSTANDING



B PERCENTAGE OF GDP

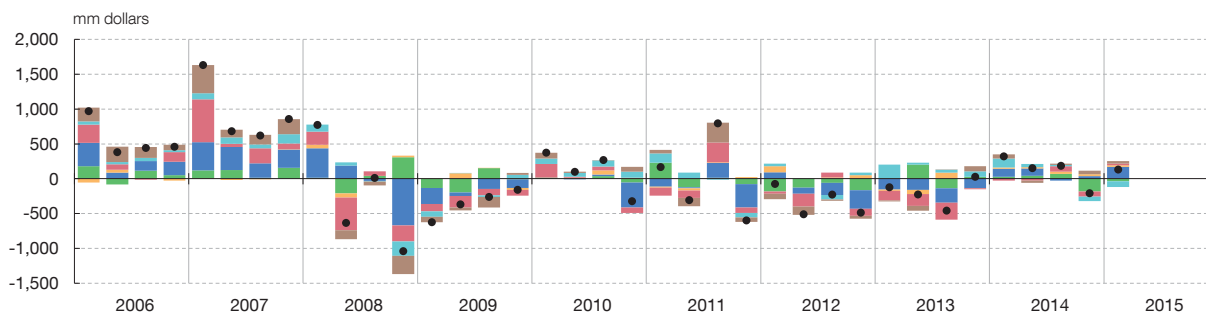


SOURCE: BIS Consolidated Banking Statistics (Immediate borrower basis).

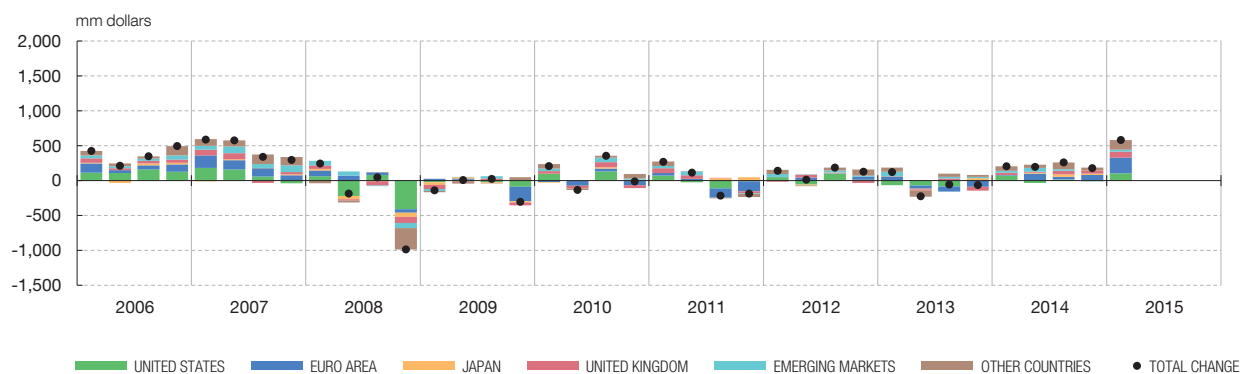
a Foreign claims are defined as the sum of cross-border claims and local claims in both local and foreign currencies.

b Countries with banking sectors dealing primarily with non-residents and/or in foreign currency on a scale out of proportion to the size of the host economy.

A BY RESIDENCE OF COUNTERPARTY, BANKS (b)



B BY RESIDENCE OF COUNTERPARTY, NON-BANKS



SOURCE: BIS Locational Banking Statistics by residence.

- a BIS reporting banks' cross-border claims include inter-office claims.
 b Includes claims unallocated by counterparty sector.

The non-consolidated LBS allow for a further analysis of the dynamics of the decline in cross-border claims. As these statistics include a breakdown of cross-border positions by currencies, *exchange rate adjusted changes* in these positions can be calculated. These exchange rate adjusted flows confirm the sharp decline in cross-border claims on developed economies and show that borrowers in the euro area were hit the most. *Banks* located in the euro area were particularly affected by the sharp contraction in international interbank activity (Chart 3, Panel A), while cross-border credit to euro area *non-bank* borrowers remained relatively unaffected (Chart 3, Panel B). The sharp decline in interbank credit to the euro area was the direct consequence of the 2007-2009 global financial crisis and the 2010-2012 euro area crisis. The latter crisis was driven particularly by adverse feedback effects between the weaknesses of certain sovereigns and banks, which disrupted bank funding markets severely, including cross-border funding. An important channel in the strong interaction between government finances and bank funding was the significant amount of sovereign debt on banks' balance sheets, which led to valuation losses and credit risk concerns when sovereign yields rose sharply [Caruana and Van Rixtel (2012)].

3.2 CHARACTERIZATION OF GLOBAL BANKING BUSINESS MODELS

Another area where the BIS IBS have become an indispensable tool of analysis is the development of *global banking business models* [McCauley *et al.* (2012), Gambacorta and Van Rixtel (2013)]. Some banks (including Spanish banks) follow the model of *multinational banking*, operating sizeable foreign branches and subsidiaries in multiple jurisdictions across the globe. In contrast, other banks operate directly cross-border from their headquarters in the home country or rely on inter-office transfers. Hence, these so-called *international banks* have limited local business activity in host countries.

Banks also differ in the degree to which they fund their operations locally in the host countries (*decentralized model*) or through internal capital markets from their main offices (*centralized model*).⁹ The decentralized model is characterized by a high degree of financial autonomy, in which every subsidiary raises financing under its own name and with its own credit rating. As a consequence, this model makes it easier for markets to accurately assign and price the risk involved in the funding; generally, the decentralized funding model displayed greater stability during the 2007-2009 global financial crisis than the centralized one. In fact, evidence suggests that since this crisis, globally operating banks have increased gradually funding through local sources in the foreign markets where they operate [CGFS (2010b)].

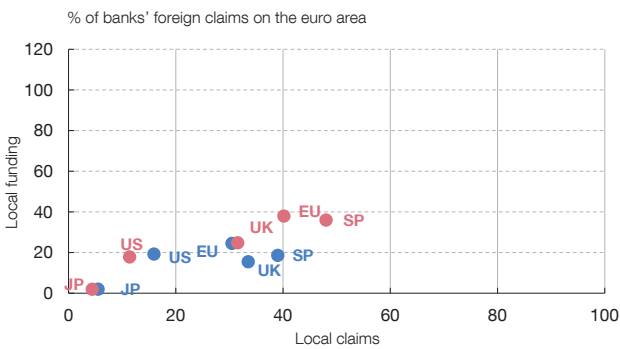
The CBS (on an immediate counterparty basis) allow for an analysis of different business models through the importance of *local positions*. Chart 4 compares the size of local claims (how much of the foreign lending is done on-site in the host country, x-axis) with

9 The latter markets are important funding mechanisms for large and globally active banks and played an important role in their international liquidity adjustments during the 2007-2009 global financial crisis [De Haas and Van Lelyveld (2010), Cetorelli and Goldberg (2012)].

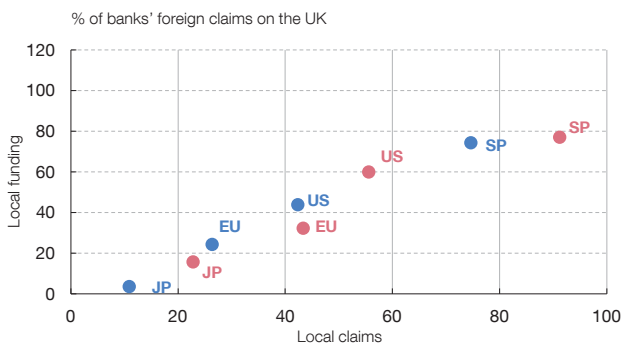
GLOBAL BANKING BUSINESS MODELS

CHART 4

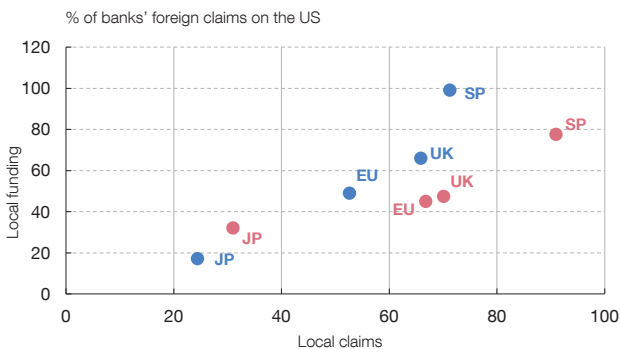
A EURO AREA (a) (b)



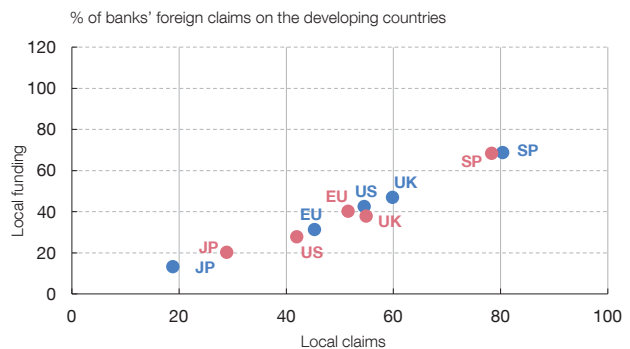
B UNITED KINGDOM (a)



C UNITED STATES (a)



D DEVELOPING COUNTRIES (a)



● 2008 Q1 ● 2015 Q2

SOURCE: BIS Consolidated Banking Statistics (Immediate borrower basis).

- a Foreign claims are defined as the sum of cross-border claims and local claims in both local and foreign currencies. Horizontal axis: Local claims are calculated as total claims extended by banks' foreign offices to residents of the host country, divided by their total foreign claims on the host country. Vertical axis: Local funding measures the degree of local funding (i.e., funding obtained in the host country) of local claims, expressed as percentage of total foreign claims. Bank are classified according to the nationality of their headquarters: UK = United Kingdom, JP = Japan, US = United States, EU = Euro area, SP = Spain.
- b In this chart EU represents activity of euro area banks in other euro area countries than those where they are headquartered.

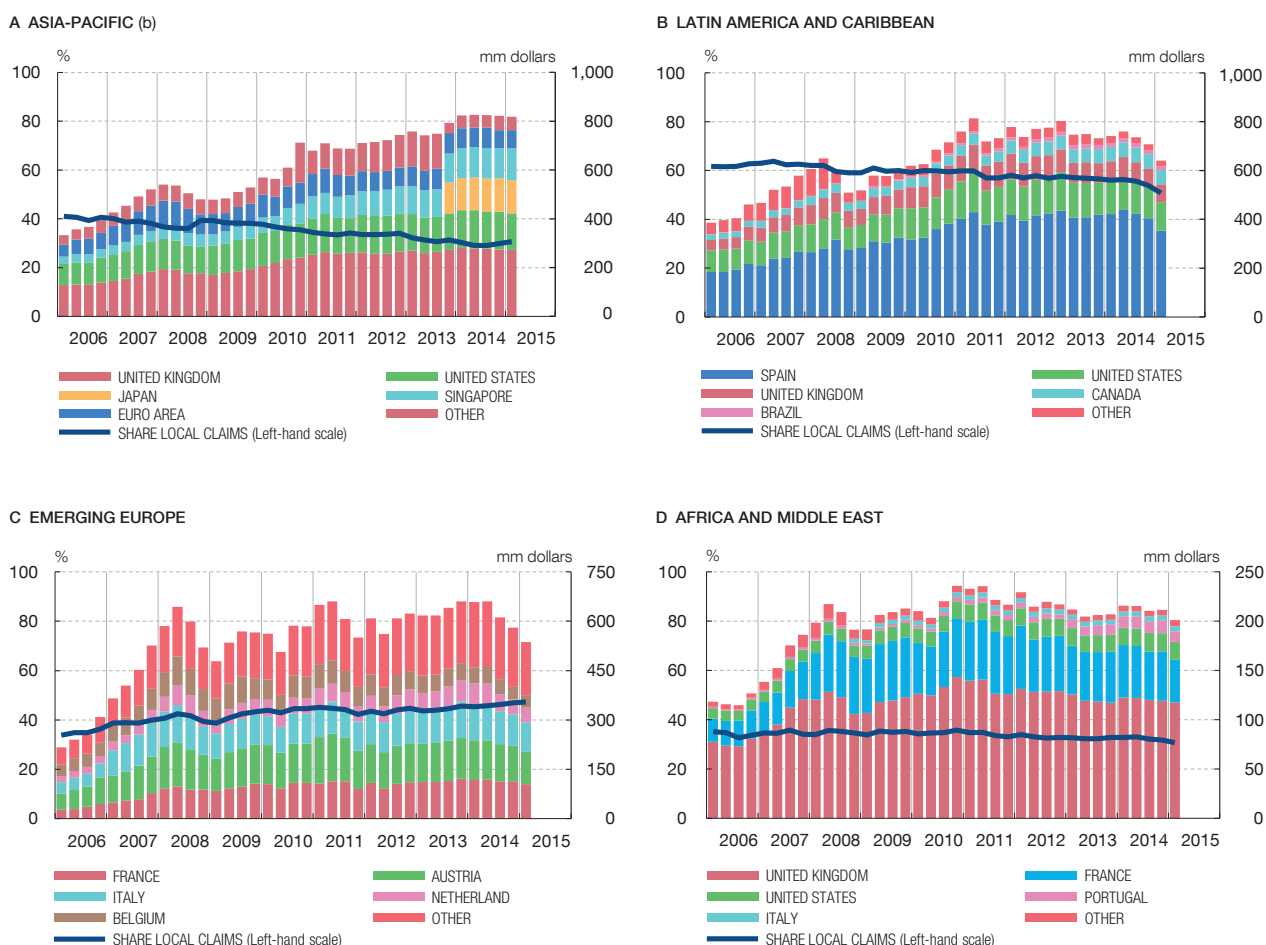
that of local funding (how much of these operations are funded locally, y-axis) for various home country banking systems vis-à-vis the euro area, the United Kingdom, the United States and emerging market economies.¹⁰ *Multinational banks with decentralized funding* in the host countries are concentrated in the top right-hand corners of the panels in Chart 4, as the shares of local claims and local funding as percentage of total foreign claims (= cross-border and local claims) are relatively high. Of the major banking systems, Spanish banks are the most pronounced exponent of the “*multinational/decentralized funding*” model, especially vis-à-vis the UK, US and emerging market economies (Panels B, C and D, respectively). Spanish banks conduct almost completely their foreign operations to these countries on a local basis, with just a minor part through cross-border operations. Other examples of this business model are the foreign operations of US banks vis-à-vis residents in the UK (Panel B) and those of euro area and UK banks vis-à-vis the US (Panel C) and vis-à-vis emerging market economies (Panel D). The importance of the multinational model and decentralized funding increased significantly from 2008 (blue dots) to 2015 (purple dots) in the UK, with the local operations (both lending and funding) of euro area, Spanish, US and Japanese banks all increasing (Panel B, shift towards top right-hand corner). Some of these changes may be explained by strategic responses to the 2007-2009 global financial crisis, such as acquisitions by foreign banks (i.e., banks headquartered abroad) of domestic banks that were bailed out by their governments.

In contrast, *international banks with centralized funding* concentrated at their HQ in the home country or in international financial centers, which rely more on cross-border lending and funding, are located in the bottom left-hand corners of the panels in Chart 4, such as Japanese banks (most pronounced vis-à-vis euro area residents, see Panel A).

The CBS can be used to investigate further the pattern of *local positions* on a consolidated basis (excluding inter-office positions). This is important information to assess credit risk exposures of national banking systems: While banks providing cross-border credit from their HQ in the home country carry the full credit risk of this exposure (in case this risk is not passed on through hedging to other entities), for credit provided through local subsidiaries overseas they carry only the risk commensurate with the size of their participation in the subsidiary.

Turning to exposures on developing countries, local claims on residents of these countries vary greatly from the perspective of the reporting banking systems. In the first quarter of 2015, Spanish banks provided the bulk of local credit in Latin America and the Caribbean (USD 354 bln or 55%), while UK banks were the largest local foreign lenders in Africa and the Middle East (USD 118 bln or 59%) (Chart 5 Panels B and D). The Asia-Pacific region and Emerging Europe displayed a more varied pattern in terms of foreign banks’ local activities, with the largest players holding smaller market shares (USD 273 bln or 33% for UK banks and USD 104 bln or 19% for French banks, respectively; Chart 5, Panels A and C). Banks headquartered in emerging markets have gained importance in local banking operations in countries of the same region [see also CGFS (2014)], such as Brazilian banks in Latin America and the Caribbean. Chart 5 also shows that local claims on Asia-Pacific as a percentage of total foreign claims on the region (= cross-border plus local claims) have declined steadily (blue line, top left-hand panel). This is related to the rise of China as the major recipient of foreign credit in the

¹⁰ Gambacorta and Van Rixtel (2013). For more details see Box 3 in this BIS working paper.



SOURCE: BIS Consolidated Banking Statistics (Immediate borrower basis).

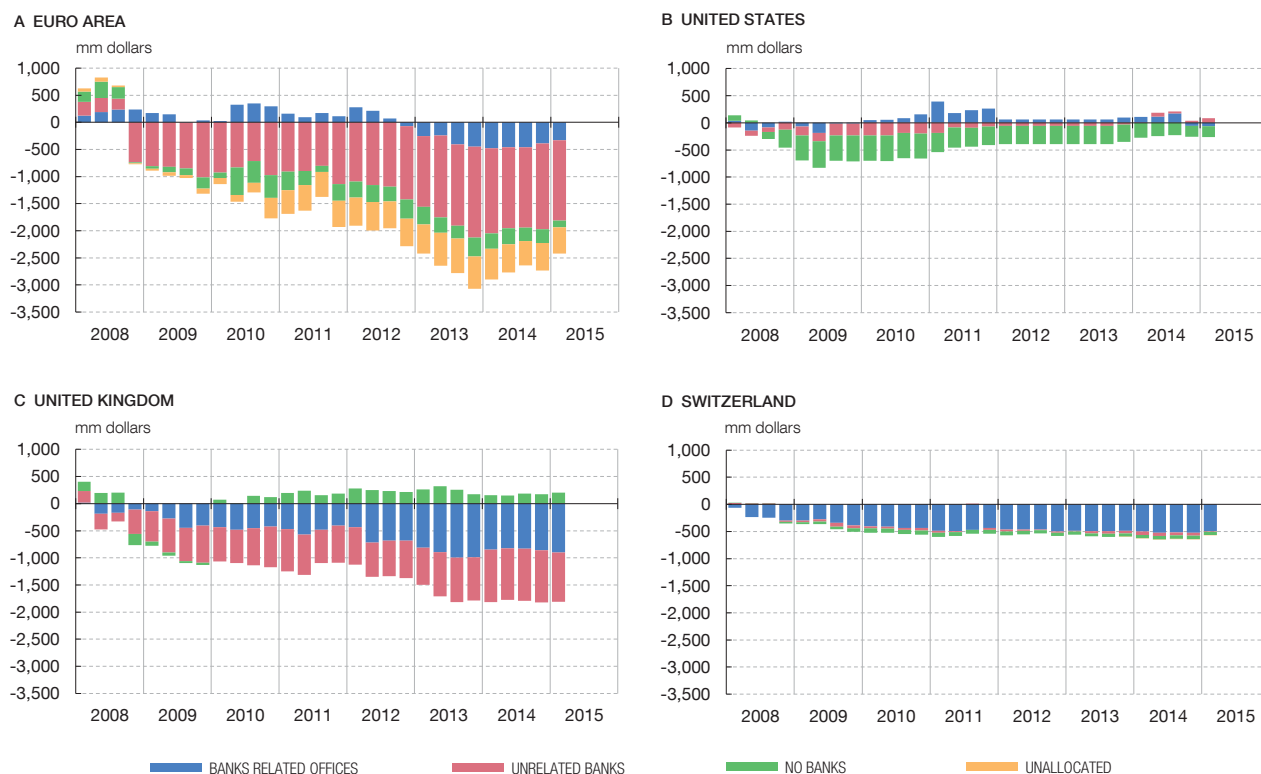
- a Ranked by the five largest foreign banking systems in terms of size of local claims.
- b Data for Japan are confidential before 2013 Q4.

region: The bulk of this credit is provided on a cross-border basis, as local operations of foreign banks in China are modest.

The *global funding models* of internationally active banks can be investigated further with the LBS by nationality (see Table 2), which offer a more detailed sectoral breakdown of interbank positions in inter-office accounts (within the same banking group) and unrelated banks (with other banks not belonging to the same group). The use of cross-border funding has declined across the board for major national banking systems since Q1 2008, but the most pronounced for euro area banks. The cumulative contraction (exchange rate adjusted) in cross-border liabilities of these banks from Q1 2008 to Q1 2015 totaled around USD 2.4 trillion, mostly through a reduction in borrowing from unrelated banks (Chart 6, Panel A). UK banks reduced their cross-border funding by a cumulative USD 1.6 trillion, relatively evenly split between lower cross-border inter-office liabilities and lower borrowing from unrelated banks (Chart 6, Panel C). The adjustment of cross-border funding by US and Swiss banks was more modest and was realized through reduced cross-border borrowing from other sectors than banks and lower cross-border inter-office liabilities, respectively (Chart 6, Panels B and D).

3.3 FOREIGN CURRENCY EXPOSURES

The availability of currency breakdowns in the LBS allows for an analysis of *foreign currency exposures* related to global banking. The BIS reports these breakdowns for the

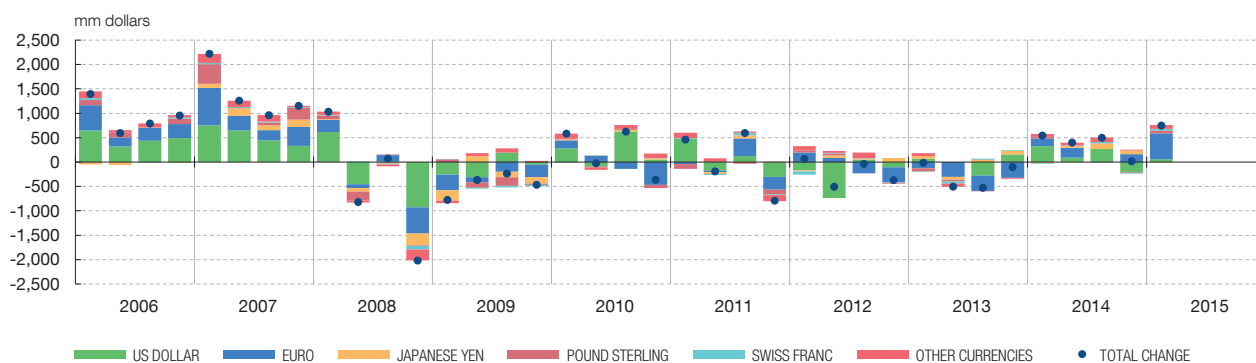


SOURCE: BIS Locational Banking Statistics by nationality.

a Exchange rate adjusted changes, cumulative changes since January-2008.

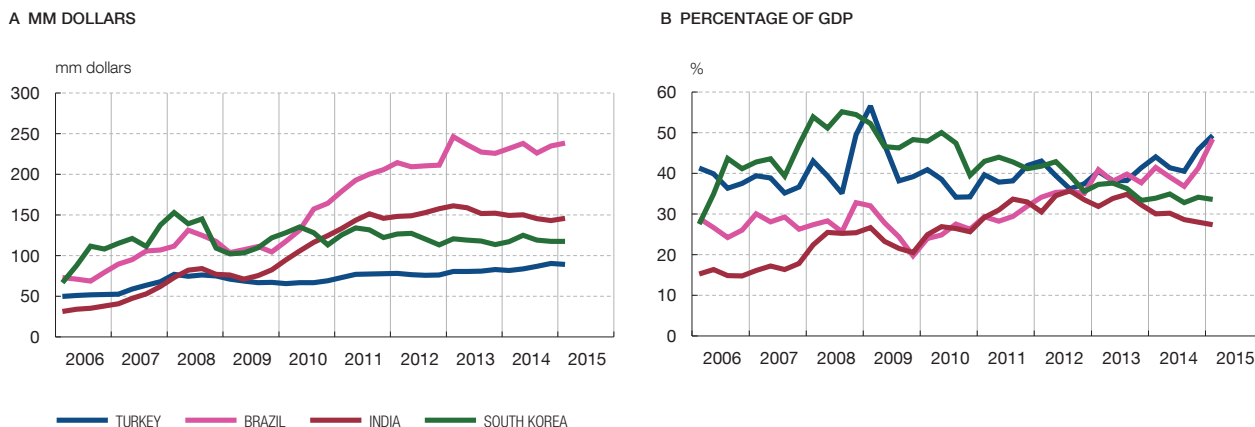
major international currencies (US dollar, euro, Japanese Yen, pound sterling and Swiss franc), with a rest category “other currencies”. In Q1 2015, cross-border claims denominated in euros increased strongly by USD 536 billion (Chart 7). This was the largest quarterly increase in eight years and may be related to the increased attractiveness of the euro as an international funding currency at that time.¹¹

¹¹ At that time, market expectations of a weakening of the euro against the US dollar prevailed, against the background of the diverging monetary policy stance of the Federal Reserve and ECB and expectations of a normalization of the Fed’s interest rate policy. As a result, US corporations started to issue more euro denominated debt in international capital markets, which may have been absorbed by BIS IBS reporting banks either through outright purchases or underwriting.



SOURCE: BIS Locational Banking Statistics by residence.

a Exchange rate- and break- adjusted changes. BIS reporting banks’ cross-border claims include inter-office claims.



SOURCES: BIS Locational Banking Statistics by residence and IMF International Financial Statistics.

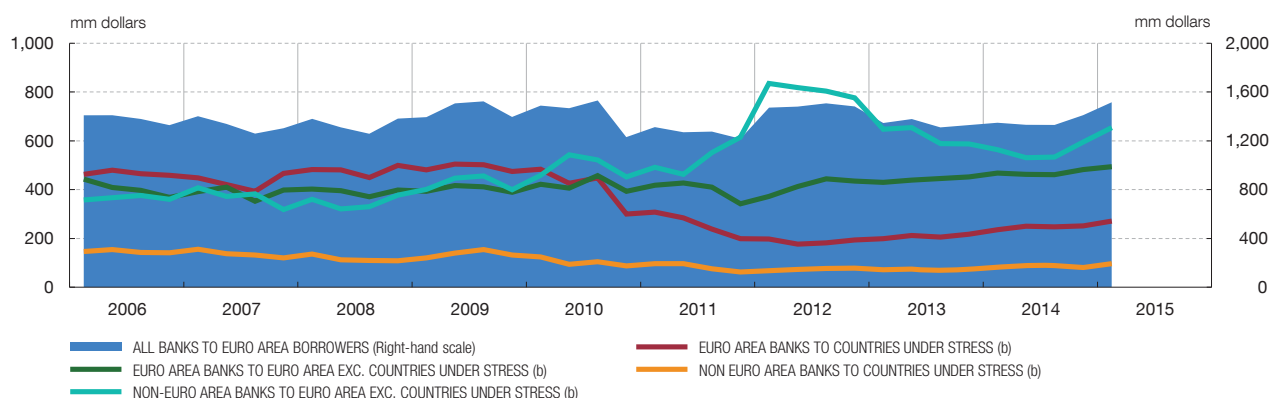
The LBS can also be used for a detailed analysis of the foreign currency exposures of *individual countries*, such as emerging market economies (EMEs). In recent years, EME non-financial firms increasingly resorted to issuance of foreign currency denominated debt, especially in US dollar [Fuentes and Serena (2015)]. With the expected normalization of US monetary policy and possible associated upwards pressures on US interest rates and the US dollar, the maintenance and refinancing of this debt would become more costly [García Luna and Van Rixtel (2013)]. Chart 8 shows the amount of US dollar-denominated cross-border liabilities of several major EMEs (liabilities of bank and non-bank sectors of these countries combined),¹² in absolute amounts and relative to GDP. The volume of foreign banks' US dollar-denominated credit to these countries has grown rapidly especially for Brazil (Chart 8, Panel A); relative to GDP this exposure has increased both for Brazil and Turkey (Chart 8, Panel B).

3.4 THE IMPACT OF THE EURO AREA FINANCIAL CRISIS ON GLOBAL BANKING

The BIS IBS have proven to be of crucial importance in the analysis of the 2007-2009 global financial crisis and the 2010-2012 euro area financial crisis. With respect to the latter, information on the exposures of national banking systems to *foreign sovereigns*, such as the Greek sovereign, were indispensable for making assessments of risks to financial stability. The CBS on an ultimate risk basis provide historical data on the exposures of reporting banks to the public sector and hence these statistics became increasing popular with the development of the euro area crisis in 2010.¹³ The data show that banks headquartered in the euro area reduced their foreign exposures to Greek, Irish, Italian, Portuguese and Spanish public sector borrowers in parallel to the intensification of this crisis, from USD 449 billion in Q3 2010 to a low of USD 176 billion in Q2 2012 (Chart 9). In the first quarter of 2015, these exposures had recovered somewhat to USD 271 billion. Simultaneously, both euro area banks and especially non-euro area banks increased their foreign exposures to the public sector in other euro area countries, in particular in Germany and France; those of the latter group of banks expanded strongly to a historical record high of USD 835 billion in the first quarter of 2012, which compared to just USD 459 billion two years earlier. With the easing of the euro area financial crisis, these exposures were largely unwound to more historical proportions (Chart 9).

¹² Of course, these exposures include only US dollar-denominated lending by banks. Other US dollar-denominated financing obtained by borrowers from emerging market economies, for example through issuance of US dollar bonds in international debt markets [see Fuentes and Serena (2015)], are not included.

¹³ Unfortunately, the BIS data on the public sector exposures do not distinguish between debt securities held in the banking book and those in the trading book. The former are held to maturity and priced (and hence reported) at book value, while the latter are held for trading purposes and valued (and reported) at market prices. Hence, the data are not corrected for valuation effects, which may play a role in changes in reported public sector exposures.



SOURCE: BIS Consolidated banking statistics (ultimate risk basis).

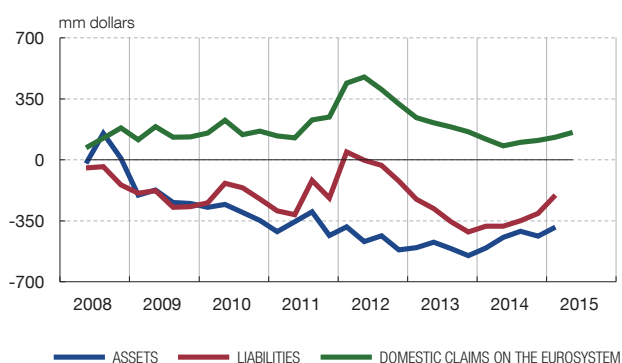
- a Positions expressed at constant end-Q1 2015 exchange rates based on the assumption that all claims on the public sector in euro area countries are denominated in euros.
- b Countries under stress: Greece, Ireland, Italy, Portugal and Spain.

The 2010-2012 euro area financial crisis affected also profoundly *international interbank activity* on the euro area [García Luna and Van Rixtel (2014)]. The LBS, which include data on cross-border assets and liabilities, show that globally active banks reduced drastically their cross-border interbank lending to banks located in the euro area, which showed different patterns across euro area countries. Banks in Germany were large net recipients of international interbank funding, especially during 2010-2013 (Chart 10, Panel A). When the euro area financial crisis started to develop in the first half of 2010, cross-border interbank liabilities of banks in Germany increased, offsetting part of the cumulative decline of the previous two years (liabilities, red line). At the same time, these banks continued to reduce their cross-border interbank lending (assets, blue line). The worsening of the euro area financial crisis from June 2011 to June 2012 led to a further sharp increase in the interbank liabilities of banks in Germany. This expansion was mirrored by higher deposits maintained with the Eurosystem (green line). With the normalization of conditions in the euro area from the second half of 2012 onwards, cross-border interbank activity involving banks in Germany and their claims on the Eurosystem returned to historical proportions as well. In contrast, banks in the countries under stress experienced a large fall in their cross-border interbank funding (liabilities, red line), while their interbank lending declined more modestly (assets, blue line) (Chart 10, Panel B). Cross-border interbank borrowing by these banks fell by a cumulative \$1.2 trillion during 2008-2013. The resulting large international funding gap (i.e., growing gap between blue and red lines) was covered by increased borrowing from the Eurosystem (green line). Hence, the Eurosystem replaced the international interbank market as a funding mechanism for these countries.

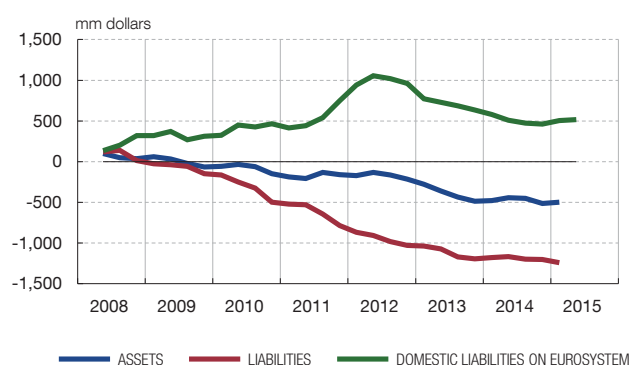
4 Enhancements and conclusions

The Committee on the Global Financial System (CGFS), which provides guidance to the compilation of the BIS IBS, approved in 2012 a set of important enhancements of these statistics. They aimed at filling gaps in the data that were exposed to a large extent by the 2007-2009 global financial crisis [CGFS (2012)]. The most important improvements are the following [Avdjiev *et al.* (2015)]. First, the enhancements introduce information about the reporting banks' *domestic positions* as well, in addition to their international activities. Hence, the IBS will provide extended coverage of banks' balance sheets, both for the LBS and CBS. Since end-June 2012, the LBS have started to provide information on banks' *local positions*, i.e., the positions against residents of the country where they are located, in *local currency* (for example, the euro-denominated claims of banks in Spain on Spanish

A BANKS IN GERMANY



B BANKS IN GREECE, IRELAND, ITALY, PORTUGAL AND SPAIN



SOURCES: BIS Locational Banking Statistics by residence and IMF International Financial Statistics.

a Exchange rate adjusted changes, cumulative changes since end-March 2008.

residents). Moreover, since end-2013, the CBS have reported their worldwide consolidated claims on residents of their *home country*, i.e., the country where they are headquartered (for example, the worldwide consolidated claims of Spanish banks on residents in Spain). Second, the enhancements add more information about banks' counterparty sectors, with much more details on banks' funding structures. In the CBS, banks have reported since end-2013 their total liabilities on a consolidated basis, with a breakdown by instruments. Moreover, in both the LBS and CBS, the number of counterparty sectors was increased. "Non-bank" entities are separated now between "non-bank financial counterparties" and "non-financial counterparties"; on a voluntarily basis (i.e., not required), the latter group is divided in "non-financial corporations", "households" and "governments". Further enhancements are related to providing more information in the LBS on the nationality of the reporting banks and currency breakdowns.¹⁴

These enhancements make significant and structural improvements to the BIS IBS which ensure that these statistics are up-to-date with changes in the financial structure and remain relevant for assessments of financial stability and credit intermediation. It needs to be kept in mind that it will take several more years before the enhancements will be completed fully [for more details see Avdjiev *et al.* (2015)]. Some enhancements have already been implemented in recent years, but at a different pace by each reporting authority and with different time-lags for the LBS and CBS. Thus, the new data are incomplete in the initial periods, which complicates historical analyses based on the enhancements at this juncture.¹⁵ However, these limitations will be eliminated gradually and not before long, analysts of global banking will have at their disposal a much broader set of historical data to assess the activities of globally active banks.

At the same time, there still remains room for further improvements in coverage and depth of the BIS IBS. First, the statistics include currently only balance sheet information; there is no data available from profit and loss statements. Hence, it is not possible to assess the profitability and financial soundness of banking systems, which is paramount for analyses of different business models and international exposures of reporting countries. Second,

¹⁴ A complete and detailed overview of the enhancements is beyond the scope of this article. For that see CGFS (2012) and Avdjiev *et al.* (2015).

¹⁵ For this reason, and given the fact that the enhancements are not available at all before Q2 2012 for the LBS and before Q4 2013 for the CBS, we decided not to use them in the analytical examples in this article.

more detailed information on off-balance sheet activities would be helpful to assess risk exposures. Third, important G20 countries, such as Argentina, China, Russia and Saudi Arabia, are not yet participating in the IBS. With banks of these countries assuming much greater international importance in recent years – for example three Chinese banks have been classified as Global Systemically Important Banks (G-SIBs) by the Financial Stability Board (FSB) as of November 2014 – their inclusion as reporting banks in the IBS is crucial.¹⁶

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¹⁶ The BIS CBS allow for estimates of the growing importance in interregional lending in Asia-Pacific of banks which are not headquartered in one of the BIS reporting countries, of which the bulk most likely is provided by Chinese banks. See McGuire and Van Rixtel (2012).

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