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## Financial Stability Notes

### **International bank flows and bank business models since the crisis**

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# International bank flows and bank business models since the crisis

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## Abstract

Developments in cross-border banking and bank business models have implications for international risk sharing. During the European sovereign debt crisis, cross-border banks only provided limited risk sharing and even amplified shocks in some euro area Member States. Policymakers responded by introducing an array of prudential instruments to improve bank resilience. This successfully strengthened the euro area banking system, fostering certain bank business models while disincentivising others. Euro area banks are now: (i) more domestically oriented with less cross-border activity; (ii) smaller; (iii) less trading, more lending oriented; (iv) more deposit funded. Conservative business models have advantages from a financial stability perspective, but they may also mitigate the advantages of cross-border activities for banks and the economy. Reforms may be necessary if banks are to play a greater role as a shock absorber in the European banking union.

## 1 Introduction

Much of the decline in international capital flows observed since the global financial crisis is attributable to banks and, to a disproportionate extent, euro area banks (Bussière et al., 2016; Lane and Milesi-Ferretti, 2017; McQuade and Schmitz, 2017). Yet banks still account for a large component of international capital flows, and bank lending remains critical to the real economy of the euro area, as alternative sources of financing have emerged only gradually and unevenly across countries and sectors.

The experience of the European sovereign debt crisis suggests that cross-border banks failed to contribute to European risk sharing.<sup>1</sup> In fact, banks were prone to sudden stops and amplified shocks in euro area Member States, including Ireland (Cimadomo et al., 2018).<sup>2</sup> In response, since the global financial crisis, policymakers have introduced a wide array of micro-

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<sup>1</sup>Risk sharing refers to a division of risk between two or more individuals or entities. In the context of this paper, it specifically relates to the division of financial risks across European countries.

<sup>2</sup>In this context, a sudden stop refers to an abrupt slowdown in international capital inflows.

and macro-prudential instruments, with the intent of improving both bank resilience and resolvability. These policies have successfully contributed to strengthening the euro area banking system (Carmassi et al., 2018). Regulatory and other policies have fostered certain bank business models while disincentivising others. Indeed, despite significant reform efforts towards a banking union, many euro area banks have become more domestically oriented.

Bank business models and characteristics are important for two reasons. First, a given financial shock or regulatory change may affect different institutions asymmetrically depending on their structure (Khwaja and Mian, 2008). Second, and as a consequence, some business models may provide a more stable source of funding to the real economy than others, be easier to resolve and have different attitudes to innovation, or capacity to benefit from economies of scale. While all these factors can affect financial stability in the short to medium run, this policy note seeks to provide input to the debate about the link between risk sharing and cross-border banking, including via different business models.

The note begins by describing in more detail the findings of the existing global and euro area literature, with regard to cross-border bank flows in Section 2, and in relation to bank structures in Section 3, drawing also on some preliminary work using bank level data. Section 4 describes how these developments relate to the EU policy environment, in particular banking union. Section 5 concludes.

## 2 The decline in global capital flows: the role of European banks

International capital flows played a key role in funding unsustainable and destabilising lending in the run-up to the global financial crisis. Specifically, domestic credit growth was highly correlated with net debt inflows, much of which was intermediated by banks (Figure 1). Although the channels of transmission may differ in future, as the financial system has changed substantially, international capital flows, and bank flows in particular, remain an important determinant of domestic financial conditions in many countries in the world today (Rey, 2013; Passari and Rey, 2015).

Since the global financial crisis there has been a marked reduction in international capital flows (Figure 2). To some extent this was a global phenomenon, but the decline in international capital flows was not evenly distributed across regions of the world (McQuade and Schmitz, 2017). Indeed, banks in Europe, and banks of European *nationality*, played a big role in this retrenchment. When measured using Bank of International Settlements (BIS) locational banking statistics, by 2016, global cross-border banking positions had contracted by approximately 15 per cent compared with their peak in 2008, and this retrenchment was predominantly driven by banks located in Europe (Figure 3). The share of euro area based banks in global cross-border bank claims fell from approximately 36 per cent in 2008 to below 30 per cent in 2016 (Emter, Schmitz and Tirpák, 2018). Other research shows that the nationality of European banks was an especially important determinant of the reduction in the international exposures of banks (Bénétrix et al., 2017).<sup>3</sup> In contrast to banks headquartered in the euro area, the global footprint of Japanese, Canadian and US banks, has actually expanded since the crisis.

There is substantial variation in the composition of the decline in cross-border activities

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<sup>3</sup>According to Bénétrix et al. (2017) the post-crisis contraction in European banks' foreign claims was shared: most European banking systems reported lower foreign claims in 2017 than in 2007, with Spanish banks being the notable exception.

of European banks. Banks have dramatically shed their cross-border holdings of government bonds from their pre-crisis peaks, while their holdings of corporate bonds have returned to pre-crisis levels (Sapir et al., 2018).

At the same time, the decrease in inter-group lending was more pronounced than that of intragroup lending (Figure 4, (a) and (b)). According to ECB (2018), the share of intragroup cross-border lending increased sharply from 60 per cent to 70 per cent of total cross-border bank lending in the last two years. This was driven by a decrease in interbank cross-border lending in most jurisdictions (e.g. Belgium, Germany and Luxembourg), while intragroup cross-border lending decreased to a lesser extent (e.g. Germany), remained broadly stable or even increased in some jurisdictions (e.g. Ireland). Foreign banks also expanded the domestic deposit base of their foreign operations in some instances, as in the case of Swedish banks operating in Estonia, Latvia and Lithuania. There is also some evidence that, while still small, direct cross-border retail lending as a share of wholesale lending has increased, notably in some smaller member states (ECB, 2018) (Figure 5).

Finally, cross-border bank mergers and acquisitions (M&A) have also declined sharply since the crisis. The value of transactions in 2017 fell to low levels and was dominated, as in previous years, by domestic transactions (ECB, 2017). Cross-border M&A also typically consisted of minority stakes, in contrast to domestic operations (Raposo et al., 2017).

There are a number of explanations for why this decline in cross-border banking occurred. The European sovereign debt crisis was clearly responsible for some of the decline in cross-border sovereign debt holdings. Restructuring of banking sectors in the context of the crisis (e.g. through EU-IMF programmes or in relation to state-aid rules) was also important in increasing the relative size of domestic bank assets in some countries. When banks shed certain units of their business lines, these tended to be acquired by national buyers (Nieto et al., 2018). Some banks (e.g. Dexia) were explicitly split along national lines.

In turn, Emter, Schmitz and Tirpák (2018) argue that the precipitous decline in cross-border bank lending within the euro area since the global financial crisis, especially between banks, partly reflects a reversal of pre-crisis excesses, as was the case in Ireland. Moreover, the authors argue that some of the cross-country variation in the decline in cross-border banking was attributable to the deterioration in asset quality, in this case the outstanding stock of non-performing loans (NPLs).

ECB (2018) asserts that some of the decline in the use of wholesale funding by banks reflects the effect of ECB monetary policy, as the ongoing injection of excess reserves reduces the necessity for counterparties to trade across borders in the euro area money market. Moreover, Baldo et al. (2017) suggest that banks with specific business models, such as investment banks, tend to hold more of this excess liquidity relative to the size of their balance sheet than other business models, such as retail and wholesale banks.

There has also been a marked increase in the stringency of microprudential regulations, as well as more widespread use of macro-prudential tools at both a global and European level (Figures 6 and 7) and a number of papers find evidence that this had an effect on cross-border flows (Avdjiev et al., 2017; Kang et al., 2017). Emter, Schmitz and Tirpák (2018) find mixed results in relation to regulatory variables, which were not found to be a significant determinant of cross-country variation in cross-border interbank lending, although there was some evidence of a role for regulation in the decline in cross-border lending to non-banks. However, many regulations in the EU are implemented in a coordinated fashion that explicitly seeks to avoid cross-country differences in order to maintain a *level playing field*. This limits the extent to which they can ex-

plain cross-country variation in certain regression specifications. Looking at the UK, Forbes, Reinhardt and Wieladek (2017) find that increases in capital requirements reduced international bank lending and that unconventional monetary policy measures amplified this effect. The authors find that the interaction between microprudential regulations and the UK Funding for Lending Scheme explains roughly 30 per cent of the contraction in aggregate UK cross-border bank lending between mid-2012 and end-2013, corresponding to approximately 10 per cent of the global contraction in cross-border lending.

Relatedly, liquidity requirements under European legislation oblige an entity within a consolidated group to maintain a sufficient stock of liquid funds at the individual entity level, in order to comply with the liquidity coverage ratio (LCR). This constrains the ability of a group to move funds across borders when managing liquidity centrally. According to the ECB (2018) this has required globally systemically important banks (G-SIBs) in Europe to hold high-quality liquid assets (HQLA) of approximately EUR 130 billion to comply with the 100 per cent liquidity coverage ratio at the subsidiary level, which is equivalent to almost 10 per cent of the G-SIBs total HQLA. While liquidity waivers have been in place since 2016, no supervisory decisions in this direction have been taken to date.

Still, changes in liquidity requirements and other bank regulations were not generally implemented with the specific aim of limiting cross-border capital flows, but in order to limit certain risky behaviours and business practices, including banks' business models. In some instances, structural changes in the business models of banks are clearly an intended consequence of regulatory changes, with the increase in deposit funding a clear example, as the pre-crisis pattern of cross-border interbank funding proved to be unsustainable. Indeed, the decline in cross-border banking flows described above has coincided with substantial changes in business models of banks since 2008, as outlined in the next section.

### 3 Changes in the business models of euro area banks and effects on cross-border activities

As we have seen, cross-border banking was profoundly affected by the crisis. Yet, this is just one dimension of the pronounced changes in the business models of banks (Figure 8).

According to the Committee on the Global Financial System (CGFS, 2018), banking sectors have shrunk relative to economic activity in numerous countries, particularly those directly affected by the crisis. As in Ireland, banks have become smaller on average, with total assets of the euro area domestic banks standing at EUR 24.2 trillion on a consolidated basis at the end of 2016, a decline of about 14 per cent compared with 2008 (ECB, 2017).<sup>4</sup> These trends were not restricted to either large or small institutions but affected banks of all sizes.

Advanced economy banks have also tended to reorient their business away from trading and more complex activities, towards less capital-intensive business lines, including commercial banking (Roengpitya et al., 2017). This pattern is apparent from the changes in the asset portfolios and revenue mix of banks. The decline in non-interest income is the main driver behind

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<sup>4</sup>This adjustment occurred mainly through a reduction in business volumes rather than the exit of banks from markets. However, there have been reductions on the extensive margin as well. On an unconsolidated basis, the number of credit institutions in the euro area declined to 5,073 at the end of 2016, from 6,768 at the end of 2008, a 25 per cent decrease. On a consolidated basis, the total number of credit institutions in the euro area amounted to 2,290 (domestic groups and stand-alone banks) at the end of 2016, down from 2,904 in 2008 (ECB, 2017).

the post-crisis fall in revenue relative to assets for most advanced economy banking systems. A key driver is trading revenue at large banks, although this decline is less evident in the euro area than in other advanced economies (CGFS, 2018).

As regards liabilities, banks have increased their reliance on customer deposit funding compared to the pre-crisis period, as is the case for the domestic Irish banks, and the median share of deposits in total liabilities in the euro area exceeded 50 per cent in 2016 (ECB, 2017). The use of wholesale market funding declined markedly compared to the pre-crisis period (Figure 9). Much of the rapid shift to more stable funding sources is a desirable consequence of the introduction of the net stable funding ratio (NSFR) and LCR bank regulations.

In addition to sluggish revenue growth, the overall cost base of euro area banks has not generally declined significantly, with adverse implications for profitability. The median cost-to-income ratio remained relatively stable at 58 per cent in 2016, indicating only limited progress in efforts to improve cost efficiency in the banking sectors of some euro area Member States.

In summary, relative to the pre-crisis period, euro area banks can increasingly be characterised as: (i) more domestically oriented with less cross-border activity; (ii) smaller; (iii) less trading, more lending oriented; (iv) more deposit funded; (v) a high cost base.

Furthermore, preliminary analysis for an upcoming research paper using bank-level data from the ECB individual balance sheet items (iBSI) for the period 2008-2016, indicates that many of the bank business model characteristics described above are correlated with the cross-border retrenchment of euro area banks since the global financial crisis (Everett, McQuade and O'Grady, 2018). Using both cross-sectional and panel regression specifications, the initial results suggest that size and complexity, geographic orientation, and whether banks were more investment banking or retail oriented, influenced the extent to which they retrenched from cross-border positions. Specifically, banks that received a greater share of their income from trading, such as investment banks, tended to reduce their foreign assets more while banks that received a higher share of income from interest, such as retail banks, reduced their foreign assets less. Banks in countries where the domestic financial system became stressed, as measured by the national rate of non-performing loans, tended to retrench more from their cross-border asset positions, consistent with the findings of Emter et al. (2018). Moreover, using information on domestic and cross-border asset holdings, the results are consistent with a "pecking order" narrative of post-crisis bank deleveraging, whereby institutions shed cross-border assets in order to shelter their domestic positions (Cetorelli and Goldberg, 2012).<sup>5</sup>

## 4 Implications for banking union

What does the overall picture of reduced cross-border banking and increased orientation towards domestic retail funding or intragroup funding imply for euro area risk sharing? The latter is one of the key objectives of banking union and, despite the adverse consequences associated with the excesses of euro area banks in the pre-crisis period, there are a number of channels through which cross-border risk sharing via banks could be beneficial.

A key argument in favour of cross-border banking arises from its effects on risk diversification. According to Allen et al. (2011), when a domestic bank invests abroad, it becomes less exposed to domestic shocks. This reduces the variance of its asset portfolio and this lower asset

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<sup>5</sup>The findings also suggest that more efficient banks reduced their cross-border assets in the euro area less, albeit with only a marginal degree of statistical significance.

volatility should reduce the likelihood of bank failures in the domestic economy. Similarly, the presence of foreign banks allows domestic firms to have multiple lending relationships with domestic and foreign banks. When domestic banks are constrained, firms can substitute domestic lending with finance from foreign banks. Certain forms of cross-border banking activity could, therefore, foster effective risk sharing across countries, as part of a more complete banking union.

Another critically important potential benefit of banking union is that it could contribute to breaking adverse feedback loops between bank and sovereign risk. The domestic government debt holdings of euro area banks, as well as their exposure to sovereign risk through other channels, has resulted in spillovers from the sovereign market to the funding costs of banks. This impairs the transmission of lower monetary policy interest rates to the real economy, such that cross-border risk sharing, through banking union or other channels, is critically important to the functioning of monetary union (Coeuré, 2012). Equally, the exposure of euro area sovereigns to contingent liabilities and risks from domestic banks can contaminate sovereign yields. Both of these linkages could be alleviated by banks diversifying their exposures across Member States and further transferring responsibility for the stability of the banking system from the national to the European level.

However, according to ECB (2018), almost 80 per cent of the idiosyncratic shocks to the GDP growth of a euro area country remained unsmoothed. Moreover, the report finds that the quantity-based financial integration composite indicator have been declining gradually in recent years. Notably, this is primarily attributable to the lower share of cross-border interbank lending described above.<sup>6</sup> It should be emphasised, however, that such an indicator of cross-border risk sharing may miss important nuances as, for a given value, different types of cross-border assets (e.g. interbank versus intragroup, or portfolio debt versus equity) may deliver different degrees of risk sharing (Cimadomo et al., 2018; Hoffmann et al., 2018).

Do the changed business models of banks that are foreign owned but domestically funded bring benefits in terms of cross-border risk sharing? On the one hand, no, as banks who exceeded their (much increased) loss absorbing capacity would share losses on its assets with the local deposit guarantor, thus maintaining risk within borders. On the other hand, foreign banks with a large domestic deposit base are also concerned with their reputation, and it is likely that the foreign parent would step in with support and bear some of the costs as an equity holder in the event of a failure of a foreign subsidiary.

McGuire and von Peter (2016) demonstrate that local claims backed by local funding made the international balance sheets of banks more resilient, such that international banks with stronger local relationships had a stabilising effect and helped sustain credit after the financial crisis. There is also considerable evidence from other parts of the world that foreign bank lending via local funding is indeed more stable in crises than cross-border flows, for example in Latin America (Rai and Kamil, 2010). It is also notable that, in the post-crisis period, even the foreign claims of banks have increasingly been funded locally (CGFS, 2018). Moreover, the incipient trend towards direct retail lending may also result in more crisis-resistant cross-border lending, while ECB (2018) argued that intragroup flows are a more robust form of banking integration than the cross-border short-term wholesale lending that characterised the pre-crisis period.

It follows that cross-border banking with a greater reliance on local or intragroup funding, or

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<sup>6</sup>ECB (2018) also highlight the positive role of ECB monetary policy in increasing price based measures of financial integration. Nevertheless, the dispersion of interest rates to households for house purchase remains high, with Ireland lying at the top end of the distribution.

based on increased direct retail lending, could provide alternative models of banking integration for the future.

## 5 Conclusions

Sufficient time has now passed since the crisis and the implementation of post-crisis reforms to allow us to take stock of the type of banking system that is emerging. Bank regulatory reforms and European banking union have successfully increased the resilience of both individual banks and the euro area banking system in general.

Many banks, including those that have cross-border operations, appear to be converging on different business models, away from short-term interbank funding, towards more stable local-customer deposits and intragroup funds to finance activities. Similarly, empirical evidence suggests that investment-bank type business models display particularly procyclical behaviour when it comes to cross-border banking. It follows that more conservative business models may have a number of advantages from a financial stability perspective. From a banking union perspective, they would also ensure that, in contrast to what happened during the crisis, cross-border banks contribute positively to risk sharing and shock absorption.

If pushed too far, however, a move towards smaller, less complex units may limit economies of scale, undermine profitability and mitigate the advantages of cross-border activities for banks. Indeed, the banking systems of some, especially larger, Member States seem unlikely to become more 'European' or integrated in the near future. Cross-border M&A in banking has come to a stand-still and, in any case, is limited to minority ownerships. In addition, the cross-border provision of more stable and long-term retail lending remains very limited.

This suggests that a number of European and national reforms are still necessary for the banking sector to play a greater role as a shock absorber in the European banking union. In particular, a common banking sector resolution backstop and a European Deposit Guarantee Scheme would reduce the need for national approaches in supervision and resolution. Finally, measures that eliminate the fragmentation in the institutional framework would make the creation of European banks more likely.

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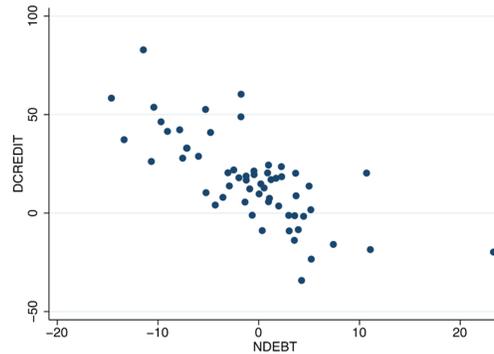
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# Figures

Figure 1: Domestic Credit Growth and Net Debt Flows, 2003- 2008.  
Units: per cent of GDP

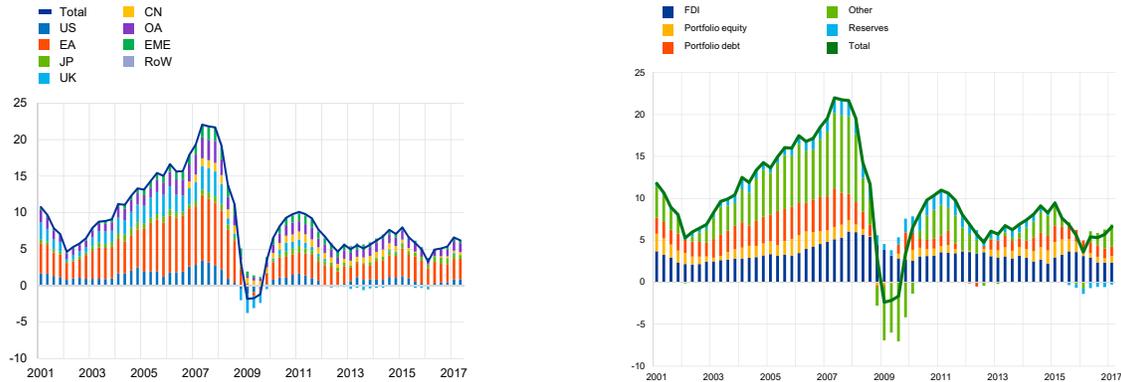


Source: Lane and McQuade (2014) based on Beck et al.(2009) and IMF BoP data.  
Note: Excludes Ireland. DCREDIT is the 5-year change in private credit from deposit-taking banks in per cent of GDP.  
NDEBT is the 5 year average net debt flows as a ratio to GDP.

**Figure 2: Global gross asset flows.**  
Units: per cent of global GDP

(a) By country/region

(b) By asset type

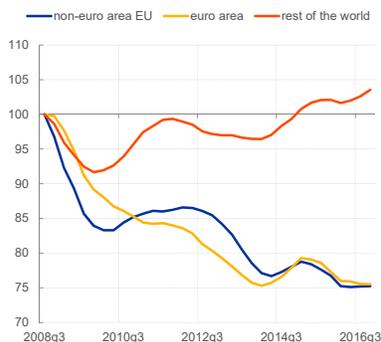


Source: McQuade and Schmitz (2018) based on IMF BoP data.

Note: EA = euro area, JP = Japan, CN = China, OA = other advanced, EMEs = Emerging Market Economies, RoW = the rest of the world.

The euro aggregate includes intra-euro area flows. The 'Other' category is primarily composed of bank loans.

**Figure 3: Cross-border bank claims by location of reporting bank.**  
Index: Q3 2008 = 100;



Source: Emter, Schmitz and Tirpák (2018) based on BIS LBS data.

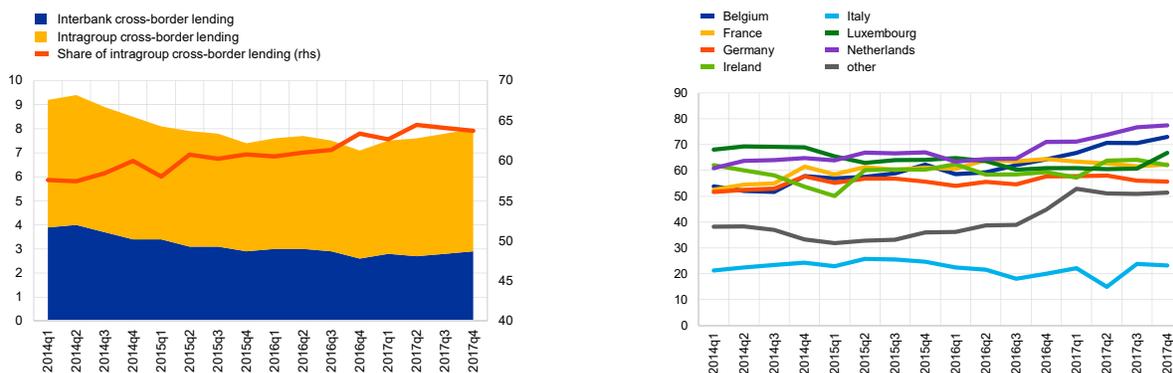
Note: 4-quarter moving averages.

Total cross-border claims of banks based in BIS reporting countries.

Figure 4: Interbank and intragroup cross-border lending in the EU

(a) Euro billions

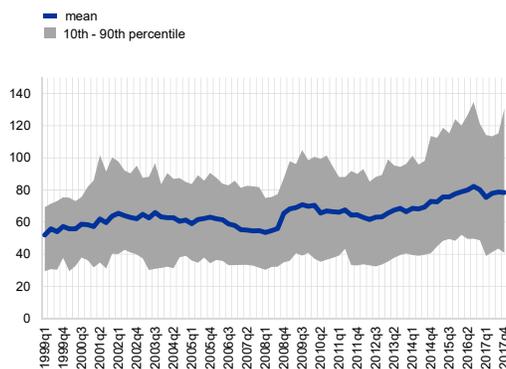
(b) Intragroup as a share of interbank, in per cent



Source: BIS LBS.

Note: cross-border claims on related banks and all banks for all reporting institutions located in: AT, BE, CY, DK, FI, FR, DE, IE, IT, LU, NL, PT, ES, SE, UK.

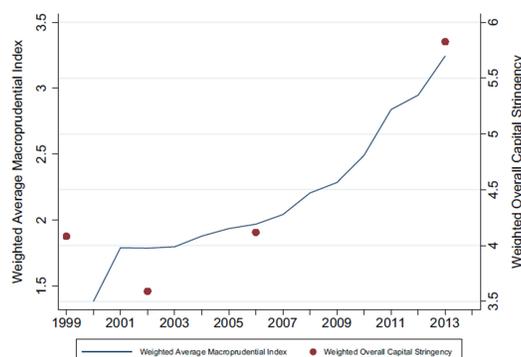
Figure 5: Ratio of cross-border retail bank lending to wholesale lending  
Units: per cent



Source: BIS LBS.

Note: cross-border claims on non-banks as ratio to claims on bank of all reporting banks located in AT, BE, CY, DK, FI, FR, DE, IE, IT, LU, NL, PT, ES, SE, UK.

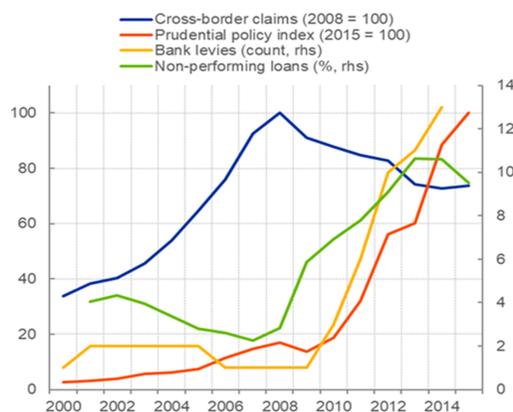
Figure 6: Global macro-prudential and regulatory policies



Source: McQuade and Schmitz (2017) based on Barth et al. (2013), Cerutti et al. (2015).

Note: Macro-prudential index ranges from 1 to 12. Capital stringency index ranges from 0 to 7.

Figure 7: Intra-EU bank claims, policy measures and asset quality



Source: Emter, Schmitz and Tirpák (2018)

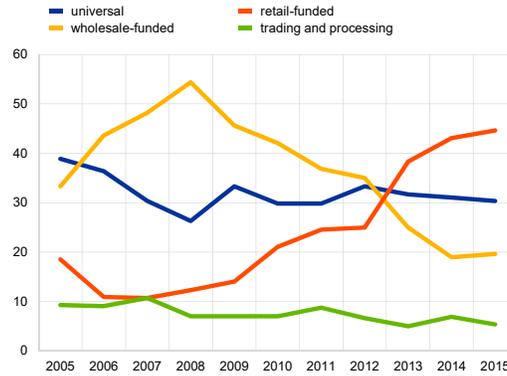
based on data from BIS, Eurostat, Cerutti et al. (2016), World Bank.

Note: Index: 2008 = 100; percentage, count, four-quarter moving averages.

Intra-EU cross-border claims is the sum of bilateral cross-border intra-EU claims.

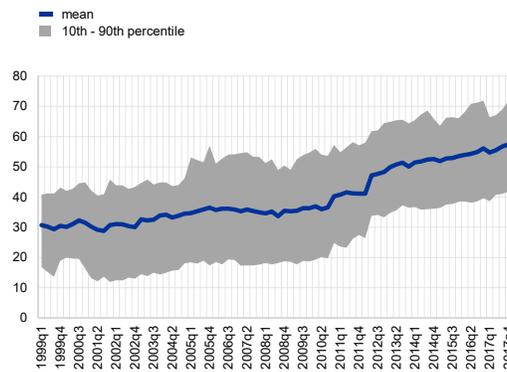
Bank levies refer to the number of EU countries that implemented them. The prudential policy index is the unweighted average index across EU countries where higher values denote increased regulatory stringency. Non-performing loans are expressed as a percentage of total gross loans (un-weighted country average).

Figure 8: Banks by business model type  
Units: per cent of total



Source: Roengpitya et al. (2017), authors' calculations.

Figure 9: Ratio of banks' non-bank liabilities to total liabilities  
Units: per cent



Source: BIS LBS.

Note: cross-border and domestic liabilities of all reporting institutions located in AT, BE, CY, DK, FI, FR, DE, IE, IT, LU, NL, PT, ES, SE, UK.

