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and Insurance Integration:
An Empirical Survey

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Post-Crisis Reversal in Banking and Insurance Integration: An Empirical Survey*

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Abstract

This empirical essay reviews post-crisis integration in banking and insurance. Looking at aggregate data, we find that cross-border banking flows have been reversed, in particular into the CESEE and peripheral counties (Portugal, Ireland and Greece). But data at the individual firm level for banks and insurers indicate that cross-border activities remain pervasive within Europe. This intensity of cross-border activities indicates that the potential for coordination failure among national authorities remains high.

Host country supervisors have so far responded by ring-fencing activities in subsidiaries, leading to further fragmentation. This essay argues that if we want to keep the benefits of both the single financial market and financial stability, we need new supranational institutions that encourage integration. The advance to Banking Union with integrated supervision and resolution can provide the necessary policy push for an integrated approach.

JEL codes: G21, G22, G28, H41

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1. Introduction

The European financial system showed strong integration after the start of Economic and Monetary Union (EMU) in 1999. This on-going process of integration was abruptly reversed by the national approach to the resolution of financial institutions during the 2007-2009 financial crisis. Key markets, such as the interbank market have become dysfunctional, contributing to further fragmentation. The fragmentation between the financial systems of euro area member states complicates the conduct of a single monetary policy within the EMU.

A key question is whether the reversal in banking and insurance integration is (partly) caused by policy actions during the crisis. The answer is crucial for financial supervision and resolution policies. Recent theory suggests that the endgame of resolution sets the incentives for financial supervision (Claessens, Herring and Schoenmaker, 2010). So, national resolution may lead to further fragmentation driven by national financial supervisors. By contrast, European resolution may foster integration. Furthermore, a European resolution approach may break the diabolic loop between banks' funding cost and sovereign risk.

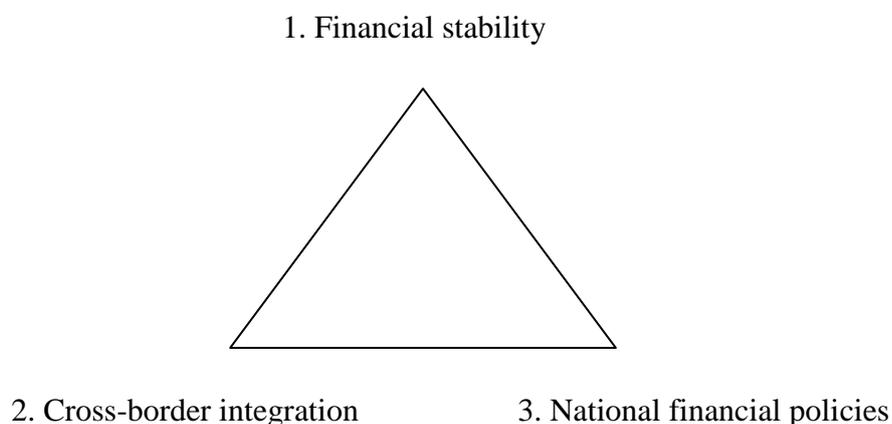
The research question in this empirical essay is on the empirics of financial integration. What is the current trend of cross-border activities of banks and insurers after the financial crisis? After reviewing the literature, we collect new data on cross-border trends in banking and insurance. Banks and insurers are the key intermediaries in the European financial system. Based on the empirical results, we provide recommendations on the EU financial architecture in a separate policy essay (Schoenmaker, 2013a). The recommendations are presented within a larger policy framework for the monetary and financial system. We argue that a European approach towards banking and insurance supervision is needed to counter the protectionist tendencies of national supervisors.

2. Theory

2.1 *Financial trilemma*

A recent advance in theory is the application of game theory to international policy coordination (Gaspar and Schinasi, 2010; Freixas, 2003). Improvised cooperation among national supervisors may breakdown during a crisis, as we have witnessed during the 2007-2009 financial crisis. This is consistent with a supervisory policy of fostering national champions (Boot, 1999). The Freixas-model of cross-border externalities provides the theoretical foundation for the financial trilemma (Schoenmaker, 2011). The trilemma states that the three policy objectives -maintaining global financial stability, fostering cross-border financial integration, and preserving national authority for financial policies- are incompatible. Any two of the three objectives can be combined but not all three; one has to give. The corollary is that governments have to make a choice of two objectives. Figure 1 illustrates the financial trilemma.

Figure 1. The financial trilemma



Source: Schoenmaker (2011).

Financial stability is a public good, as the producer cannot exclude anybody from consuming the good (non-excludable) and consumption by one does not affect consumption by others (non-rivalness). A key issue is whether governments can still produce this public good at the national level with today's cross-border operating banks. Cross-border integration of banks (as part of the single financial market) leads to increased welfare of financial services users. An important driver of financial integration is market forces. Firms benefit from the lower cost of capital that enhanced competition brings about, allowing a better allocation of capital. More productive investment opportunities will become available, and a reallocation of funds to the most productive investment opportunities will take place. Investors also benefit from access to a broader range of financial instruments and more opportunities to diversify their portfolios.

As cross-border financial integration progresses, policy makers will have less scope for independent policy-making, including fiscal independence. Ultimately, the trilemma boils down to the issue of sovereignty. At one extreme, policy makers can hand over part of their sovereignty to foster international banking and international financial stability. In the European setting, this boils down to the single financial market (with free establishment

of cross-border branches) and a stable European banking system. At the other extreme, policy-makers can choose to impose restrictions on cross-border banking (in the form of requiring cross-border subsidiaries; see section 3.6 below on the costs of stand-alone subsidiaries) to preserve their full sovereignty. That would make an inroad in the single financial market. The financial trilemma proves that there is no way out for policy makers (Schoenmaker, 2011; 2013b). If they want to maintain financial stability, policy makers have to make a clear choice between cross-border financial integration and national policies.

The financial trilemma raises the following empirical issue: the extent of cross-border business affects the policy choice. If cross-border business is well advanced, authorities may be forced to give up national policies and pursue an international approach to financial policies (provided that authorities care about financial stability). If cross-border business is limited, authorities may still pursue national financial policies. The financial trilemma is an economics based concept. Section 3 answers the empirical question.

Game theory can be applied to examine the incentives of policy makers to give up national financial policies. An international approach is subject to strategic behaviour, in particular the free-rider problem. Countries that do not sign up to coordinated burden sharing for the financial support¹ of an ailing bank nevertheless profit from burden sharing by the other countries, as the stability of the European financial system is a public good. Goodhart and Schoenmaker (2006), for example, note that free riding may be a problem for the UK. All major banks have a large presence in London. While 17 percent of banking assets in the EU are located in the UK,² the UK's share in the EU economy is lower at 13% of GDP or 15% of the ECB capital key. So it might be more difficult for the UK to join a specific burden sharing arrangement based on the amount of European banking assets, as the UK would have to pay a sizeable proportion of such burden sharing. But, at the same time, the UK might also experience sizeable stability benefits from pre-arranged recapitalisations.

Gaspar and Schinasi (2010) and Claeassens, Herring and Schoenmaker (2010) provide a more extensive game-theoretic analysis. In addition, a full political economic analysis would be needed to analyse a country's incentives to adopt an international approach. The next section provides empirical evidence on the degree of integration in banking and insurance.

2.2 *International policy coordination*

How to solve the financial trilemma? There is a large body of literature on international policy coordination in the world of finance. Broadly speaking, two main strands can be distinguished. The first is to develop supranational solutions, such as an international lender of last resort (Obstfeld, 2009 and 2011; and Fischer, 1999) or a world financial regulator (Eatwell and Taylor, 2000). In this case, national financial policies will be replaced by an international approach. The second is to segment international financial

¹ The spectrum of financial support measures ranges from guarantees, asset relief, liquidity support, recapitalisation to winding-down of an ailing institution.

² We only take here the share of European banking assets (domestic and cross-border from EU countries). For the UK, the share in European banking assets is 17 percent. The UK share in total banking assets (domestic and cross-border from EU and third countries) is 22 percent, due to the large presence of international banks in London.

markets through restrictions on cross-border flows (Eichengreen, 2004). In the case of international banks, the segmentation can be done through a network of fully self-sufficient subsidiaries (Cerutti *et al*, 2010). The objective of cross-border integration is given up. The approach in this essay fits in the first strand of developing an international framework.

Starting with the first strand, the internationalisation of banking operations has blurred the lines of responsibility for national central banks in their role as lender of last resort. Central bank actions have effects on foreign financial markets, not least through potential effects on exchange rates. In a situation of global distress, such actions, if widely pursued by individual authorities, may further destabilise world markets. Obstfeld (2009) argues that the IMF has a key role to play as coordinated lender of last resort.

More recently, Obstfeld (2011) also highlights the fiscal dimension of liquidity support. There is always a government standing behind a central bank to guarantee its solvency. While central banks can lend without limit (that is providing unlimited lender of last resort support), their capacity to absorb losses is limited to their capital. So, the government is the capital supplier of last resort. Recent experience shows the potential for banking problems to quickly turn into big fiscal problems with externalities for financial institutions abroad. This is a problem for any globalised financial system, not just the euro area with its common currency.

Internationally coordinated lender of last resort support, with a coordinated fiscal backup, requires some sort of common framework of financial supervision and enforcement. The international supervisory system must provide a strong brake to the several forms of moral hazard. Next, to be effective, supervision must be closely coordinated internationally, with the support of clear guidelines for resolving international banks and sharing the resulting costs. The euro area's failed attempt to leave national supervisory regimes in place offers a vivid example. As an ultimate consequence of cross-border externalities posed by international banks, Eatwell and Taylor (2000) make the case for a World Financial Authority. Such a global authority can internalise these cross-border externalities.

The second strand in the literature is to segment international markets through restrictions on cross-border flows. Eichengreen (2004) argues that international financial liberalisation can positively affect the efficiency of resource allocation and the rate of economic growth. But analyses of both recent and historical experiences also show an undeniable association between capital mobility and crises, especially when domestic institutions are weak and the harmonisation of capital account liberalisation and other policy reforms are inadequate. So weak institutions cannot stop the possible spillover effects.

By contrast to the first strand, Eichengreen (2002) indicates that official financing through the IMF -similar to financing through the central bank at the national level- is part of the problem. The IMF's financial rescues allow investors to escape without losses, in turn encouraging them to lend without due regard to the risks. This only makes the international financial system more crisis prone. So, new alternatives like an international lender of last resort would create more problems than they solve. Eichengreen proposes to put limits on cross-border flows until the institutional and policy environment has been strengthened in the problem countries. Until corporate governance and supervisory

infrastructures have been sufficiently upgraded to ensure that banks and firms can manage their own risks, policy should be used to limit their external borrowing. As the strengthening of institutions proceeds, foreign direct investment should be liberalised, followed by stock and bond markets. Only then should banks be permitted to borrow offshore.

In the case of international banking, segmentation can be achieved by a network of fully self-sufficient subsidiaries. The separately capitalised subsidiaries have to operate with substantial higher levels of liquidity and capital in the absence of cross-border transfers. Cerutti *et al.* (2010) argue that the Great Financial Crisis challenged centralised capital and liquidity management by internationally active banks. This has sparked a debate about the desirable organisational and supervisory arrangements for international banks; in particular, the question whether restrictions should be placed on intra-group cross-border transfers imposed by the host/home country supervisors. In other words, should the foreign operations be ring-fenced?

Cerutti *et al.* (2010) provide the arguments both for and against ring-fencing. The arguments in favour of centralised international bank structures and against ring-fencing rely on efficiency and financial stability considerations (for example, benefits of diversification across country-specific shocks). From an international bank's perspective, the ability to freely re-allocate funds across its affiliates is essential for achieving the most efficient outcome. International bank structures may also yield benefits for the host country economies. De Haas and Van Lelyveld (2010), for example, show that the ability of international banks to attract liquidity and raise capital allows them to operate an internal capital market within their bank. This internal capital market provides their subsidiaries with better access to capital and liquidity than what they would have been able to achieve on a stand-alone basis. This may in turn help to reduce the pressure to scale back lending during economic downturns.

But there are also arguments in favour of ring-fencing. For a host country supervisor, the decision to impose ring-fencing would typically be driven by macro-financial stability considerations, such as the need to protect the domestic banking system from negative spillovers from the rest of the group. Vice versa, the home country supervisor may wish to limit foreign exposures affecting the parent bank. It may do so by requiring local funding for foreign operations in separately capitalised and funded subsidiaries. The exposure for the parent bank is then limited to the capital invested in the foreign subsidiary, applying the concept of limited liability.

Finally, the difficulties in resolving international banking groups and the absence of agreements on burden-sharing mechanisms during the Great Financial Crisis suggest the desirability of promoting greater self-sufficiency of banking groups' affiliates. When adopting such stand-alone-subsidiaries, international banking is reversed.

3. Empirical evidence on banking and insurance integration

3.1 Empirical approach

The financial trilemma indicates that the extent of cross-border externalities determines the choice between national and European financial policies. If cross-border externalities

are large, national financial policies will have to be given up (assuming that policymakers want to maintain financial stability). Cross-border externalities can be measured by the geographical segmentation of financial firms' assets. Sullivan (1994) develops the Transnationality Index to measure the internationalisation of multinationals. This Transnationality Index is calculated as an unweighted average of (1) foreign assets to total assets, (2) foreign income to total income, and (3) foreign employment to total employment. Although an index based on three indicators is more stable, our study focuses on the first indicator: foreign assets to total assets.

The financial stability benefits are related to a bank's assets in several ways. The benefits can be thought of as preventing a temporary reduction of credit availability (credit crunch) through shortening of balance sheets by a forced liquidation of the loan book in a particular country. Another source of benefits is the safeguarding of financial stability of the total banking system, which might be jeopardised by a fire sale of assets or other externalities impacting negatively on aggregate investment in a country (Acharya, 2009).

Thus, we take size and distribution of bank assets to represent the benefits. This is in accordance with the "credit view" on the impact of bank failures on the economy (Bernanke, 1983). An alternative proxy would be the distribution of liabilities, as the liability-holders bear the cost of a failure. But that does not take into account the loan channel as a source of macroeconomic risk. While many studies use exposure data (e.g. on particular banking exposures) to measure patterns of contagion risk, we take a different approach. The key issue of the financial trilemma is the potential for coordination failure. Each government only incorporates the domestic effects of a failure. So it is not the type of exposure, but the amount of domestic versus foreign business that determines the intensity of coordination failure (see Schoemaker (2011 and 2013b) for a full description of the financial trilemma model and the variables).

In this study, we focus on financial shocks that propagate within the financial system through cross-border links. Stock based measures are relevant for this form of financial contagion. So far, most cross-border activities are measured in terms of flows (are cross-border flows rising?)³ or price-convergence (are interest rates or risk premiums converging?). Given the focus on resolution (how can the domestic and foreign assets of an ailing financial firm be resolved?), this essay examines financial intermediaries (universal banks and insurers).

Alternative approaches focus on financial shocks that propagate through liquidity shortages, credit constraints, funding concerns or changes in asset prices. These alternative approaches measure the transmission of shocks through financial markets and examine the dynamics of asset prices and/or funding channels.

This section starts with broad empirical evidence on international banking. The empirical literature on the internationalisation of financial services is extensive (see Cetorelli and Goldberg, 2011, for an overview). A first line of research examines the patterns of foreign direct investment (FDI) in banking. How large are the flows into banks in (emerging) economies and what is the impact on the banking system of these economies? Soussa (2004) reports that most of the FDI in banking in emerging economies was directed to

³ It is still interesting to monitor flows in order to detect changes in stocks.

Latin America and Eastern Europe over the 1990-2003 period. The focus of this research is on the recipient (host) countries. Updating these studies, new aggregate data indicate that cross-border banking has gradually been descending since its pre-crisis peak in 2007. Nevertheless, cross-border banking is still persuasive with a share of over 20 percent of total bank lending in *host* countries across the world. Unfortunately, there is no empirical evidence on aggregate trends in international insurance.

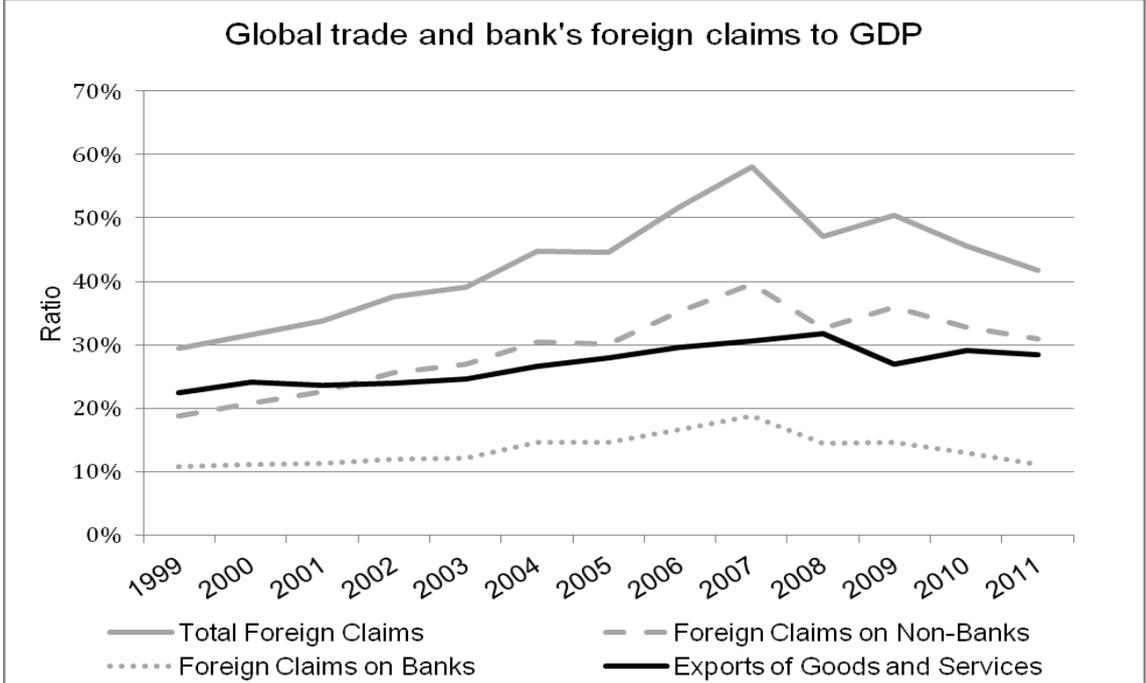
A second line of research looks at the cross-border expansion of individual banks and insurers from their *home* base. Internationalisation can be measured by examining a specific aspect of international banking and insurance. Berger *et al.* (2003), for example, investigate the geographic reach of banks' cash management services. How many countries do banks cover? Internationalisation is then measured by the amount of countries in which a bank is active. A separate approach is to look at the full set of activities of banks. Extending earlier work (Schoenmaker and Oosterloo, 2005; Schoenmaker and Van Laecke, 2007; Schoenmaker, Oosterloo and Winkels, 2008), we adopt this approach to measure the international operations of banks and insurers. Detailed data on the geographical segmentation of the 30 largest banks and 25 largest insurers in Europe is collected, as these large financial intermediaries are cross-border oriented. Large European banks have significant international operations (close to 50 percent on average), while large European insurers have even larger international operations (over 55 percent on average).

The dynamics and choice of variables are explored in detail below. We apply slightly different indicators of foreign penetration, due to data availability. The indicator for aggregate banking trends is linked to lending, while the indicator for individual banks and insurers is linked to assets and gross written premium respectively, which are broader indicators.

3.2 *International banking trends*

After the Asian crisis in the late 1990s, the BIS stepped up the systematic worldwide collection of international banking statistics. So, the aggregate trends can be illustrated from 1999 onwards. It may be useful to review the link between banking and trade. Figure 2 indicates that international banking (measured as banks' foreign claims to GDP) is both larger and growing faster than international trade (measured as exports to GDP). Closer investigation of Figure 2 shows that international bank lending to the non-bank sector has more or less kept pace with global trade. By contrast, international bank lending to banks has increased from 10 to 20 percent from 1999 to 2007. It subsequently went back to 11 percent after the Great Financial Crisis. International lending to non-banks is supporting global trade, while international lending within the financial system (including securitisation) has been growing fast in the run up to the crisis, and has also been declining fast after the crisis. It is now back at the pre-crisis level of 11 percent.

Figure 2. Global trade and banks' foreign claims to GDP.

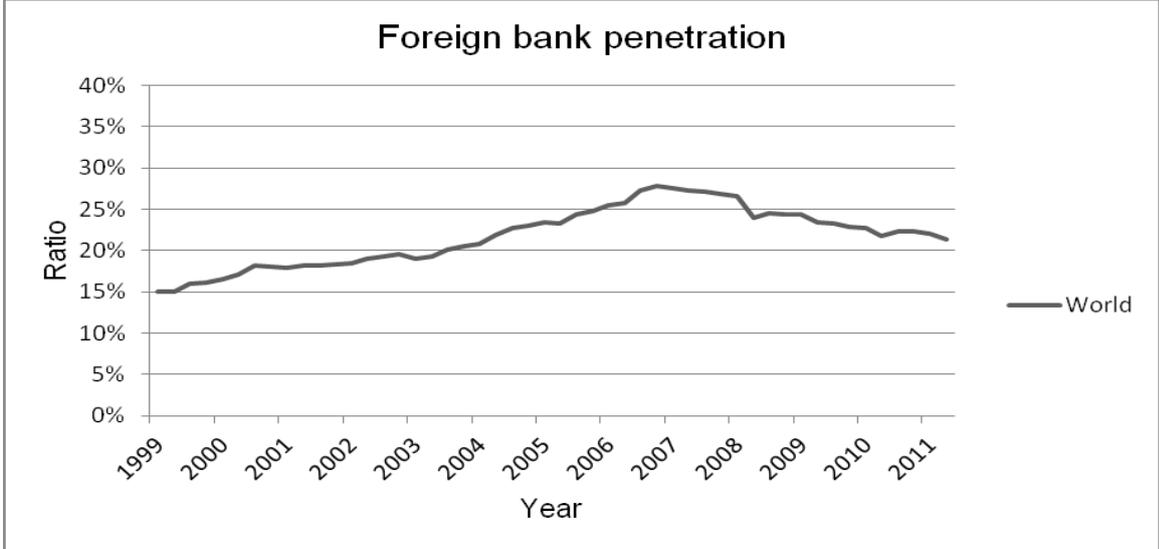


Note: Global trade is measured as exports of goods and services to GDP. Total foreign claims of banks are split into foreign claims on non-banks and on banks.

Source: World Development Indicators, World Bank; World Economic Outlook Database, IMF; Consolidated Banking Statistics, BIS.

Next, the rate of foreign bank penetration, defined as foreign lending as a share of total lending in a country or region, is investigated. Figure 3 presents foreign bank penetration at the global level from 1999 to 2011. Again, the Great Financial Crisis plays a prominent role. While the share of foreign bank lending to the non-bank sector rose from 15 to 28 percent, it dropped to 21 percent in 2011. Claessens and Van Horen (2012) also document substantial increases in foreign bank presence (defined as the number of foreign banks as a share of total banks in a country). They report that current market shares of foreign banks average 10 percent in OECD countries and 30 percent elsewhere. During the Great Financial Crisis, foreign banks reduced credit more compared to domestic banks, except when they dominated the host banking system.

Figure 3. Foreign bank penetration.

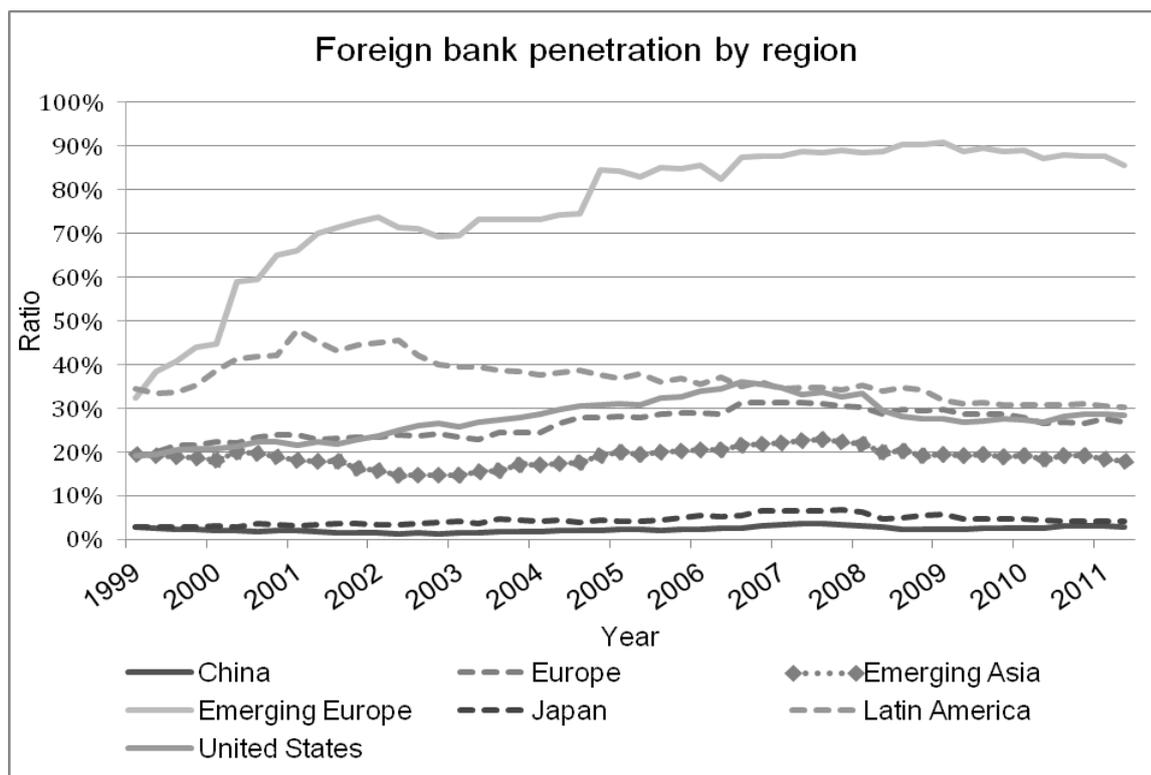


Note: Lending by foreign banks, as a percentage of total bank lending to non-banks in a given country. The data are for the World, that is all countries aggregated.

Source: International Financial Statistics, IMF; Consolidated Banking Statistics, BIS.

It is interesting to examine the rate of foreign bank penetration by region. Figure 4 plots the regional trends, whereby we apply weighted averages to show the economic importance of foreign banking in a region. Foreign bank penetration in Latin America declined after the Argentina crisis of 2001 and is now back at 30 percent. So the earlier trend in foreign banking in Latin America has been reversed. For Western Europe and the US, the shares are relatively stable at about 30 percent. By contrast, the share has expanded to nearly 90 percent in emerging Europe. The ebb in foreign bank lending to Central and Eastern Europe after the financial crisis has been limited up until 2011. The share of foreign bank penetration in emerging Asia is far lower at 20 percent. China and Japan have very limited foreign banking within their borders with shares well below 5 percent. That shows that these large Asian countries are difficult to penetrate for foreign banks.

Figure 4. Foreign bank penetration by region.



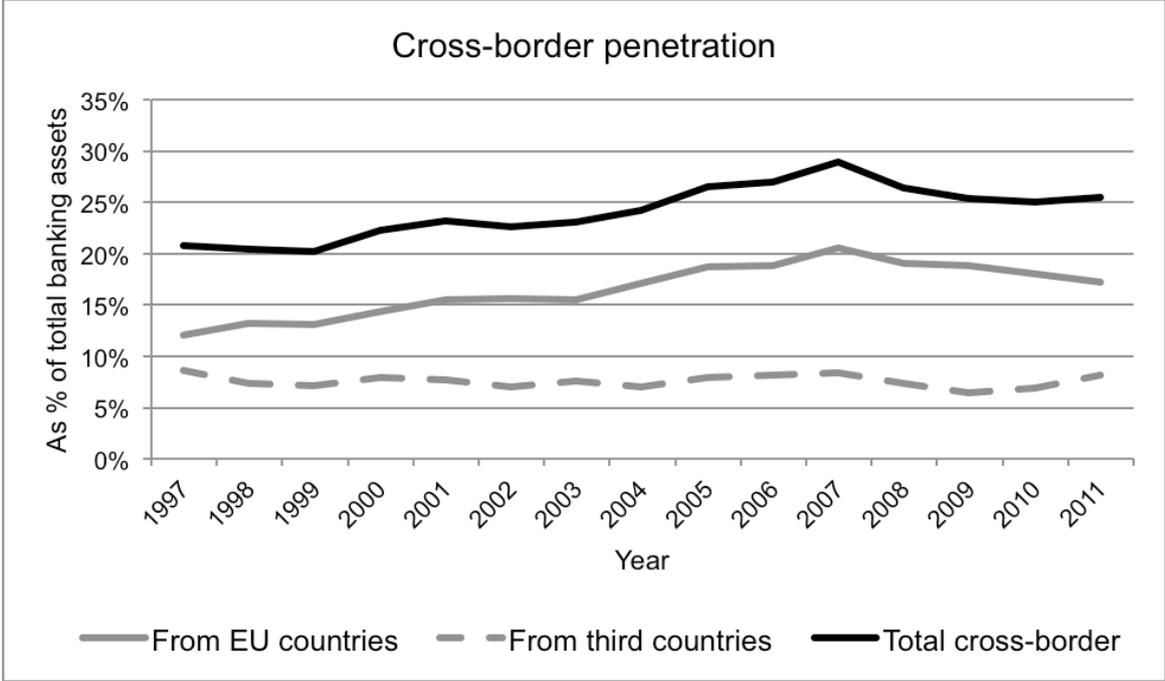
Note: Lending by foreign banks, as a percentage of total bank lending to non-banks in a given country or region. The data are for the major countries and regions. In the case of regions, the data for the respective countries in that region are aggregated.

Source: International Financial Statistics, IMF; Consolidated Banking Statistics, BIS.

3.3 Aggregate EU banking trends

Moving to Europe, we can measure the cross-border penetration within the European Union (EU). This measurement is more detailed as the ECB collects and publishes structural indicators of the EU banking system. Figure 5 presents the cross-border penetration. Within the EU, the cross-border penetration has gone up from 12 percent in 1997 to 21 percent in 2008. It shows a decline after the crisis from 21 to 17 percent. But the cross-border business from EU countries remains sizeable. Business from third countries is relatively stable around 8 percent throughout the period. Overall cross-border penetration remains solid with a fall back to the pre-crisis level of 2004 (which is consistent with the foreign banking trend at the global level in Figure 3). There are no major reductions in the aftermath of the Great Financial Crisis.

Figure 5. Cross-border penetration in the European Union.



Note: Share of assets from other EU countries and third countries, as a percentage of total bank assets. The ratios are calculated for the EU-27.
Source: EU Banking Structures, ECB.

Moving to the country level, Table 1 provides a detailed breakdown of total assets to see country trends in overall banking in the EU after the crisis. It is remarkable that the size of the banking system did not shrink. We use the year 2008 as benchmark. Although the Great Financial Crisis started in Autumn 2008, the full extent was not yet incorporated in end-2008 figures (accounting is often lagging) with the exception of the UK, where the impact of the Lehman failure in London was immediately felt with a decline of total assets of €1,255 billion (12 percent drop from 2007 to 2008). The overall size of the EU banking system is flat from 2008 to 2009 and increases thereafter. The 2008-2012 change is +9 percent, as reported in the final column in Table 1. Some crisis-stricken countries, like Belgium (-10 percent), Estonia (-14), Greece (-6), Ireland (-36), Latvia (-12) and Luxembourg (-25), show a major decline over this period.

Table 1. Total banking assets in EU countries from 2006 to 2012 (in €billion).

Countries	2006	2007	2008	2009	2010	2011	2012	2008-12
Belgium	1,122	1,298	1,271	1,156	1,133	1,197	1,146	-10%
Bulgaria	22	31	37	38	40	42	45	23%
Czech Repub.	115	140	155	160	174	180	191	23%
Denmark	822	978	1,092	1,105	1,130	1,145	1,150	5%
Germany	7,121	7,562	7,875	7,424	8,295	8,387	8,435	7%
Estonia	15	21	22	21	20	19	19	-14%
Ireland	1,178	1,337	1,412	1,324	1,209	1,011	903	-36%
Greece	315	383	462	490	514	476	436	-6%
Spain	2,516	3,005	3,381	3,433	3,463	3,613	3,587	6%
France	5,728	6,682	7,225	7,156	7,436	8,050	7,908	9%
Italy	2,793	3,332	3,635	3,692	3,760	4,043	4,247	17%
Cyprus	77	93	118	139	135	132	129	9%
Latvia	23	31	32	30	30	29	28	-12%
Lithuania	17	24	27	26	26	25	24	-9%
Luxembourg	840	915	932	798	755	769	695	-25%
Hungary	94	109	125	126	121	110	111	-11%
Malta	30	38	42	41	50	51	55	29%
Netherlands	1,843	2,168	2,232	2,217	2,261	2,427	2,528	13%
Austria	790	891	1,068	1,037	977	1,009	983	-8%
Poland	190	234	263	274	311	310	352	34%
Portugal	397	440	482	520	559	573	560	16%
Romania	52	72	85	86	91	91	90	7%
Slovenia	35	44	49	53	53	52	52	6%
Slovakia	49	58	66	55	56	58	60	-9%
Finland	255	288	384	388	472	635	587	53%
Sweden	774	855	908	935	1,061	1,130	1,206	33%
United King.	9,869	10,095	8,840	9,421	9,637	10,193	10,299	17%
Euro area	24,933	28,345	30,568	29,921	31,128	32,503	32,328	6%
Non-euro area	12,148	12,778	11,649	12,222	12,641	13,255	13,497	16%
EU	37,081	41,123	42,217	42,144	43,768	45,757	45.825	9%

Note: Total banking assets are reported for each country in €billion. The final column reports the change from 2008 to 2012 as a percentage. The average figures for euro area, non-euro area and EU are asset-weighted.

Source: EU Banking Structures, ECB.

This essay examines a potential reversal in integration after the crisis, which is measured by cross-border banking within the EU. Table 2 reports cross-border penetration from EU countries. At the aggregate level, cross-border penetration decreased from 21 percent in 2007 to 17 percent in 2011 (as also shown in Figure 5). This gradual and modest decline hides some significant dynamics at the country level. Belgium shows a large increase of 32 percentage points (see right-hand side column of Table 2), due to the split, and subsequent sale, of Fortis to BNP Paribas (Belgian and Luxembourg parts) and the Dutch government (Dutch part). By contrast, the Netherlands pictures a temporary reduction in cross-border penetration to about 4 percent in 2007/2008. As the Dutch supervisor slowed down the transfer of the different parts of ABN Amro, only the 2009 figures show for the first time the final transfer to RBS and Deutsche Bank. Large declines in cross-border banking are found in the New Member States: Estonia (-9 percentage points), Cyprus (-12), Latvia (-15), Lithuania (-11), Poland (-12) and Romania (-13). These countries

experience some major reversals of cross-border inflows in the aftermath of the Great Financial Crisis.

Table 2. Cross-border penetration from EU countries (2006 to 2011, in %).

Countries	2006	2007	2008	2009	2010	2011	2008-11
Belgium	22%	21%	22%	54%	52%	54%	32%
Bulgaria	80%	79%	81%	82%	78%	74%	-7%
Czech Repub.	91%	88%	98%	90%	88%	93%	-5%
Denmark	18%	17%	15%	18%	17%	15%	-1%
Germany	9%	10%	10%	10%	10%	10%	0%
Estonia	98%	99%	97%	95%	93%	88%	-9%
Ireland	33%	47%	47%	43%	36%	38%	-9%
Greece	37%	23%	22%	21%	20%	19%	-3%
Spain	11%	11%	10%	10%	9%	9%	-1%
France	10%	11%	11%	10%	9%	9%	-2%
Italy	14%	18%	13%	12%	13%	13%	0%
Cyprus	25%	26%	33%	33%	26%	22%	-12%
Latvia	60%	59%	62%	63%	60%	48%	-15%
Lithuania	85%	84%	85%	83%	79%	74%	-11%
Luxembourg	87%	85%	83%	82%	85%	82%	0%
Hungary	53%	55%	61%	54%	57%	63%	2%
Malta	38%	37%	39%	35%	37%	35%	-4%
Netherlands	14%	16%	4%	3%	13%	11%	8%
Austria	19%	22%	19%	15%	15%	15%	-3%
Poland	61%	60%	75%	56%	59%	63%	-12%
Portugal	21%	23%	22%	22%	21%	21%	-1%
Romania	84%	89%	87%	76%	74%	74%	-13%
Slovenia	30%	29%	31%	29%	28%	28%	-2%
Slovakia	78%	83%	93%	96%	96%	95%	3%
Finland	56%	65%	70%	67%	70%	71%	2%
Sweden	9%	9%	10%	7%	7%	8%	-2%
United King.	24%	27%	25%	24%	21%	17%	-8%
Euro area	16%	17%	16%	16%	16%	16%	0%
Non-euro area	25%	27%	27%	25%	22%	19%	-8%
EU	19%	21%	19%	19%	18%	17%	-2%

Note: Cross-border penetration via branches and subsidiaries from EU countries is reported for each country as a percentage of total banking assets. The final column reports the difference in percentage points from 2008 to 2011. The average figures for euro area, non-euro area and EU are asset weighted.

Source: EU Banking Structures, ECB.

We investigate two specific dimensions of financial integration in the EU in more detail. First, the impact of the Great Financial Crisis on the dominant share of banking groups from Western Europe in the emerging financial markets of Central, Eastern and South-Eastern Europe (CESEE). Second, the impact of the European sovereign debt crisis on cross-border flows into the peripheral (Portugal, Ireland and Greece) and distressed (later extended with Spain and Italy) countries. To examine these dimensions, we report cross-border flows for these two groups of countries from 2006 to 2011 in Table 3.

Table 3. Breakdown for CESEE, peripheral and distressed countries.

Panel A. Total assets (in EUR billion)								
Countries	2006	2007	2008	2009	2010	2011	2012	2008-12
CESEE	596	763	859	870	922	916	972	13%
Periphery	1,890	2,160	2,356	2,334	2,281	2,060	1,900	-19%
Distressed	7,199	8,497	9,372	9,459	9,504	9,716	9,733	4%

Panel B. Cross-border penetration from EU countries (in %)								
Countries	2006	2007	2008	2009	2010	2011	2012	2008-11
CESEE	69%	69%	78%	68%	68%	71%	-	-7%
Periphery	31%	38%	37%	34%	29%	29%	-	-8%
Distressed	17%	20%	18%	16%	15%	15%	-	-3%

Note: CESEE are the 10 New Member States from Central, Eastern and South-Eastern Europe (Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia, and Slovakia). The periphery countries are Portugal, Ireland and Greece. At a later stage, Spain and Italy are added turning it into distressed countries. The averages for CESEE, peripheral and distressed countries are asset weighted.

Source: See Tables 1 and 2.

Panel A. of Table 3 confirms again that there are no major reversals of the overall size of country's banking systems, except for the peripheral countries (-19 percent from 2008 to 2012). That is due to the largest (in bank asset terms) peripheral country, Ireland, which shows a 36 percent decline (see Table 1). While Figure 4 (using BIS and IMF data) shows only a modest decline for foreign penetration into emerging Europe, the more detailed ECB data show a sharp decline in cross-border banking. Cross-border penetration from EU countries (i.e. Western banks active in emerging Europe) dropped with a full 10 percentage points from 78 percent in 2008 to 68 percent in 2009 in Panel B. of Table 3. That is a major reversal of integration. In particular, Poland, Romania and the Baltics were badly hit, as Table 2 shows. Poland shows the largest shift: a 15 percentage points increase from 2007 to 2008 followed by a 19 percentage points decline from 2008 to 2009. Nevertheless, Poland experiences a large increase of total banking assets of 34 percent from 2008 to 2012 (see Table 1). More generally, the Great Financial Crisis reversed the large upward swing in cross-border banking prior to the crisis. Cross-border penetration in emerging Europe has returned to the pre-crisis level of about 70 percent (asset weighted average). The Vienna Initiative -aimed at maintaining cross-border banking flows from Western to Eastern Europe- may have prevented a further decline of cross-border banking into emerging Europe.

The CESEE figures indicate the vulnerability of emerging Europe to adverse developments in those foreign banking groups whose subsidiaries or branches have systemic presence in individual concerned countries. Our analysis is consistent with newly emerging evidence that the viability of the host country branch and/or subsidiary is dependent on the performance of the parent bank (Bruno and Shin, 2012; Jeon, Olivero and Wu, 2013). CESEE countries are thus very dependent on the well-being of the banks headquartered in the EU-15 countries. CESEE countries may thus have an incentive to join Banking Union. In a Banking Union, these banks would be supervised and resolved at the European level. By opting in, CESEE would get a say in the supervision and resolution of these banks that are important for their economy (see our policy essay,

Schoenmaker, 2013a). The crisis has shown that the current CESEE strategy of subsidiarisation offers no protection against reversals of cross-border banking credit.

Finally, we analyse the impact of the European sovereign debt crisis. The crisis started in the peripheral countries, with Greece and Ireland receiving a rescue package in 2010 and Portugal in 2011. Later on, doubts started about the fiscal position of Spain and Italy, turning the peripheral group of countries into the distressed countries. Table 3 indicates a strong contraction of the peripheral countries, both on total banking system (-19 percent in Panel A) and the foreign participation within the total banking system (-8 percentage points in Panel B). The strong drop is caused by Ireland, the largest peripheral country. There has been an ongoing shrinkage of the Irish banking system since the Great Financial Crisis (see Table 1). Furthermore, cross-border banking has dropped from 47 percent in 2007/2008 to 38 percent in 2011 (see Table 2). So, cross-border credit has contracted faster than domestic credit in Ireland. Moving to the distressed countries, it appears that there are no signs yet of reversal of cross-border banking in Spain and Italy. But it is too early to have a verdict on these countries, where the sovereign debt crisis erupted in 2011/2012.

Summing up, integration has been reversed in the CESEE and peripheral countries, with a decline in cross-border penetration from 2008 to 2011 with 7 and 8 percentage points respectively. The evidence shows that the large Western European banks have thus withdrawn from the crisis-stricken countries.

3.4 *Integration of top 30 European banks*

After reviewing the overall trends in international and European banking from a host country perspective, we move to the internationalisation of banks from a home country perspective. As explained in Section 3.1, financial stability benefits can be related to a bank's assets. Following this approach, this section takes the geographic segmentation of assets as a proxy for the geographic spread of the benefits. It is interesting to distinguish between regional expansion within Europe and global expansion of banks. The asset data are therefore broken down into activities in the home market (h), the rest of the region (r), and the rest of the world (w). Our empirical study of international banking focuses on the large banks, as these are more international than their smaller counterparts. Extending earlier work with Sander Oosterloo and Christiaan van Laecke (Schoenmaker and Oosterloo, 2005; Schoenmaker and Van Laecke, 2007), we select the 30 largest banks on the basis of Tier 1 capital published by *The Banker* (2012).⁴

The purpose of the data exercise is to examine to what extent banks have significant international operations. Following Schoenmaker and Oosterloo (2005), banks are grouped on the basis of their geographic dispersion. The first two groups are truly international banks, as they have more than 50 percent of business abroad. Global banks have less than 50 percent of business in the home country and the majority of their international business in the rest of the world. Regional banks have also less than 50 percent of their business in the home country, but the majority of their international business is in the rest of the region. The third group is a runners-up group, labelled semi-

⁴ To measure the overall potential for coordination failure, we take the simple breakdown into home, regional (European) and global assets. Schoenmaker and Siegmann (2012) provide a further breakdown of the European assets at the country level. This provides a more nuanced picture of the asymmetries in incentives and potential for coordination failure.

international banks. These banks have 50 to 75 percent of their business in the home country. International operations are still sizable at 25 to 50 percent. Finally, domestic banks have more than 75 percent of their business in the home country. The financial trilemma model predicts coordination failure when the foreign operations become large. This is relevant for the first three groups: global, regional, and semi-international banks. National financial policies may only be suitable for domestic banks.

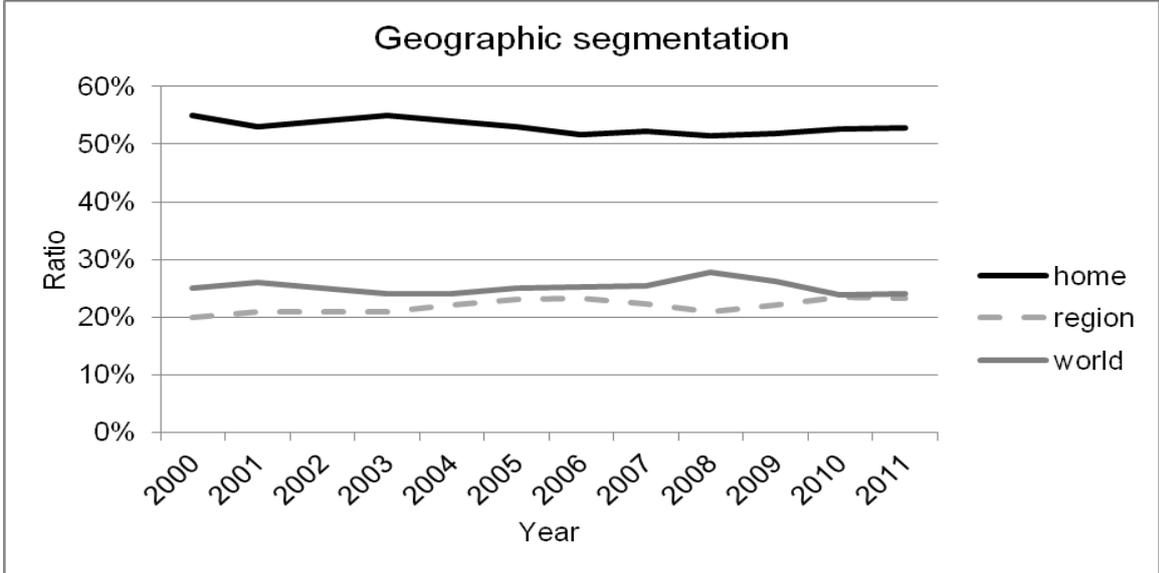


Figure 6. Geographic segmentation of 30 largest European banks.

Note: Share of consolidated assets in home country, rest of Europe (region) and rest of world. The three ratios add up to 100 percent.

Source: Author’s calculations based on annual reports.

Figure 6 shows the history of cross-border banking from a home country perspective for the European Union. Foreign business is calculated as a weighted average for the top 30 banks (weighted according to assets). While the aggregate international and European banking statistics (see Figures 3 to 5) suggest a decline of international banking after the Great Financial Crisis, individual bank data show a different pattern. Throughout the period from 2000 to 2011, cross-border activities have been going steady with some differences. Large European banks have significant international operations at close to 50 percent. The cross-border business within Europe has remained stable at just above 20 percent, with a slight increase from 21 percent in 2008 to 23 percent in 2011 after the Great Financial Crisis. Cross-border business to rest of the world has declined from 28 percent in 2008 to 24 percent in 2011. European banks, in particular German and Dutch banks, have been gradually retreating from the United States, thereby making room for others to step in (Schildbach and Wenzel, 2012). Banks from Canada, China, and Japan have expanded their US business (in line with the general shift of economic power from the West to the East). The overall presence of foreign banks in the United States has remained stable (see Figure 4).

The dynamics over the 2000 to 2011 period are interesting in two respects: (1) ups and downs of internationalisation at particular banks; and (2) entry and exit of banks in the top 30. Foreign business of the largest European banks remained high at about 50 percent throughout the 2000 to 2011 period. Big banks, like HSBC, Deutsche Bank, Credit

Suisse, and UBS, have kept their international orientation until today. The foreign activities of Barclays increased from 24 percent in 2000 to 66 percent in 2011 (see Table 4 below). It has thus moved from being a domestic bank to being a truly global bank. Barclays Capital, its investment bank arm, has played a major role in Barclays' internationalisation. The other large UK bank, Royal Bank of Scotland (RBS), seemed to follow a similar pattern, but was caught by the financial crisis. As part of the government rescue package, RBS had to downsize its international operations. Its foreign business is now 38 percent, down from its peak in 2007–2008 at 46 percent.

Fortis, a mid-sized bank operating on a regional scale in Europe, is a good example showing that a failure of an international bank does not automatically reduce international banking. During the crisis, the Belgian bank was split on national lines. The domestic Belgian part of Fortis was bought by BNP Paribas, which added to the foreign business of BNP Paribas (moving from 30 to 34 percent cross-border business in Europe in Table 4). The foreign Dutch part was acquired by ABN AMRO and thus turned into a domestic business (moving from 32 to 80 percent home country business in Table 4).

An overall conclusion is that most large banks have kept a strong international orientation after the Great Financial Crisis. Some have even become larger through facilitated mergers and takeovers in order to rescue ailing competitors. But other banks have been forced to deleverage deeply, in particular their international business, in response to state aid. Consequently, there are some significant shifts.

Moving to the current situation, Table 5 documents the international activities of the 30 largest European banks in 2011. Europe houses six global banks (three from the UK, two from Switzerland and one from Germany) and seven regional banks from various European countries (reflecting financial integration within the EU). All these banks have the majority of their business abroad. Furthermore, Europe has eight semi-international banks, with sizeable business abroad (between 25 and 50 percent).

These (semi-)international banks have two faces. On the one hand, they play an important role in the domestic economy and are thus systemic in the home country (except for Standard Chartered, which has minor operations in the UK). Given the close connections between the national authorities and these big banks, these banks are sometimes dubbed as national champions (Boot, 1999). On the other hand, a large part of their activities is abroad. As the national authorities do not take the cross-border externalities into account, this may lead to coordination failure in case of a bailout. So, while international coordination may be needed most for these banks, the national authorities are also likely to cling to their national champions.

While these large banks may be 'too-big-to-fail', some banks may be 'too big to save' for some home countries (Demirguc-Kunt and Huizinga, 2013). But how can we measure which banks are too big to save? The equity to GDP ratio provides an indicator of the relative size of the costs for a country (Dermine and Schoenmaker, 2010). Equity measures the unexpected losses that could arise and the subsequent public bail out costs. Dermine and Schoenmaker (2010) suggest that the bailout of a bank may become difficult for a country if a bank's equity to GDP ratio exceeds 4%.

Table 5 shows that this is the case for 13 banks (coming from the UK, Spain, the Netherlands, Switzerland, Sweden, Belgium, Denmark, Ireland and Norway) out of our

sample of the 30 largest banks. Too-big-to-safe banks typically come from the smaller countries, but also the UK that is home to various very large banks. It is not an issue for Germany, France and Italy, where the size of banks is smaller than the economic weight of the country would suggest. Resolution at the European, rather than the home country, level of these too-big-to-safe banks improves the feasibility of bailouts (see Schoenmaker and Siegmann, 2012; Schoenmaker, 2013a).

Table 4. Biggest 30 banks in Europe from 2000 to 2011

Banking groups	2000			Banking groups	2006			Banking groups	2011		
	h	r	w		h	r	w		h	r	w
HSBC	33	6	61	HSBC	24	11	65	HSBC	35	11	54
Crédit Agricole	61	19	20	Crédit Agricole	64	20	16	BNP Paribas	49	34	17
Royal Bank of Scotland	76	7	17	Royal Bank of Scotland	69	8	23	Royal Bank of Scotland	62	8	30
Halifax Bank of Scotland	94	3	3	Banco Santander	31	35	35	Crédit Agricole	81	11	8
BNP Paribas	48	21	31	BNP Paribas	52	30	18	Banco Santander	27	41	32
Banco Santander	28	10	62	Barclays	49	13	37	Barclays	34	27	39
Barclays	76	7	17	Halifax Bank of Scotland	86	7	7	Lloyds Banking Group	90	7	3
Rabobank Group	80	7	13	UniCredit	29	68	3	Deutsche Bank	34	32	34
ING Bank	36	19	45	Rabobank Group	73	15	12	UniCredit	42	56	2
UBS	35	30	35	ING Bank	40	41	19	Banque Populaire CdE	71	14	15
ABN Amro Group	34	33	33	UBS	24	24	51	ING Bank	40	38	22
Deutsche Bank	41	29	30	Deutsche Bank	27	36	36	Rabobank Group	74	9	17
Groupe Caisse d'Epargne	n.a.	n.a.	n.a.	ABN Amro Group	32	34	34	Société Générale	79	12	9
Société Générale	68	11	21	Crédit Mutuel	93	5	1	Intesa Sanpaolo	82	14	4
Crédit Mutuel	100	0	0	Société Générale	58	31	11	BBVA	56	9	35
Lloyds TSB	84	8	8	Credit Suisse Group	28	25	46	UBS	36	20	44
Credit Suisse Group	29	32	39	BBVA	53	1	45	Credit Suisse Group	21	26	53
HypoVereinsbank	62	34	3	Lloyds TSB	99	0	0	Standard Chartered	15	4	81
Banca Intesa	66	19	15	Groupe Caisse d'Epargne	81	2	17	Crédit Mutuel	86	10	4
BBVA	31	2	67	Groupe Banques Populaires	81	8	11	Commerzbank	51	32	17
Fortis Group	45	27	28	Fortis Group	56	38	7	Nordea Group	21	74	5
Groupe Banques Populaires	98	1	1	Commerzbank	74	20	6	CaixaBank	98	2	0

Table 4. Biggest 30 banks in Europe (*continued*)

Banking groups	2000			Banking groups	2006			Banking groups	2011		
	h	r	w		h	r	w		h	r	w
UniCredit	74	8	18	Nordea Group	27	73	0	Danske Bank	40	60	0
Dexia	52	48	0	Dexia	53	33	15	KBC Group	64	21	15
Sanpaolo IMI	82	12	6	Danske Bank	59	36	5	ABN Amro Group	80	12	8
Nordea Group	22	76	2	Banca Intesa	79	11	10	Allied Irish Banks	81	18	1
Commerzbank	77	13	10	Dresdner Bank	65	25	10	DNB Group	73	17	10
KBC Group	45	36	19	la Caixa	100	0	0	Landesbank Baden-Württemberg	72	20	8
Bayerische Landesbank	63	18	19	Sanpaolo IMI	86	11	3	Bayerische Landesbank	77	12	11
Caja de Ahorros de Barcelona	98	2	0	KBC Group	50	29	22	Erste Group	41	55	4
Weighted average	55	20	25	Weighted average	52	23	25	Weighted average	53	23	24

Note: Top 30 banks are selected on the basis of capital strength as published in *The Banker*. Total assets are segmented over the home country, the rest of region, and the rest of world. The top 30 banks are calculated using a weighted average (weighted according to assets).

Source: Author's calculations based on annual reports.

Table 5. Biggest 30 banks in Europe in 2011.

Banking groups	Capital strength in €billion	Equity/GDP ratio in %	Total assets in €billion	Home country as % of total assets	Rest of region as % of total assets	Rest of world as % of total assets
Global banks						
1. HSBC (UK)	108	6.3%	1,975	35%	11%	54%
2. Barclays (UK)	60	3.5%	1,868	34%	27%	39%
3. Deutsche Bank (Germany)	49	2.0%	2,164	34%	32%	34%
4. UBS (Switzerland)	32	7.7%	1,165	36%	20%	44%
5. Credit Suisse Group (Switzerland)	30	7.2%	862	21%	26%	53%
6. Standard Chartered (UK)	29	1.7%	463	15%	4%	81%
Regional banks						
1. BNP Paribas (France)	71	3.7%	1,965	49%	34%	17%
2. Banco Santander (Spain)	62	5.9%	1,251	27%	41%	32%
3. UniCredit (Italy)	43	2.8%	927	42%	56%	2%
4. ING Bank (Netherlands)	39	6.6%	961	40%	38%	22%
5. Nordea Group (Sweden)	22	6.3%	716	21%	74%	5%
6. Danske Bank (Denmark)	19	8.1%	461	40%	60%	0%
7. Erste Group (Austria)	12	4.2%	210	41%	55%	4%
Semi-international banks						
1. Royal Bank of Scotland (UK)	68	4.0%	1,801	62%	8%	30%
2. Banque Populaire CdE (France)	41	2.1%	1,138	71%	14%	15%
3. Rabobank Group (Netherlands)	38	6.5%	732	74%	9%	17%
4. BBVA (Spain)	34	3.2%	597	56%	9%	35%
5. Commerzbank (Germany)	26	1.0%	662	51%	32%	17%
6. KBC Group (Belgium)	15	4.2%	285	64%	21%	15%
7. DNB Group (Norway)	14	4.4%	274	73%	17%	10%
8. Landesbank Baden-Württ. (Germany)	14	0.6%	373	72%	20%	8%
Domestic banks						
1. Crédit Agricole (France)	62	3.2%	1,880	81%	11%	8%
2. Lloyds Banking Group (UK)	53	3.1%	1,160	90%	7%	3%
3. Société Générale (France)	38	2.0%	1,182	79%	12%	9%
4. Intesa Sanpaolo (Italy)	37	2.4%	639	82%	14%	4%
5. Credit Mutuel (France)	28	1.4%	605	86%	10%	4%
6. CaixaBank (Spain)	20	1.9%	282	98%	2%	0%
7. ABN Amro Group (Netherlands)	15	2.5%	405	80%	12%	8%
8. Allied Irish Banks (Ireland)	15	9.6%	137	81%	18%	1%
9. Bayerische Landesbank (Germany)	14	0.6%	309	77%	12%	11%
Top 30 European banks	37	4.0%	915	53%	23%	24%

Note: Top 30 banks are selected on the basis of capital strength (Tier 1 capital) as published in *The Banker*. Equity to GDP is Tier 1 capital divided by GDP. Total assets are segmented over the home country, the rest of region, and the rest of world. The top 30 banks are calculated using a weighted average (weighted according to assets).

Source: Author's calculations based on annual reports.

State aid

Several banks received state aid during the Great Financial Crisis. Table 6 lists the state aid for the larger banks (assets of more than €250 million in 2007). During the crisis, 14 large banks received state aid. In three cases, two ailing banks were merged as part of the restructuring deal. This was the case for Lloyds Bank (taking over HBOS), Commerzbank (taking over Dresdner) and Banque Populaire Caisse d'Épargne. As part of the approval of state aid, the European Commission requested these banks to downsize. With the exception of BPCdE, the banks with state aid have downsized significantly. The overall downsizing is 18 percent (decline measured from 2007 to 2011). The actual downsizing is even larger, as the total EU banking system grew over this period with 9 percent. So, the growth difference is -27 percent.

Table 6. Large banks with state aid.

Banking groups	Assets of separate banks in 2007 in €billion	Total assets in 2007 in €billion	Total assets in 2011 in €billion	Difference 2007-2011 in percent
1. Royal Bank of Scotland (UK)		2,587	1,801	-30%
2. Lloyds Banking Group (UK)		1,389	1,160	-16%
2a. Lloyds Group (UK)	481			
2b. HBOS (UK)	908			
3. Commerzbank (Germany)		1,116	662	-41%
3a. Commerzbank (Germany)	616			
3b. Dresdner Bank (Germany)	500			
4. ING Bank (Netherlands)		994	961	-3%
5. Fortis (Belgium)		767	Split up	
6. Banque Populaire CdE (France)		707	1,138	+61%
6a. Groupe Caisse d'Épargne (France)	434			
6b. Groupe Banques Populaires (France)	273			
7. Dexia Bank (Belgium)		605	413	-32%
8. Landesbank Baden-Württ. (Germany)		443	373	-16%
9. Bayerische Landesbank (Germany)		416	319	-23%
10. KBC Group (Belgium)		356	285	-20%
11. WestDeutsche Landesbank (Germany)		287	168	-41%
Aggregate difference state aid banks		8,900	7,280	-18%
Aggregate difference EU banking system		41,062	44,818	+9%

Note: Banks with stated aid are selected on the basis of size: assets over €250 million in 2007. In some cases, two banks were merged as part of the restructuring. Assets of the separate banks are reported in the first column. One bank (Fortis) was split up and ceased to exist. Another bank (WestDeutsche Landesbank) was dissolved in Summer 2012.

Source: Author's calculations based on annual reports.

While deleveraging was partly due to state aid received by some large European banks, there are more factors behind the deleveraging process in the CESEE countries. The Deleveraging Monitor (Vienna Initiative, 2012) presents preliminary evidence showing that deleveraging

includes constraints on both the supply side (e.g. funding shortage at the group level, balance sheet restrictions related to state aid) and the demand side (e.g. feeble economic growth in the region, pervasive non-performing loans). The situation varies significantly among CESEE countries.

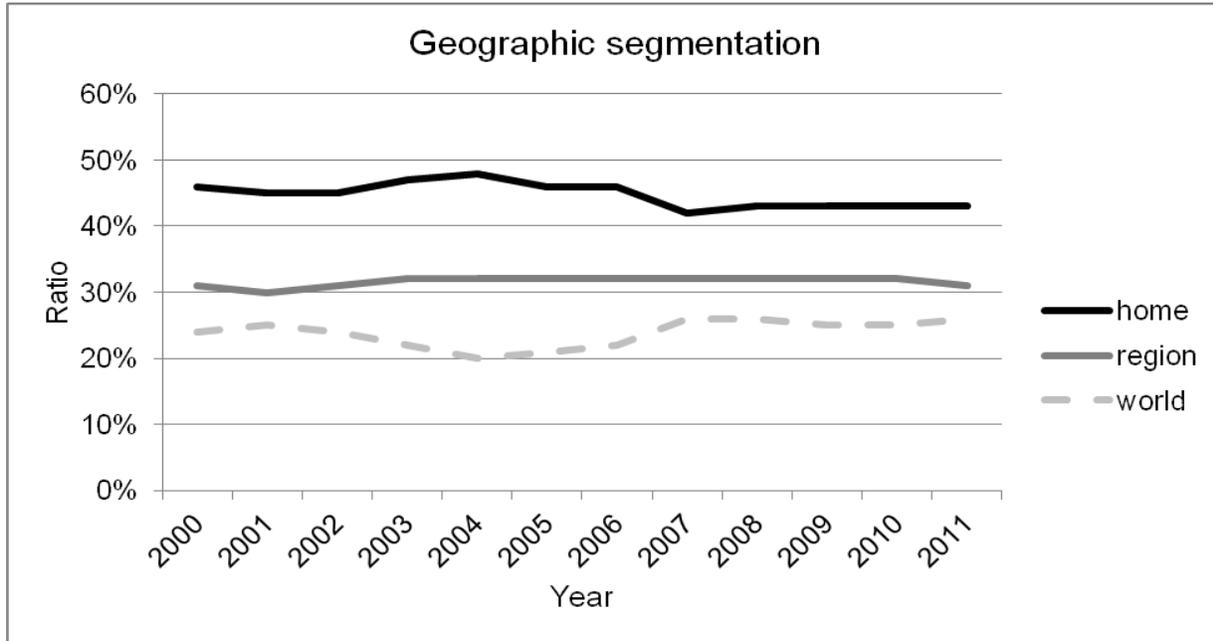
3.5 *Integration of top 25 European insurers*

After reviewing the integration of international banking, we now turn to the internationalisation of insurance groups from a home country perspective. As explained in Section 3.1, the Transnationality Index comprises three indicators: (1) foreign assets to total assets, (2) foreign income to total income and (3) foreign employment to total employment. While in banking the first indicator is commonly used, the second indicator is more common in the insurance industry. We take the geographic segmentation of gross written premium (GWP) as a proxy for the cross-border business. Extending earlier work (Schoenmaker, Oosterloo and Winkels, 2008), this section examines the data on the 25 largest European insurance groups (ranked by GWP).

Figure 7 shows the trend of cross-border businesses for European insurance from a home country perspective. The weighted average of GWP for the top 25 insurance groups is taken to measure the level of foreign business. Although it may be expected that the Great Financial Crisis would have severely lowered foreign insurance operations, this Figure shows a different pattern. In the run-up to the crisis, cross-border business to the rest of the world increased. After the crisis, this ratio remained stable around 25 percent. The cross-border business within Europe did not show any response to the crisis and kept its level around 32 percent until 2010, while in 2011 it slowed down to 31 percent. These numbers indicate strong financial integration of the insurance sector within Europe. Remarkably, the domestic insurance activities declined from 46 percent in 2006 to 42 percent during the crisis and remained at that level after the Great Financial Crisis.

Table 7 shows the dynamics over the 2000 to 2011 period. We can examine: (1) ups and downs of internationalisation at particular insurers; and (2) entry and exit of insurers in the top 25. Foreign business of the largest European insurers remained high at about 55 percent throughout the 2000 to 2011 period. The three big insurers, AXA from France, Allianz from Germany and Generali from Italy, have remained large international players until today. With gross written premiums of over €60 billion (see Table 8), these three have left their European competitors behind them. The runner-up, Aviva, has fallen behind through the divestment (through an IPO) of its Dutch subsidiary, Delta Lloyd, in 2009. The foreign activities of Prudential have increased from 46 percent in 2000 to 78 percent in 2011 (see Table 7 below). It has thus turned into a truly global insurer, with major business in the US and Asia.

Figure 7. Geographic segmentation of 25 largest European insurers



Note: Share of gross written product in home country, rest of Europe (region) and rest of world. The three ratios add up to 100 percent.

Source: Author's calculations based on annual reports.

To measure the impact of the Great Financial Crisis, Table 8 calculates the difference between the gross written premium in 2007 and 2011. Four insurers have realised an overall growth of more than 30 percent over this four year period. Eureko/Achmea increased its gross written premium from €15 to 20 billion in the 2007 to 2011 period, while its cross-border business in Europe remained stable at 7 percent. The Spanish insurer, MAPFRE, showed almost the largest increase as its business grew with 59 percent. It also turned from a domestic insurance company into an international player, by increasing its business in Latin America. It thus follows the path of the two big Spanish banks, BBVA and Santander, which also have large operations in Latin America. Next, ACE, the international Swiss insurer, increased its business from € 12 to 16 billion. Finally, the largest growth in business of 60 percent is achieved by SCOR, the international French insurer.

AEGON and ING Insurance are the two insurers among the top 25 that received state aid during the Great Financial Crisis. While AEGON received directly state aid for its insurance operations, the ING Group received state aid for its banking operations. As in the case of banking, these two insurance companies downsized their business with 27 and 41 percent respectively. This is a substantial downsizing, as overall business of the top 25 insurers increased with 4 percent over this period (Table 8). AEGON kept its strong international orientation, while ING Insurance has been divesting several foreign insurance operations. Furthermore, ING Group will still need to divest ING Insurance as part of its state aid agreement with DG Competition of the European Commission. It is interesting to see the dynamics between insurers. A major divestment of AEGON was the sale of its US mortality reinsurance business of Transamerica Re to SCOR, explaining the international expansion of SCOR.

An overall conclusion is that most large insurers have kept a strong international orientation after the Great Financial Crisis. Different from banking where several facilitated mergers and takeovers took place, the big insurers did not grow significantly. The two insurers that received state aid downsized their business. Consequently, there are some shifts, although the top 3 remains unchanged.

Moving to the current situation, Table 9 documents the international activities of the 25 largest European insurers in 2011. Similar to banks in the previous section, insurers are grouped on the basis of their geographic dispersion. The first two groups are truly international insurers. Global insurers have less than 50 percent of business in the home country and the majority of their international business in the rest of the world. Regional insurers have also less than 50 percent of their business in the home country, but the majority of their international business is in the rest of the region. The third group are semi-international insurers. These insurers have 50 to 75 percent of their business in the home country. International operations are still sizable at 25 to 50 percent. Finally, domestic insurers have more than 75 percent of their business in the home country.

Table 9 illustrates that Europe has seven global insurers from the leading financial countries (UK, Netherlands, Germany, Spain, Switzerland, and France) and eight regional insurance groups from various European countries. All these insurance companies have the majority of their business abroad. It is noteworthy that the top 5 insurers in Europe are large regional players: AXA, Allianz, Generali, Zurich Financial Services and Aviva have a strong footing in Europe with more cross-border business within Europe than outside Europe. Next, Europe has four semi-international insurance companies, with sizeable business abroad (between 25 and 50 percent). A final group of 6 insurers are domestic. Similar to their domestic banking counterparts, these domestic players focus mainly on their respective domestic markets.

Comparing insurance and banking, the large insurers are more international than banks on both indicators in 2011 (though the indicators for foreign business are slightly different with foreign assets for banking and foreign gross written premium for insurance). The weighted average of foreign business is larger: 47 percent for banking (Figure 6 and Table 5) compared to 57 percent for insurance (Figure 7 and Table 9). Next, the relative number of international players is larger: 13 out of 30 in banking (Table 5) compared to 15 out of 25 in insurance (Table 9).

Table 7. Biggest 25 insurance groups in Europe from 2000 to 2011.

Insurance groups	2000			Insurance groups	2007			Insurance groups	2011		
	h	r	w		h	r	w		h	r	w
Allianz	35	44	21	AXA	23	41	37	AXA	24	42	35
AXA	26	41	34	Generali	35	60	5	Allianz	27	51	23
Generali	34	60	7	Allianz	27	55	19	Generali	29	63	8
Aviva	47	31	22	ING Insurance	17	9	74	Zurich Financial Services	12	46	42
ING Insurance	29	21	51	Aviva	39	44	17	Aviva	36	37	27
Zurich Financial Services	13	46	42	Zurich Financial Services	08	48	44	Prudential	22	0	78
CNP	99	1	0	CNP	86	11	4	CNP	100	0	0
Credit Agricole	90	5	5	AEGON	14	46	40	Lloyd's	83	5	13
AEGON	16	27	56	Prudential	32	0	68	ING Insurance	30	9	61
Prudential	53	1	45	Lloyd's	87	4	9	Credit Agricole	81	10	9
Skandia/Old Mutual	27	33	41	Credit Agricole	76	13	11	Talanx	38	30	32
Talanx	31	28	41	Talanx	46	30	24	Achmea/Eureko	93	7	0
HBOS	90	5	5	ERGO	79	17	4	MAPFRE	43	5	52
ERGO	87	13	0	BNP Paribas	57	22	21	AEGON	19	38	43
BNP Paribas	58	23	20	Eureko	92	8	0	ERGO	71	24	5
Eureko	63	37	0	Swiss Life	50	50	0	BNP Paribas	50	34	16
Fortis	34	30	35	MAPFRE	66	5	29	ACE	10	11	79
Groupama	87	12	1	Covéa	97	2	2	Covéa	97	2	2
Swiss Life	52	49	0	ACE	12	11	77	Swiss Life	62	38	0
Fondiaria-Sai	100	0	0	Groupama	77	23	0	Groupama	70	30	0
Royal & Sun Alliance	46	21	34	Fortis	68	30	2	Royal & Sun Alliance	38	33	29
RBS Group	86	4	11	RBS Group	91	9	0	Ageas	63	34	3
Unipol	95	3	2	Royal & Sun Alliance	46	34	20	Vienna Insurance Group	46	55	0
Lloyds TSB	90	5	5	Old Mutual	5	0	95	SCOR	33	16	51
Legal & General	91	5	5	Vienna Insurance Group	53	47	0	Legal & General	90	5	5
Weighted average	46	31	24	Weighted average	42	32	26	Weighted average	43	31	26

Note: Top 25 insurance groups are selected on the basis of gross written premium. Gross written premiums are segmented over the home country, the rest of region (Europe), and the rest of world. The top 30 insurance groups are calculated using a weighted average (weighted according to gross written premiums).

Source: Author's calculations based on annual reports.

Table 8. Change in gross written premium due to the Great Financial Crisis

Current top 25	Insurance groups		GWP 2007 in €mln	GWP 2011 in €mln	Change in 2007-2011
1.	AXA	FR	86,116	80,570	-6%
2.	Allianz	DE	65,788	69,299	+5%
3.	Generali	IT	66,218	69,159	+4%
4.	Zurich Financial Services	CH	32,237	36,902	+14%
5.	Aviva	UK	42,259	35,915	-15%
6.	Prudential	UK	25,034	30,775	+23%
7.	CNP	FR	31,504	30,026	-5%
8.	Lloyd's	UK	22,317	28,106	+26%
9.	ING Insurance	NL	46,422	27,198	-41%
10.	Credit Agricole	FR	20,667	24,759	+20%
11.	Talanx	DE	19,130	23,682	+24%
12.	Eureko/Achmea	NL	14,853	19,650	+32%
13.	MAPFRE	ES	12,311	19,600	+59%
14.	AEGON	NL	26,900	19,521	-27%
15.	ERGO	DE	16,401	18,639	+14%
16.	BNP Paribas	FR	14,914	16,288	+9%
17.	ACE	CH	12,051	16,099	+34%
18.	Covéa	FR	12,089	14,277	+18%
19.	Swiss Life	CH	12,820	14,103	+10%
20.	Groupama	FR	11,781	13,915	+18%
21.	Royal & Sun Alliance	UK	8,994	10,931	+22%
22.	Ageas/Fortis	BE	9,227	9,421	+2%
23.	Vienna Insurance Group	AT	6,912	8,884	+29%
24.	SCOR	FR	4,762	7,602	+60%
25.	Legal & General	UK	6,536	6,847	+5%
Total			628,243	652,168	+4%

Note: Top 25 insurance groups are selected on the basis of gross written premium (GWP) in 2011. The change in gross written premium with respect to the level in 2007 is then calculated.

Source: Author's calculations based on annual reports.

Table 9. Biggest 25 insurance groups in Europe in 2011

Insurance groups	GWP in €bln	Total assets in €bln	Home Country as % of GWP	Rest of region as % of GWP	Rest of world as % of GWP
Global insurance groups					
1. Prudential (UK)	31	328	22%	0%	78%
2. ING Insurance (Netherlands)	27	335	30%	9%	61%
3. Talanx (Germany)	24	115	38%	30%	32%
4. MAPFRE (Spain)	20	55	43%	5%	52%
5. AEGON (Netherlands)	20	346	19%	38%	43%
6. ACE (Switzerland)	16	113	10%	11%	79%
7. SCOR (France)	8	31	33%	16%	51%
Regional insurance groups					
1. AXA (France)	81	730	24%	42%	35%
2. Allianz (Germany)	69	641	27%	51%	23%
3. Generali (Italy)	69	423	29%	63%	8%
4. Zurich Financial Services (Switzerland)	37	298	12%	46%	42%
5. Aviva (UK)	36	374	36%	37%	27%
6. BNP Paribas (France)	16	146	50%	34%	16%
7. Royal & Sun Alliance (UK)	11	23	38%	33%	29%
8. Vienna Insurance Group (Austria)	9	40	46%	55%	0%
Semi-international insurance groups					
1. ERGO (Germany)	19	139	71%	24%	5%
2. Swiss Life (Switzerland)	14	125	62%	38%	0%
3. Groupama (France)	14	89	70%	30%	0%
4. Ageas (Belgium)	9	91	63%	34%	3%
Domestic insurance groups					
1. CNP (France)	30	321	100%	0%	0%
2. Lloyd's (UK)	28	77	83%	5%	13%
3. Credit Agricole (France)	25	258	81%	10%	9%
4. Eureka/Achmea (Netherlands)	20	92	93%	7%	0%
5. Covéa (France)	14	85	97%	2%	2%
6. Legal & General (UK)	7	327	90%	5%	5%
Top 25 European insurance groups	26	224	43%	31%	26%

Note: Top 25 insurance groups are selected on the basis of gross written premium (GWP). The insurance groups are structured in Global insurance groups, European insurance groups, Semi-international insurance groups and Domestic insurance groups. The top 25 insurance groups are calculated using a weighted average (weighted according to gross written premiums).

Source: Author's calculations based on annual reports.

3.6 *Branches versus subsidiaries*

So far, we have examined quantitative data on cross-border integration. The corporate structure of international banks has also an impact on integration. In particular, the legal dimension whether an international bank organises its cross-border operations through branches or subsidiaries is important. While subsidiaries have a legal status with their own corporate charter and balance sheet, branches have no separate legal status but are part of another legal entity, often the parent bank. The legal form influences the allocation of supervisory responsibilities between the home and host authorities. Foreign subsidiaries are separately licensed and supervised by the host country. As branches do not have their own balance sheet, the host country cannot monitor the solvency position of branches. The Basel Concordat for the supervision of international banks thus assigns the supervision of solvency to the home country (Basel Committee on Banking Supervision, 1983). Nevertheless, the host country still has the power to monitor the ‘soundness’ of foreign branches operating in their jurisdiction. The EU is going one step further with the Single Market in Banking. The Second Banking Directive allows banks to expand by establishing branches in other EU Member States without additional supervision by host country authorities, because the home country supervises the parent bank (home country control). Branches thus facilitate financial integration.

A range of bank structures exists with varying degrees of centralisation. At one end of the spectrum, an integrated global bank operates through a worldwide web of branches. At the other end, a decentralised global bank has multiple subsidiaries. In practice, the shades are grey, as international banks typically have a mix of branches and subsidiaries. Citigroup, a US-based integrated global bank maintains, for example, both a branch and subsidiary in London. The upshot is that integrated banks tend to make more use of branches, while decentralised banks have at least one main subsidiary in each country of operation.

Although organising cross-border activities through branches lessens the intensity of host supervision (large banking groups like Deutsche Bank have to deal with at least 20 different supervisory authorities in the EU), many banks choose to operate through subsidiaries. Dermine (2006) and Cerutti *et al.* (2007) examine the factors influencing international banks’ legal structure. They list the following considerations:

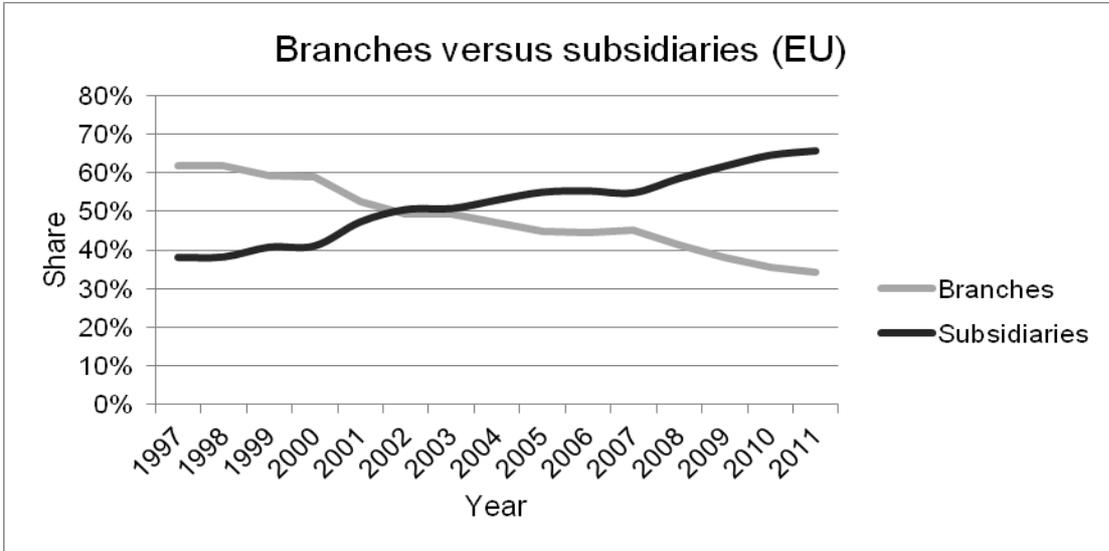
- *Corporate tax*: a subsidiary structure is often more flexible from an international corporate tax point of view, while high corporate taxes in the host country favour branches;
- *Size and nature of business*: for large retail operations, banks are more likely to operate through a subsidiary, while banks channel wholesale operations more through branches to manage liquidity and credit risks globally. Some host country supervisors even require the subsidiary form for large foreign retail operations (see Section 3);
- *Political risks*: in case of unwarranted government intervention and other major political risks in the host country, banks are more likely to use branches in order to keep assets as much as possible in the home country.

Notwithstanding these more fundamental considerations, to a large extent, legacy explains the actual pattern. The take-over history and subsequent lack of appetite to conduct costly adjustments determine the legal structure. Next, Dermine (2006) argues that the motivation to initially keep a subsidiary in the host country is driven by factors like protection of the original brand, trust of local management, and nationalistic feelings (reassuring countries that

they keep supervisory control over their bank). This analysis reinforces the earlier observation that the corporate structure of banks is very unlikely to meet the textbook case of a single entity with branches, but will instead involve a web of branches and subsidiaries. The subsidiary form is on the rise in the EU. Figure 8 illustrates that the share of foreign branches has declined over the last 15 years, while the share of foreign subsidiaries has increased from 38 to 66 percent. In particular, the steep increase after the start of the Great Financial Crisis in 2007 is notable.

There is anecdotal evidence that host country supervisors informally push for ‘subsidiarisation’ to reassert their control over host operations. In particular, when retail business becomes sizeable, supervisors may require a subsidiary. This would violate the EU Single Market, which provides banks with the freedom to establish cross-border branches. Nevertheless, the push for local control is consistent with the national approach under the financial trilemma. Prior to the Great Financial Crisis, New Zealand had already adopted this policy of requiring subsidiaries, if and when the retail operations of Australian banks in New Zealand become large. Finally, supervisors (both in emerging and developed economies) have become very restrictive in allowing dividend payouts by banks and insurers, as the top priority in the aftermath of the Great Financial Crisis is to rebuild (large) capital buffers. Supervisors also apply this restrictive dividend policy to subsidiaries (both domestic and foreign). Capital is thus stuck in the different subsidiaries of a bank or insurer, complicating capital management at the group level (see below).

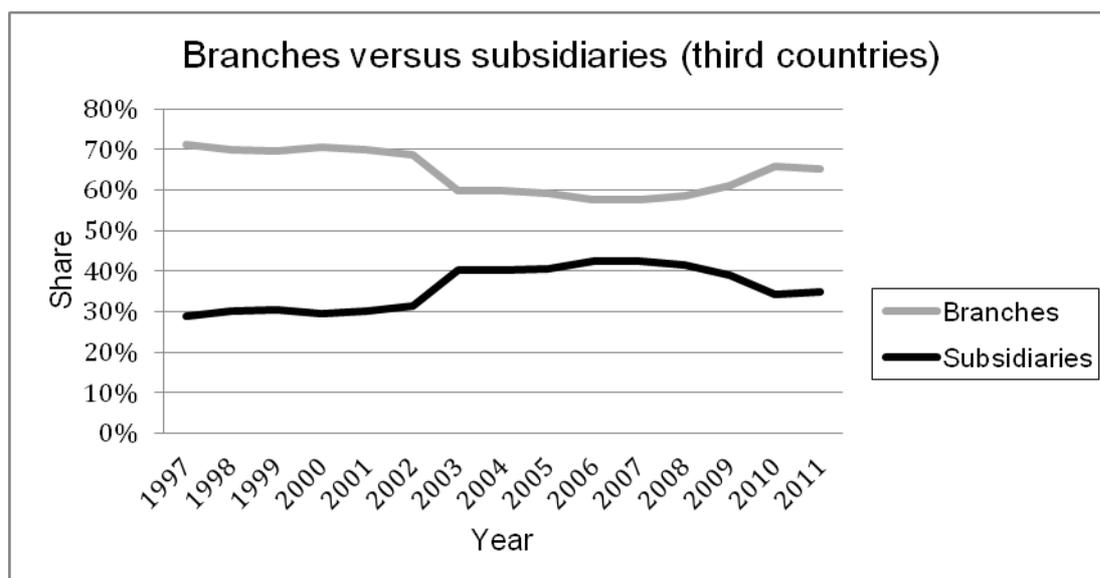
Figure 8. Relative share of branches and subsidiaries from other EU countries.



Note: The share is measured by cross-border assets in branches, respectively subsidiaries, from other EU countries as a percentage of overall cross-border assets in EU banks.

Source: EU Banking Structures, ECB.

Figure 9. Relative share of branches and subsidiaries from third countries.



Note: The share is measured by cross-border assets in branches, respectively subsidiaries, from third countries as a percentage of overall cross-border assets in EU banks.

Source: EU Banking Structures, ECB.

Figure 9 reports the share of branches and subsidiaries from third countries. If anything, the share of branches has increased from 59 to 65 percent since the crisis. It should be noted that assets from EU countries (€7.9 billion) is twice as large as assets from third countries (€3.8 billion). Moreover, the vast majority of third country assets is located in the UK, the financial centre of Europe.

In practice, factors like reputation risk and ring-fencing, are blurring the stark legal difference between branches and subsidiaries. Freshfields Bruckhaus Deringer (2003), an international law firm, examines to what extent legal firewalls (separate legal personality and limited liability of subsidiaries) can help to reduce or prevent contagion risk within a financial group. They find that legal firewalls can help to protect from direct contagion (credit exposures arising from intra-group transactions or operational risk from sharing of services), but are less effective in limiting indirect contagion (reputation risk and funding risk). This is because indirect contagion arises from perceptions and behaviour of (potential) counterparties and other market participants. The strategy of most major banks to develop and maintain a global brand reinforces contagion risk.

A good example of indirect contagion is the Drexel Burnham Lambert collapse in 1990. While the Drexel Burnham Lambert Group was experiencing difficulties in the US, the London subsidiary was solvent. Nevertheless, the Bank of England had to intervene as facilitator because the counterparties did not want to deal directly with the London subsidiary.

Costs and benefits of ring-fencing

The financial trilemma states that policy makers have to choose two out of the following three objectives: 1) financial stability; 2) cross-border integration and 3) national financial policies (see section 2.2 above). The trilemma boils down to the issue of sovereignty. At one extreme, policy makers can hand over part of their sovereignty (giving up on objective 3) to foster the

single financial market with free establishment of cross-border branches and a stable European banking system. At the other extreme, policy-makers can choose to impose restrictions on cross-border banking in the form of requiring cross-border subsidiaries (giving up on objective 2) to preserve their full sovereignty. That would make an inroad in the single financial market.

An important issue is thus the economic benefits of branching (free cross-border banking) versus subsidiaries (restricted cross-border banking). A segmented banking system with self-sufficient subsidiaries is costly (Cerutti *et al*, 2010). A full cost-benefit analysis involves calculating the costs for the financial system and the impact on the economy. On the financial system side, cross-border banks face the costs of maintaining separate capital and liquidity buffers at their national stand-alone subsidiaries in the absence of cross-border transfers. In a first study on this topic, Cerutti *et al* (2010) simulate the potential capital needs of 25 major European cross-border banking groups resulting from a credit shock affecting their affiliates in CESEE. The scenario for the credit shock is a drop in GDP growth of 2 percent and an increase in interest rates of 2 percent. Because of this credit shock, the amount of nonperforming loans rises sharply, leading to losses in the CESEE subsidiaries. The simulations show that under ring-fencing (stand-alone subsidiaries), sample banking groups have substantially larger needs for capital buffers at the parent and/or subsidiary level.

More specifically, under ring-fencing, there is no reallocation of excess capital (that is, capital beyond the regulatory minimum) and profits of the parent bank or the subsidiaries. Subsidiaries are self-sufficient, and new capital to restore the regulatory minimum capital after the credit shock has to be raised separately in the local market or from the local authorities.⁵ By contrast, in the case of integrated banks without ring-fencing, excess capital and profits in the remainder of the group can first be used to meet the capital needs. Cerutti *et al* (2010) find that in the case of ring-fencing the sample banks' aggregate capital needs resulting from a CESEE shock are over two times higher than in the case of no ring-fencing. Under ring-fencing about \$45 billion of extra capital needs to be raised after the credit shock to restore the regulatory minimum capital, while only \$20 billion is needed without ring-fencing.

On the economic side, the cost of capital may start to differ among the EU member states. The purpose of the single market in banking is to integrate banking markets and thus to drive down the cost of borrowing across the EU to the lowest denominator (see Guiso *et al*, 2004). When banking markets are segmented, the cost of borrowing may start to rise in banking markets that are dominated by foreign stand-alone subsidiaries with higher capital and liquidity buffers. In particular for emerging countries, like the CESEE countries, the entry of foreign banks from developed countries helps to make financial markets in the host country more competitive (driving down the cost of capital) and to transfer technical know-how (for example, on risk management, credit scoring, and payment systems).

⁵ In the aftermath of the Great Financial Crisis, intra-group funding in Europe has become relatively expensive and volatile. The prevalent banking group practices consist in pricing intra-group funding at the cost of funding of the parent plus the CDS spread of the sovereign where the subsidiary is located. Given the recent increases in CDS spreads and the general market risk, subsidiaries more and more often choose to pay down debt owed to parents and rely on local deposits as a more stable funding source. In case local deposits are not sufficiently available, these funding constraints can contribute to a tighter credit supply and in effect have a negative impact on host country financial stability. It should be noted that this practice is a (temporarily?) crisis-related phenomenon.

Another economic factor is the impact on financial stability. While international banks transmit financial shocks more easily, they also contribute to international risk sharing. National segmented financial systems may reduce the financial stability at the country level. This is, in particular, true when business cycles are not synchronic across countries. The business cycle is an important driver of credit risk, which is one of the major risks in banking. In an empirical study, Slijkerman (2007) shows that a merger of domestic banks increases the downside risk of the newly merged bank, while a cross-border merger has a mitigating impact on the downside risk through the effects of credit risk diversification. Nevertheless, self-funded subsidiaries, in particular by local deposits, may increase macro-financial stability at the national level.

A final question is, to what extent are stand-alone subsidiaries effective in maintaining financial stability? Is the functional separation of subsidiaries really possible? The assumption is that the stability effects are contained within the local economy in case of the failure of a subsidiary or a parent bank. But, as indicated above, the remaining solvent parts of a banking group may find it difficult to continue their operations. Because of (reputation) contagion risk, counterparties may stop trading or funding the remaining parts. Furthermore, depositors may walk away on the principle of being better safe than sorry.

4. Interpreting the empirical results and policy recommendations

This empirical essay contains an extensive survey of banking and insurance (dis)integration. While it is tempting to draw policy conclusions from aggregate data, this essay argues that detailed data on individual banks and insurers is needed to assess the potential for coordination failure among national authorities in the resolution of an ailing bank or insurer. To give an example, overall cross-border business of 25 percent (banking) or 30 percent (insurance) does not immediately suggest that coordination is a big issue. Looking at the largest banks and insurers, it appears that 13 out of 30 banks and 15 out of 25 insurers conduct more than 50 percent of their business abroad. Home governments will ignore these foreign effects in the resolution of a potential failure. The financial trilemma model predicts that coordination failure is likely to happen for these international financial firms during a financial crisis, as witnessed during the 2007-2009 financial crisis.

An interpretation of the empirical survey in this essay suggests the following:

Aggregate trends in cross-border activity in banking

There is a general reversal of international banking to pre-crisis 2004-2005 levels. Aggregate data from the BIS suggest a stronger declining trend (as of end-2011) than EU data. Cross-border banking is currently at 18 percent, which is still very sizeable causing cross-border externalities. At the country level, ECB data provide evidence that cross-border banking flows into CESEE and peripheral countries (Portugal, Ireland and Greece) have been reversed during the crisis.

Differences in cross-border activity before and after the crisis

The aggregate and individual data give a slightly differing message. Aggregate banking data suggests a slight reversal after the crisis. Bottom-up data suggests that cross-border business

of the largest banks and insurers remain significant, with some major changes within the banking and insurance population. While banks are deleveraging their international business, they also do that at the national level. But these are preliminary conclusions as the process of deleveraging is not yet finished at the European banks. The insurance sector is more stable, with less up- and downward swings in business.

Differences in activity for financial firms with state aid and without state aid

Large banks and insurers that received state aid downsized their business at a strong pace (minus 18 percent for banks and minus 34 percent for insurers), while the total European banking and insurance sector grew after the crisis (plus 9 percent and plus 3 percent respectively). There is thus a significant difference, pushed by the European Commission's strong stance on restructuring as a condition for receiving state aid.

Differences in cross-border activity between banking and insurance

Insurance is more international than banking. That is found at both at the aggregate level (57 percent is cross-border in insurance versus 47 percent in banking) and the individual level (relatively more international insurers than banks).

Impact of policy

Problem banks and insurers were resolved at the national level. Next, anecdotal evidence that supervisors seem to reinforce supervision at national lines is supported by evidence on the ratio of subsidiaries versus branches (supervisors have control over cross-border subsidiaries but not over cross-border branches within the EU). The ratio of cross-border subsidiaries has risen significantly after the crisis and is now at 66 percent. This seems to contribute to the fragmentation of the European banking market.

At the same time, the evidence on contraction in CESEE countries indicates that this policy of subsidiarisation does not work, at least not to maintain lending. Western European banks did reduce lending in their CESEE subsidiaries. CESEE supervisors have insisted on subsidiaries from the start of the liberalisation of their markets in the 1990s.

Our empirical findings seem to follow the financial trilemma, which states that the three policy objectives of 1) maintaining global financial stability, 2) fostering cross-border financial integration, and 3) preserving national authority for financial policies, are incompatible. Any two of the three objectives can be combined but not all three; one has to give. The corollary is that governments have to make a choice of two objectives. In the aftermath of the crisis, governments are choosing for financial stability (1st objective) and national financial policies (3rd objective) at the expense of the single financial market (2nd objective).

Need for policy action

If we want to reap the benefits of both the single financial market and financial stability, then we need new supranational institutions that encourage integration. As we argue in a separate policy essay (Schoenmaker, 2013a), the advance to Banking Union with integrated supervision and resolution can provide the necessary policy push for an integrated approach.

To be crystal clear, the theoretical part of this essay argues that the financial trilemma is inescapable. Policymakers have to make a choice between promoting cross-border banking and preserving national authority for financial supervision and resolution. Pursuing both policies results in financial instability. The proposals for bail-in at the holding company level of cross-border banks do not provide a fail-proof way to deal with cross-border resolution still using national policy tools. The bail-in tool, which converts debt into equity after a trigger event, has some attractive properties, as it, for example, improves the incentives to monitor the bank and thus reduces moral hazard. But even if bail-in were triggered in time, it would only provide an extra capital buffer before taxpayers money may be needed.⁶ Bail-in thus does not eliminate the need for a fiscal backstop. Moreover, the trilemma predicts that national authorities will base their policy-stance on bail-in and further resolution on national considerations, disregarding cross-border externalities.

But there is an uncomfortable corollary from supervision and resolution at the supranational level in the Banking Union. For countries that are part of the EU, but not of the Banking Union, supervision and resolution will by definition be national. The logic of the financial trilemma suggests that countries outside the Banking Union only have one stable option of just subsidiaries and no branches within their borders. The natural, albeit painful, conclusion of this would be a two tier European banking system violating the Single Financial Market. In earlier work (e.g. Schoenmaker, 2010), we have argued that the need for financial supervision and stability at the European level is mainly related to the Single Financial Market, as free cross-border banking flows create cross-border externalities. This is born out by the impact of the Great Financial Crisis on CESEE countries; there is no major distinction between euro and non-euro area CESEE countries. Our analysis suggests that it may be in the interest of non-euro area countries to exercise the option to participate in Banking Union. By contrast, the vulnerability of national banking systems, due to the European sovereign debt crisis, is confined to the euro area. See the accompanying policy essay (Schoenmaker, 2013a) for a full discussion of Banking Union.

While current policy action is aimed at building a Banking Union to address the current weaknesses in the European banking system (including the diabolic loop between national governments and national banking systems), we may at a later stage also wish to consider the potential benefits of an Insurance Union. Such a move would require further research because contagion channels are very different in insurance. Our findings suggest that it may be useful to do this further research.

⁶ There are two main proposals on the scope of bail-in. In the first, only some pre-specified debt instruments are subject to bail-in. The European Commission (2012) suggests a minimum of 10 percent of liabilities. That would provide potentially an extra capital buffer of 10 percent. In the second, all liabilities would be subject to bail-in. The resolution authority would have to follow a hierarchy, whereby shareholders claims should be exhausted before subordinated creditors. When those claims are exhausted the resolution authority can impose losses on senior claims, potentially ending up imposing losses on depositors (which may be borne by the deposit insurance fund). The latter strategy is time-inconsistent. If the resolution authority were to impose large losses on all creditors and depositors of a major bank, there would be severe second round effects on the banking system (including uncertainty about the exact impact on the other banks). Other banks would *inter alia* be affected through write down of interbank claims and their exposure to the deposit insurance fund. Knowing these consequences, the resolution authority may not follow a full bail-in strategy. Broad bail-in powers are thus not fully credible.

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