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The State of the Banking Sector in Europe

Dirk Schoenmaker, Toon Peek

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THE STATE OF THE BANKING SECTOR IN EUROPE

ECONOMICS DEPARTMENT WORKING PAPERS No. 1102

By Dirk Schoenmaker and Toon Peek

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ABSTRACT/RÉSUMÉ

The state of the banking sector in Europe

This paper reviews the state of the banking sector in Europe. At the aggregate level, the empirical data suggest that the Baltics, Cyprus, Greece and Ireland, in particular, are hit by a strong decline in lending in the wake of the financial crisis. This deleveraging is mainly caused by a reduction in cross-border supply of credit. We also examine the capital position of the European banking system, using November 2013 stock market data. In the basic scenario to restore capital to a market based leverage ratio of 3%, EUR 84 billion of extra capital would be needed for the largest 60 banks.

At the bank level, the top tertile of well-capitalised banks (with a market based leverage ratio well above 4%) continues lending. By contrast, the 2nd tertile of medium-capitalised banks (between 3 and 4%) and the 3rd tertile of weakly capitalised banks (well below 3%) show a strong decline in lending. Moreover, the market-to-book ratio is below one for these banks. The market thus gives a lower value to these banks.

Our findings provide prima facie evidence of a credit crunch in Europe. Another fallout of the financial crisis is an increase, though very modest, of concentration in banking in the distressed countries (Greece, Ireland, Portugal, Spain and Italy). The enhancement of financial stability through (forced) M&As seems to come at the expense of reduced competition.

JEL classification: G220; G320; G380.

Key words: banks; capital; deleveraging; credit supply; cross-border banking; geographical segmentation.

This working paper relates to the 2014 OECD Economic Survey of the European Union (www.oecd.org/eco/surveys/European Union).

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L'état du secteur bancaire en Europe

Ce document examine l'état du secteur bancaire en Europe. Au niveau agrégé, les données empiriques suggèrent que les pays baltes, Chypre, la Grèce et l'Irlande, en particulier, sont touchés par une forte diminution du crédit à la suite de la crise financière. Ce désendettement est principalement dû à une réduction de l'offre transfrontalière de crédit. Nous examinons également la capitalisation du système bancaire européen, en utilisant les données boursières de novembre 2013. Dans le scénario de base qui consiste à restaurer à 3 % le ratio de levier fondé sur la capitalisation boursière, 84 milliards d'euros de capitaux supplémentaires seraient nécessaires pour les 60 plus grandes banques.

Au niveau des banques, le tiers supérieur des banques les mieux capitalisées (avec un ratio de levier fondé sur la capitalisation boursière bien au-dessus de 4 %) continue de prêter. En revanche, le deuxième tiers de banques de capitalisation intermédiaire (entre 3 et 4 %) et le troisième tiers des banques faiblement capitalisées (bien en-dessous de 3 %) montrent une forte diminution des prêts. En outre, le ratio entre valeur de marché et valeur comptable est inférieur à un pour ces banques. Le marché donne ainsi à ces banques une valeur inférieure.

Nos résultats fournissent la preuve prima facie d'une chute du crédit en Europe. Une autre retombée de la crise financière est une augmentation, bien que très modeste, de la concentration du secteur bancaire dans les pays en difficulté (Espagne, Grèce, Irlande, Italie et Portugal). Le renforcement de la stabilité financière à travers des fusions et acquisitions (forcées) semble se faire au détriment de la concurrence.

Classification JEL : G220 ; G320 ; G380.

Mots clés : banques ; capital ; désendettement ; offre de crédit ; activité bancaire transfrontalière ; segmentation géographique.

Ce document de travail se rapporte à l'Étude économique de l'OCDE de l'Union Européenne 2014 (www.oecd.org/eco/etudes/Union Européenne).

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THE STATE OF THE BANKING SECTOR IN EUROPE

By Dirk Schoenmaker & Toon Peek[1]

1. Introduction

The state of the financial system in Europe is not a happy one. The global financial crisis of 2007-2009 has turned into the European sovereign debt crisis of 2010-2012. While a strong financial sector can support economic growth, a weak sector amplifies an economic downturn. Reinhart and Rogoff (2009) show that an economic downturn in the aftermath of a financial crisis tends to be longer.

The aim of this paper is to review the state of the banking sector in Europe. We examine the deleveraging trends, including the impact of state aid restrictions. Next, we review the state of financial integration in Europe. While cross-border banking flows promoted economic growth, it also fuelled a credit boom in some of the peripheral countries (notably Ireland, Portugal and the Baltics). Following the usual pattern, these credit booms turned into a bust. The dynamics in these peripheral countries are shown in detail. Finally, we review the capital positions and the remaining systemic risks in the European banking system.

Moving to the policy implications, the paper examines the impact of the deleveraging on the credit supply. Are we experiencing a credit crunch in Europe, or not? A strong recapitalisation of the European banking sector may prevent a prolonged credit crunch scenario. This would follow the US, which has good experience with a strong recapitalisation approach of their banking sector in 2009. The financial crisis has also lead to consolidation in the financial industry. This reduces the competition at the country level. Finally, the sovereign debt crisis has fragmented the European financial system, hampering the transmission of monetary policy and weakening competition. A move to Banking Union can counter the current fragmentation tendencies and move Europe back to an integrated and resilient banking system.

This paper is organised as follows. Section 2 investigates the deleveraging trends in the European banking system. The impact of state aid on downsizing banks is also examined. Section 3 reviews the impact of the crises on the integration of the European banking system. Section 4 measures the capital positions of banks and provides estimates for the capital shortage in the European banking system, as of November 2013. Section 5 moves to the policy impact on the credit supply (do we experience a credit crunch?) and on competition. Section 6 concludes and provides policy recommendations.

2. Deleveraging trends

An important lesson from financial crises is that financing conditions for banks and firms are key mechanisms in turning financial crises into recession (Kalemli-Ozcan, Sorensen and Yesiltas, 2012). In the upswing, finance is readily available leading to further expansion. By contrast, in the downturn, finance is constrained leading to further contraction. Kiyotaki and Moore (1997) have dubbed the term 'credit cycles' for the pro- cyclical nature of the financial system. In this section, we examine the balance sheets of the country banking systems as well as individual banks to examine whether banks are deleveraging (that is shortening their balance sheet) in the aftermath of the global financial crisis.

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1. Prof. Dr. Dirk Schoenmaker and Toon Peek MSc are at Duisenberg School of Finance in Amsterdam. This paper was prepared as background for a seminar on the European banking sector at the OECD. We are grateful to Piritta Sorsa, Eckhard Wurzel and seminar participants at the OECD for useful comments on an earlier draft.

2.1 State of balance sheets (aggregate trends)

We start with an aggregate view of banking balance sheets to gauge the overall deleveraging trend by examining total assets in the banking system at the country level. Table 1 provides a detailed breakdown of total assets to see country trends in overall banking in the European Union (EU) after the crisis. It is remarkable that the size of the banking system did not shrink. We use the year 2008 as general benchmark for most countries, with the year 2007 for the UK. Although the global 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 EUR 1,240 billion (12% drop from 2007 to 2008). Figure 1 shows that the overall size of the EU banking system is flat from 2008 to 2009 and increases thereafter till 2011 and then levels off. So, there is no overall deleveraging trend in Europe. The 2008-2013 change is +3%, as reported in the final column in Table 1. Nevertheless, some crisis-stricken countries, like Belgium (-17%), Cyprus (-15), Estonia (-13), Greece (-10), Ireland (-39), Latvia and Lithuania (-11) and Luxembourg (-20), 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	2013	2007/8-13
Belgium	1,122	1,299	1,272	1,156	1,133	1,197	1,085	1,062	-17%
Bulgaria	22	31	37	38	40	42	45	46	25%
Czech Repub.	115	140	155	160	174	180	192	190	23%
Denmark	819	971	1,091	1,105	1,138	1,145	1,158	1,041	-5%
Germany	7,122	7,564	7,876	7,425	8,295	8,387	8,219	7,827	-1%
Estonia	15	21	22	21	20	19	20	19	-13%
Ireland	1,412	1,607	1,672	1,577	1,462	1,264	1,124	1,021	-39%
Greece	316	384	462	491	514	476	441	418	-10%
Spain	2,527	3,005	3,381	3,433	3,463	3,613	3,574	3,393	0%
France	5,749	6,698	7,234	7,183	7,436	8,050	7,712	8,073	12%
Italy	2,795	3,334	3,636	3,692	3,760	4,036	4,211	4,161	14%
Cyprus [1, 2]	77	93	118	139	135	132	128	101	-15%
Latvia	23	31	32	30	30	29	28	29	-11%
Lithuania	17	24	27	26	26	25	24	24	-11%
Luxembourg	927	1,025	1,105	1,012	969	983	868	889	-20%
Hungary	94	109	125	126	121	110	107	106	-15%
Malta	30	38	42	41	50	51	53	53	26%
Netherlands	1,843	2,168	2,232	2,217	2,261	2,427	2,490	2,397	7%
Austria	788	885	1,057	1,028	976	1,009	974	942	-11%
Poland	190	234	262	274	311	310	354	345	32%
Portugal	397	439	482	520	559	573	556	531	10%
Romania	52	72	84	86	90	91	91	89	6%
Slovenia	35	43	49	53	53	52	51	50	2%
Slovakia	48	56	64	54	56	58	60	60	-6%
Finland	257	290	387	390	472	635	597	525	36%
Sweden	774	846	899	930	1,061	1,130	1,211	1,203	34%
United Kingdom	9,776	9,963	8,724	8,954	9,170	9,726	9,553	9,266	-7%
Euro area	25,291	28,740	31,006	30,412	31,594	32,963	32,163	31,522	2%
Non-euro area	12,050	12,628	11,523	11,750	12,182	12,788	12,764	12.337	7%
EU	37.341	41.369	42.528	42.161	43.776	45.750	44.927	43.859	3%
Baltics	55	75	81	77	76	73	73	71	-12%
CESEE	610	761	857	869	922	916	973	957	12%
Periphery	2,124	2,430	2,616	2,588	2,534	2,313	2,121	1,970	-25%
Distressed	7,446	8,769	9,634	9,713	9,757	9,962	9,906	9,524	-1%

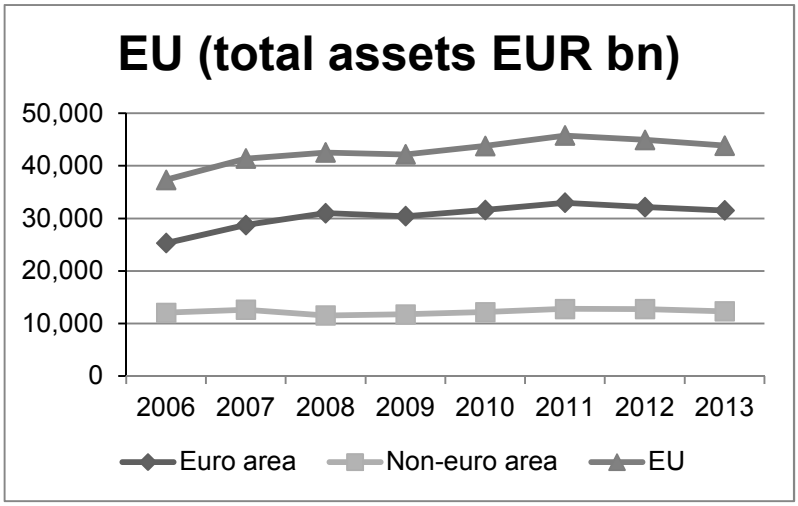
Note: Total banking assets are reported for each country in € billion. The final column reports the change from 2007 (for the UK) and 2008 (for all other EU countries) to 2013 as a percentage. Figures are year-end (except for 2013 at end-June). Baltics are Estonia, Latvia and Lithuania. CESEE are the 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.

1. The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

2. The Republic of Cyprus is recognized by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: ECB.

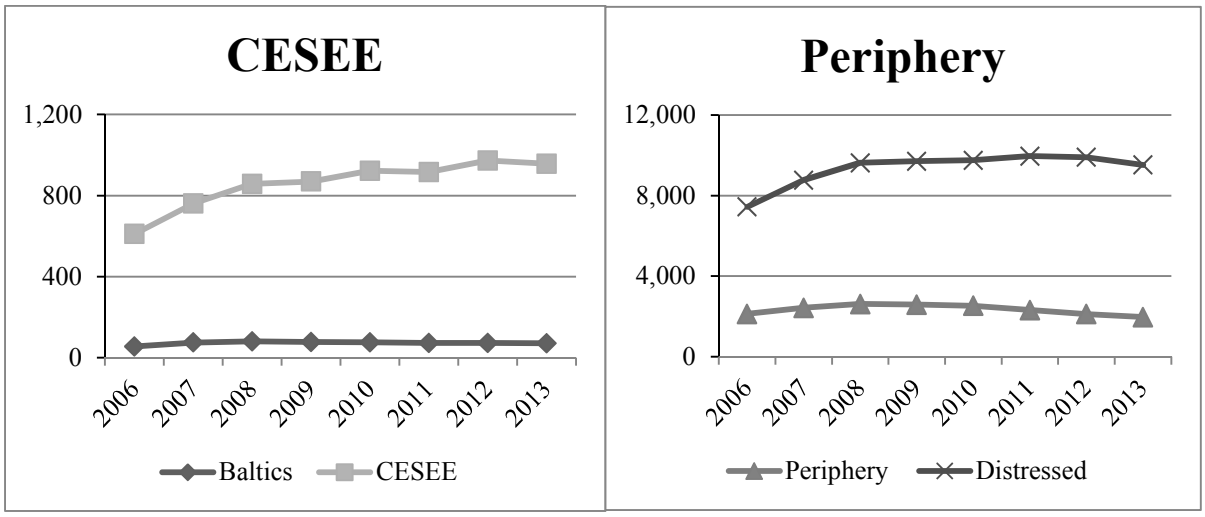
Figure 1. Total banking assets in the EU (in € billion)



We investigate two specific dimensions of deleveraging in the EU in more detail (reported in the bottom rows of Table 1). First, we examine the impact of the global financial crisis on the banking system of Central, Eastern and South-Eastern Europe (CESEE) and the sub-set of the Baltics. Figure 2 illustrates that the overall group of CESEE does not show a decline in banking. The size of the banking system has increased over the 2008-2013 period with 12%, well above the EU-average of 3%. Only the Baltics (Estonia, Latvia and Lithuania) show a reversal of 12%.

Second, we examine the impact of the European sovereign debt crisis on the banking system of the peripheral (Portugal, Ireland and Greece) and distressed (later extended with Spain and Italy) countries. 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 1 indicates a strong contraction of the banking system of the peripheral countries (-25%). The strong drop is caused by Ireland, the largest peripheral country. There has been an on-going shrinkage of the Irish banking system since the global financial crisis culminating in a 39% drop. The overall decline of 39% in Ireland is caused by a reduction of both foreign banking (-56%) and domestic banking (-28%). Moving to the distressed countries, it appears that there are no signs yet of a major reversal of 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.

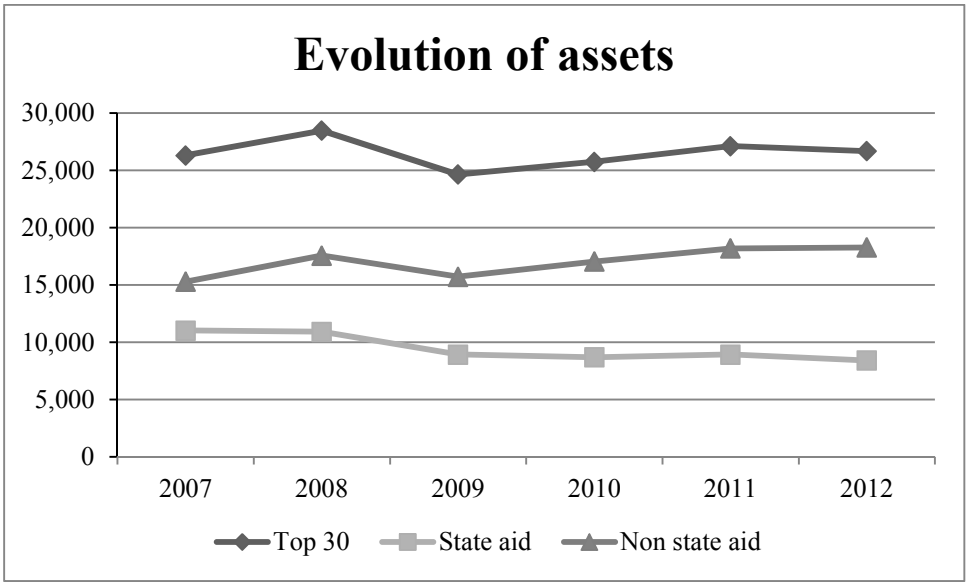
Figure 2. Total banking assets in CESEE and Periphery (in € billion)



2.2 State of balance sheets (individual banks)

After reviewing country trends, we move to individual banks. The aim is to review developments in banks' total assets over time. We take the top 30 European banks, selected on the basis of Tier 1 capital at end 2011 published by *The Banker* (2012). Figure 3 shows that there was a drop immediately after 2008, followed by a gradual recovery from 2009 to 2011. Total assets again dropped from 2011 to 2012, only at a slower pace. The overall decline from 2008 to 2012 is -6%. This picture is different from total assets of the banking system, which shows a smooth pattern of growth over these periods without any decline. The mandatory downsizing of several top 30 banks, which received state aid (see below), causes this difference. The more granular approach from the top 30 banks may be more informative than total banking system assets to examine lending dynamics during the crisis.

Figure 3. Total assets of Top 30 European banks (in € billion)



Impact of state aid

Table 2 shows the asset developments for the individual banks in the top 30 of European banks. While the overall evolution of assets shows a decline of 6% from 2008 to 2012, individual bank asset patterns are far more volatile. Several major banks have experienced a large decline in their balance from 2007/8 to 2012: Barclays (-15%), UBS (-24), ING (-12), RBS (-38), Commerzbank (-43), KBC (-28), Lloyds (-18), Allied Irish Banks (-32), ABN Amro (-62) and several Landesbanken (about -20). All these banks, except for Barclays, received state aid during the crisis. There is thus a significant decline, pushed by the European Commission's strong stance on restructuring as a condition for receiving state aid. The Commission's state aid conditions are geared on returning a bank in need of state aid towards a viable bank (*inter alia* by downsizing). Table 2 indicates that 13 out of the top 30 European banks received state aid during the global financial crisis (2007-2009) and subsequent European sovereign debt crisis (2010-2012). The overall downsizing of the group of state aid banks is 23%. By contrast, other banks have expanded their business during this period: Standard Chartered (+55%), Santander (+21), Nordea (+43), BBVA (+17) and DNB Group (+64). The large expansion of Standard Chartered has been achieved in Asia. The overall expansion of the group of non-state aid banks is 4`%.

Table 2. Top 30 European Banks - Evolution of Assets

	Assets (end of year, € bn)						Difference	State aid
Bank	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2007/8-2012**	
HSBC (UK)	1,614	1,809	1,651	1,834	1,972	2,040	13%	No
Barclays (UK)	1,671	2,148	1,555	1,738	1,874	1,836	-15%	No
Deutsche Bank (Germany)	1,925	2,202	1,501	1,906	2,164	2,012	-9%	No
UBS (Switzerland)	1,376	1,350	904	1,051	1,165	1,043	-24%	Yes
Credit Suisse Group (Switzerland)	823	784	695	825	862	765	-7%	No
Standard Chartered (UK)	226	311	305	386	462	482	55%	No
BNP Paribas (France)	1,694	2,076	2,058	1,998	1,965	1,907	-8%	No
Banco Santander (Spain)	913	1,050	1,111	1,218	1,252	1,270	21%	No
UniCredit (Italy)	1,022	1,046	929	929	927	969	-7%	No
ING Group (Netherlands)	1,313	1,332	1,164	1,247	1,279	1,169	-12%	Yes
Nordea Group (Sweden)	389	474	508	581	716	677	43%	No
Danske Bank (Denmark)	449	476	417	431	461	467	-2%	No
Erste Group (Austria)	201	201	202	206	210	214	6%	Yes
Royal Bank of Scotland (UK)	2,587	2,512	1,913	1,695	1,806	1,616	-38%	Yes
BBVA (Spain)	502	543	535	553	598	638	17%	No
Commerzbank (Germany)	1,037	1,125	844	754	662	636	-43%	Yes
KBC Group (Belgium)	356	355	324	321	285	257	-28%	Yes
DNB Group (Norway)	186	188	220	239	275	308	64%	No
Crédit Agricole (France)	1,261	1,653	1,557	1,594	1,724	1,842	11%	No
Lloyds Banking Group (UK)	1,389	1,177	1,158	1,157	1,163	1,139	-18%	Yes
Société Générale (France)	1,072	1,130	1,024	1,132	1,181	1,251	11%	No
Intesa Sanpaolo (Italy)	573	636	625	657	639	673	6%	No
Allied Irish Banks (Ireland)	178	182	174	145	137	123	-32%	Yes
Banque Populaire CdE (France)	707	1,144	1,029	1,048	1,138	1,148	0%	Yes
Rabobank Group (Netherlands)	571	612	607	653	732	752	23%	No
Landesbank Bad,-Wür. (Germany)	443	448	412	374	373	373	-17%	Yes
Credit Mutuel (France)	396	425	421	375	382	385	-9%	No
CaixaBank (Spain)	n/a	n/a	n/a	n/a	n/a	n/a	-	Yes
ABN Amro Group (Netherlands)	1,025	667	469	380	405	394	-62%	Yes
Bayerische Landesbank (Germany)	416	421	339	316	309	301	-29%	Yes
Total European banks	26,315	28,477	24,651	25,743	27,118	26,687	-6%	30
State aid banks	11,028	10,914	8,932	8,694	8,932	8,413	-23%	13
Non-state aid banks	15,287	17,563	15,719	17,049	18,186	18.274	4%	17

Note: The selection of the top 30 banks is based on capital strength (Tier 1 capital) at end 2011 as published in *The Banker* (2012). This selection is held constant across the years. The difference is taken from the highest level of assets in 2007 and 2008 compared to 2012. Figures for BPCE, Commerzbank, and Lloyds Banking Group in 2007 and 2008 are pro-forma the merger of Banque Populaire-Groupe Caisse d'Epargne, Commerz-Dresdner, and Lloyds-HBOS respectively. The final column reports whether the bank received state aid during the financial crisis.

Source: Annual reports, Bankscope.

3 State of integration

The Single Financial Market promotes financial integration. Financial integration allows for cross-border provision of financial services. In the banking sector, cross-border credit has an impact on credit supply and competition in the host market. Cross-border business can be measured by the geographical spread 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, this paper focuses on the first indicator for banking: foreign assets to total assets.

As one of our main research purposes is to investigate the impact on credit supply, we motivate the choice of the asset indicator for banking. The impact on credit provision is related to a bank's assets in several ways. The impact can be thought of as preventing a temporary reduction of credit availability (credit crunch) through shortening of balance sheets by a strong reduction of the loan book in a particular country. Another impact is related to the 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).

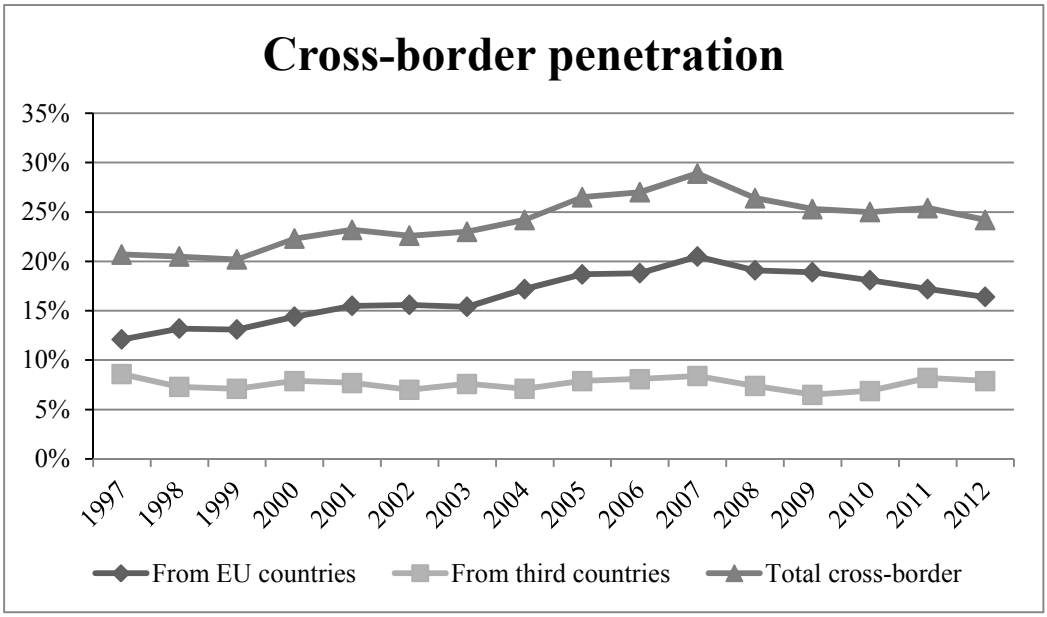
Thus, we take size and distribution of bank assets to represent the impact on credit supply. This is in accordance with the "credit view" of the impact of banking on the economy (Bernanke, 1983). This section starts with broad empirical evidence on cross-border banking in Europe. The aggregate data focus on the recipient (host) countries and 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 about 25% of total bank assets in *host* countries (see Figure 4 below).

Another line of research looks at the cross-border expansion of individual banks from their *home* base. Extending earlier work (Schoenmaker and Oosterloo, 2005; Schoenmaker and Van Laecke, 2007), we adopt this approach to measure the international operations of banks. Detailed data on the geographical segmentation of the 30 largest banks in Europe is collected, as these large financial intermediaries are cross-border oriented. Large European banks have significant international operations (close to 50% on average). The dynamics and choice of variables are explored in detail below.

3.1 Integration in banking sector (aggregate trends)

Integration can be measured by the cross-border penetration within the EU. We investigate the rate of cross-border bank penetration, defined as cross-border bank assets - both from branches and subsidiaries of foreign owned banks- as a share of total bank assets in a country. This measurement is detailed as the ECB collects and publishes structural indicators of the EU banking system. Figure 4 presents the cross-border penetration. Within the EU, the cross-border penetration has gone up from 12% in 1997 to 21% in 2007. It shows a decline after the crisis from 21 to 17%. But the cross-border business from EU countries remains sizeable. Business from third countries is relatively stable around 8% throughout the period. Overall cross-border penetration remains solid with a fall back to the pre-crisis level of 2004. There are no major reductions in the aftermath of the global financial crisis.

Figure 4. Cross-border penetration in the European Union



Note: Share of bank 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 3 reports cross-border penetration from EU countries. At the aggregate EU level, cross-border penetration decreased from 21% in 2007 to 16% in 2012 (as also shown in Figure 5 below). This gradual and modest decline hides some significant dynamics at the country level. Belgium shows a large increase of 29 percentage points (see right-hand side column of Table 3), 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% in 2008/2009. Because the Dutch supervisor slowed down the transfer of the different parts of ABN Amro, only the 2010 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: Czech Republic (-11 percentage points), Estonia (-12), Cyprus (-16), Latvia (-15), Lithuania (-13), Poland (-19), Romania (-16). Also the United Kingdom has had a large contraction of 8 percentage points. These countries experience some major reversals of cross-border inflows in the aftermath of the global financial crisis.

Table 3. Cross-border penetration from EU countries (2006 to 2012, in %)

Countries	2006	2007	2008	2009	2010	2011	2012	2008-12
Belgium	22%	21%	22%	54%	52%	54%	51%	29%
Bulgaria	80%	79%	81%	82%	78%	74%	73%	-9%
Czech Repub.	91%	88%	98%	90%	88%	93%	86%	-11%
Denmark	19%	17%	15%	18%	17%	15%	16%	0%
Germany	9%	10%	10%	10%	10%	10%	11%	1%
Estonia	98%	99%	97%	95%	92%	88%	85%	-12%
Ireland	27%	39%	40%	36%	30%	31%	29%	-11%
Greece	37%	23%	22%	21%	20%	19%	16%	-6%
Spain	11%	11%	10%	10%	9%	9%	9%	-1%
France	10%	11%	11%	10%	9%	9%	10%	-1%
Italy	13%	18%	13%	12%	13%	13%	13%	0%
Cyprus	25%	26%	33%	33%	26%	22%	17%	-16%
Latvia	60%	59%	62%	63%	60%	48%	47%	-15%
Lithuania	85%	84%	85%	83%	79%	74%	72%	-13%
Luxembourg	78%	76%	70%	65%	66%	64%	67%	-3%
Hungary	53%	55%	61%	54%	57%	63%	54%	-7%
Malta	38%	37%	39%	35%	37%	35%	32%	-7%
Netherlands	14%	16%	4%	3%	13%	11%	9%	5%
Austria	19%	22%	19%	15%	15%	15%	16%	-3%
Poland	61%	60%	75%	56%	59%	63%	56%	-19%
Portugal	21%	23%	22%	22%	21%	21%	20%	-1%
Romania	84%	89%	87%	76%	74%	74%	71%	-16%
Slovenia	30%	29%	31%	29%	28%	28%	29%	-1%
Slovakia	81%	86%	95%	96%	96%	95%	96%	1%
Finland	56%	65%	69%	67%	70%	71%	67%	-2%
Sweden	9%	10%	10%	7%	7%	8%	7%	-2%
United King.	24%	27%	25%	26%	22%	18%	17%	-8%
Euro area	16%	17%	16%	16%	16%	16%	16%	0%
Non-euro area	25%	28%	27%	26%	23%	20%	19%	-8%
EU	19%	20%	19%	19%	18%	17%	17%	-2%
Baltics	78%	78%	79%	79%	75%	67%	66%	-13%
CESEE	69%	70%	78%	68%	68%	71%	66%	-12%
Periphery	28%	33%	33%	30%	26%	26%	24%	-9%
Distressed	17%	20%	18%	16%	15%	15%	14%	-4%

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 2012. The average figures for euro area, non-euro area, EU, Baltics, CESEE, Periphery and Distressed are asset weighted. See Table 1 for the composition of the country groupings.

Source: EU Banking Structures, ECB.

Figure 5 illustrates these trends, where the euro area shows a flat pattern of cross-border penetration and the non-euro area (UK, Sweden, Denmark and most NMS) a sharp decline. Part of the cross-border fragmentation is regulatory driven. Some supervisors demand that assets and liabilities need to be matched locally. Moreover, there is an emerging tendency among supervisors to ask for a subsidiary rather than a branch (Schoenmaker, 2013).

Figure 5. Cross-border penetration in the EU (in % of total banking assets)

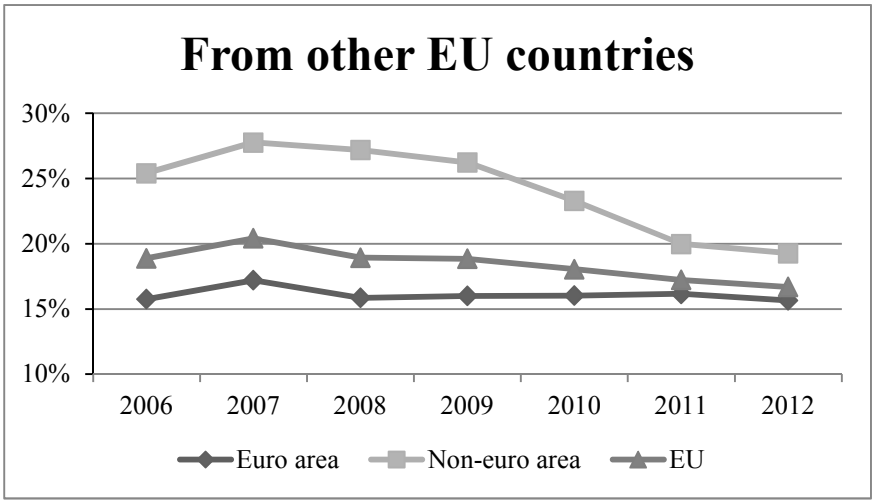
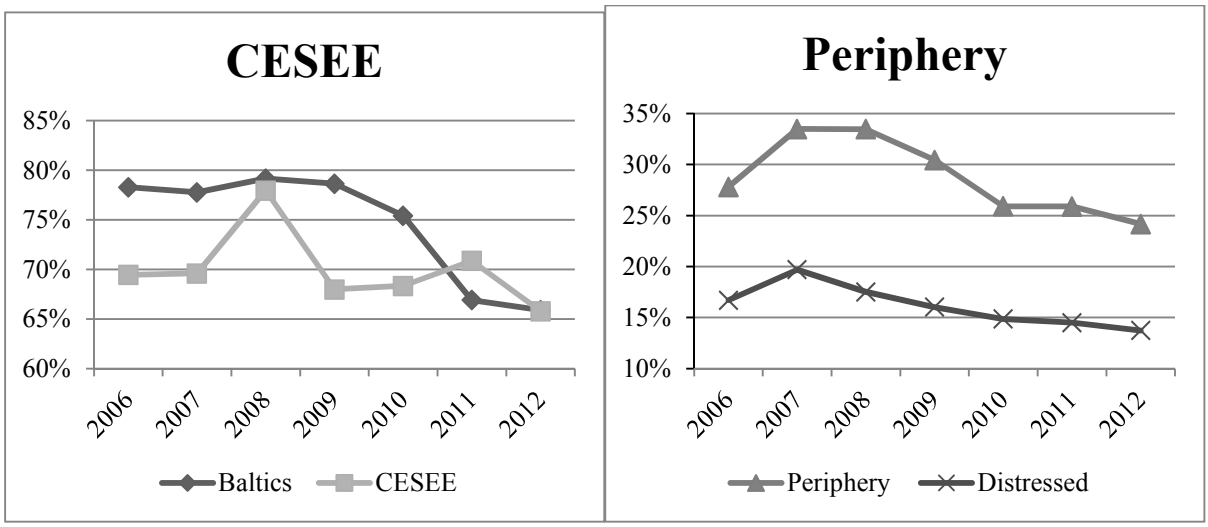


Figure 6. Cross-border penetration in CESEE and Periphery (in % of total banking assets)



The ECB data show a sharp decline for foreign penetration into emerging Europe. Cross-border penetration from EU countries (*i.e.* Western banks active in emerging Europe) dropped with a full 10 percentage points from 78% in 2008 to 68% in 2009 in Table 3. That is a major reversal of integration. In particular, Poland, Romania and the Baltics were badly hit. 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 32% from 2008 to 2013 (see Table 1). The Baltics experiences a 13 percentage point decline in cross-border penetration over the 2008-2012 period.

More generally, the global financial crisis reversed the large upward swing in cross-border banking prior to the crisis. Cross-border penetration in emerging Europe has returned to pre-crisis levels of about 65% (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 (Vienna Initiative, 2012).

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 wellbeing 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. 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. Tables 1 and 3 indicate a strong contraction of the peripheral countries, both on total banking system (-25% in Table 1) and the foreign participation within the total banking system (-9 percentage points in Table 3). The strong drop is caused by Ireland, the largest peripheral country. There has been an on-going shrinkage of the Irish banking system since the global financial crisis (see Table 1). Furthermore, cross-border banking has dropped from 40% in 2007/2008 to 29% in 2012 (see Table 3). 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 a major reversal of cross-border banking in Spain and Italy (see Table 3 and Figure 6). 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 2012 with 12 and 9 percentage points respectively. The evidence shows that the large Western European banks have thus withdrawn from the crisis-stricken countries.

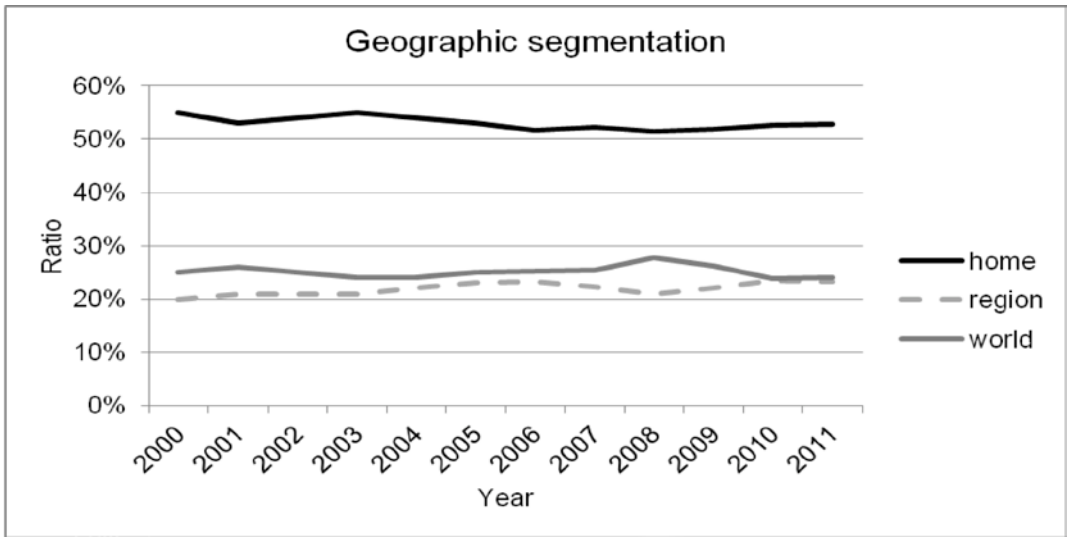
3.2 Integration in banking sector (individual banks)

After reviewing the overall trends in European banking from a host country perspective, we move to the internationalisation of banks from a home country perspective. As explained above, our proxy for cross-border banking is related to a bank's foreign assets. 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 integration 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 at end 2011 published by *The Banker* (2012).

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% of business abroad. Global banks have less than 50% 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% 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- international banks. These banks have 50 to 75% of their business in the home country. International operations are still sizable at 25 to 50%. Finally, domestic banks have more than 75% of their business in the home country.

Figure 7 shows the history of cross-border banking from a home country perspective for the EU. Foreign business is calculated as a weighted average for the top 30 banks (weighted according to assets). While the aggregate European banking statistics (see Figure 4) suggest a decline of international banking after the global 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%. The cross-border business within Europe has remained stable at just above 20%, with a slight increase from 21% in 2008 to 23% in 2011 after the global financial crisis. Cross-border business to rest of the world has declined from 28% in 2008 to 24% 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 (Schoenmaker, 2013).

Figure 7. Geographic segmentation of Top 30 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%.
Source: Author's calculations based on annual reports.

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% 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 25% in 2000 to 66% 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%, down from its peak in 2007 at 47%.

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 22 to 34% 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 34 to 80% home country business in Table 4).

An overall conclusion is that most large banks have kept a strong international orientation after the Global 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 response to state aid. Although it is often argued that banks with state aid reduce their business in particular abroad, that is not what we find in the data. It appears that the deleveraging occurred both at home and abroad.

More generally, there are some significant shifts in cross-border business at the individual bank level. Some large international banks have increased their business in the continents, that are less affected by the crisis: HSBC and Standard Chartered in Asia, and Santander and BBVA in Latin America. Other European banks have expanded their European business, such as BNP Paribas (see above), Banque Populaire CdE and Danske Bank. By contrast, many others have downsized their cross-border business. The overall result in Table 4 is that the weighted average of the cross-border business of the top 30 banks remained remarkably constant at 23% in the rest of the region and 24% in the rest of the world from 2007 to 2011.

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%).

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 (Schoenmaker, 2013). So, while international coordination may be needed most for these banks, the national authorities are also likely to cling to their national champions.

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 remain significant, with some major changes within the banking 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.

Table 4. Geographical segmentation of Top 30 banks in Europe from 2000 to 2011 (in %)

Banking Groups	2000			Banking Groups	2007			Banking Groups	2011		
	h	r	w		h	r	w		h	r	w
HSBC	37	7	56	HSBC	35	16	50	HSBC	35	11	54
Crédit Agricole	61	19	20	Royal Bank of Scotland	53	22	25	BNP Paribas	49	34	17
Deutsche Bank	29	37	34	Crédit Agricole	76	14	10	Royal Bank of Scotland	62	8	30
HypoVereinsBank	62	35	3	Banco Santander	52	35	13	Crédit Agricole	81	11	8
UBS	19	28	52	BNP Paribas	57	22	21	Banco Santander	27	41	32
BNP Paribas	38	24	37	Barclays	35	23	42	Barclays	34	27	39
Royal Bank of Scotland	72	7	21	HBOS	80	10	10	Lloyds Banking Group	90	7	3
ABN Amro	34	33	33	UniCredit	42	55	3	Deutsche Bank	34	32	34
Credit Suisse	21	29	50	ING Bank	39	31	29	UniCredit	42	56	2
Barclays	75	6	19	Rabobank	66	16	19	Banque Populaire CdE	71	14	15
ING Bank	36	19	45	Deutsche Bank	29	29	43	ING Bank	40	30	30
Banco Santander	28	10	62	Fortis	62	30	8	Rabobank	74	9	17
BBVA	31	2	67	Credit Mutuel	94	4	2	Société Générale	79	12	9
Société Générale	68	11	21	Banca Intesa	74	17	9	Intesa Sanpaolo	82	14	4
Rabobank	80	7	13	Groupe Caisse d'Epargne	92	3	5	BBVA	56	9	35
Banca Intesa	68	16	16	Société Générale	63	18	19	UBS	36	20	44
Commerzbank	66	21	12	Credit Suisse	13	34	53	Credit Suisse Group	21	26	53
Lloyds Bank	86	7	7	BBVA	71	1	28	Standard Chartered	15	4	81
Dresdner	54	27	19	UBS	10	34	57	Crédit Mutuel	86	10	4
Credit Mutuel	95	3	3	Lloyds Bank	84	8	8	Commerzbank	51	32	17
Fortis	55	31	14	la Caixa	100	0	0	Nordea Group	21	74	5
Abbey National	99	1	0	Commerzbank	78	21	1	CaixaBank	98	2	0
Groupe Caisse d'Epargne	0	0	0	Groupe Banque Populaire	86	6	8	Danske Bank	40	60	0
Halifax	95	5	0	Dexia	54	31	16	KBC Group	64	21	15
Bayerische Landesbank	63	18	19	Nordea	30	70	0	ABN Amro Group	80	12	8
Nordea	22	76	2	Landesbank Baden-Wurttemb.	88	12	0	Allied Irish Banks	81	18	1
KBC	45	23	32	Bayerische Landesbank	77	14	9	DNB Group	73	17	10
UniCredit	73	8	19	Standard Chartered	22	0	78	Landesbank Baden-Württemb.	72	20	8
Dexia	52	48	0	Danske Bank	63	37	0	Bayerische Landesbank	77	12	11
Groupe Banque Populaire	98	1	1	KBC	59	12	29	Erste Group	41	55	4
Weighted average	51	20	26	Weighted average	53	23	24	Weighted average	53	23	24

Note: Top 30 banks are selected on the basis of capital strength for the respective years (2000, 2007, and 2011) as published in *The Banker*. Total assets are segmented over the home country, the rest of region, and the rest of world and presented as a percentage of total assets. The three categories add up to 100%. The top 30 banks are calculated using a weighted average (weighted according to assets).

Source: Author's calculations based on annual reports.

Table 5. Top 30 banks in Europe in 2011

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

1. in EUR billion.

2. as % of total assets.

Note: Top 30 banks are selected on the basis of capital strength (Tier 1 capital) at end 2011 as published in *The Banker* (2012). 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).

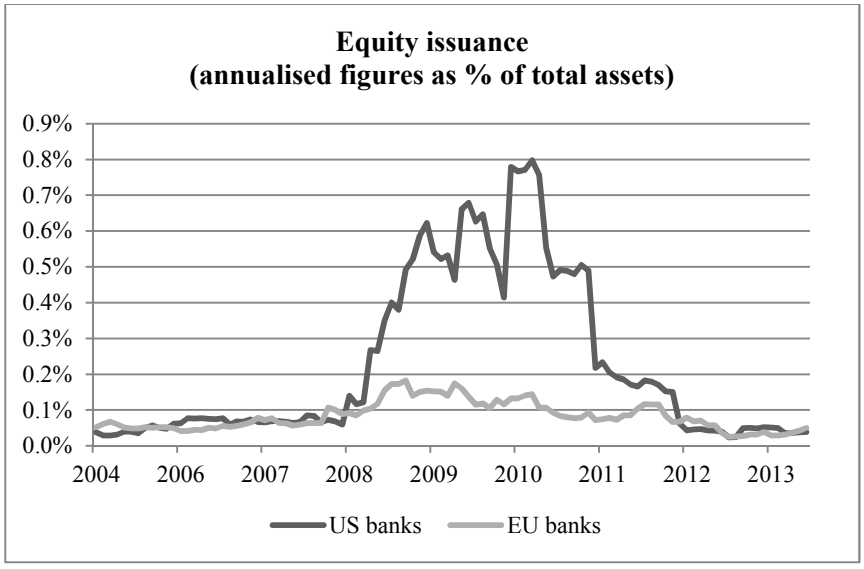
Source: Author's calculations based on annual reports.4 Capital positions and system risk.

The 2007-2009 global financial crisis started in the financial sector and quickly turned into a global recession with a decline in output, employment, and trade. While the US is slowly resuming economic growth, the European recovery is still very subdued. Two differences between the US and Europe stand out. First, the US Treasury did a strong stress test of its main banks in 2009, and forced the banks to remedy any capital shortfalls, defined in absolute dollar amounts, on a short notice. The early and strong recapitalisation, mainly through equity issues, helped US banks to resume their role as provider of credit to the economy. The European Banking Authority (EBA) conducted several stress tests, but these tests were less strong. Moreover, the EBA allowed banks much time (up to 9 months) to achieve the required capital levels defined as a capital ratio. The ratio approach provided leeway for banks to remedy any shortfall by strengthening capital (retained earnings and equity issues)

and/or reducing their exposures by shortening their balance sheet (deleveraging). Unlike the US banks, European banks have done very few equity issues. Figure 8 shows a comparison between the relative amounts of bank equity issuances in the US compared to EU banks over the last 10 years. It shows clearly that the US banks raised a lot more equity in a much more concentrated timeframe in order to stabilize the banking system, compared to EU banks. In this context, the EU banks are lagging behind. Second, Europe has suffered a second crisis, the sovereign debt crisis. The sovereign debt crisis has further weakened the balance sheet of European banks.

This section provides an overview of the capital position of individual banks. If banks have too little capital, they may find it difficult to grant new loans, potentially causing a 'credit crunch'. Another third item is the aggregate systemic risk in the financial system. This provides an indicator of potential casualties in the financial sector, which may come at a cost for the taxpayer.

Figure 8. Comparison of bank equity issuances between EU and US



Note: In order to compare these recapitalisation efforts it is useful to relate them to the size of the banking system, so we will consider a normalisation by (current) total assets. The monthly issuance (rolling average) is translated to annualised figures. The annualised figures on equity issuance are presented as a percentage of total bank assets in the US, respectively EU.

Source: Dealogic data.

4.1 Capital position of individual banks

Capital is a good indicator of the health of a financial institution. The regulatory capital ratio is a useful starting point, but has some deficiencies (Acharya, Schoenmaker and Steffen, 2011). First, the main capital ratio, the Tier 1 capital ratio, is based on risk- weighted assets (to be precise: Tier 1 equity divided by risk weighted assets). Banks are allowed to use internal models to determine the risk weights. Research shows that there is a strong heterogeneity in the application of risk weights by banks (Le Leslé and Avramova, 2012). Das and Sy (2012) find that risk weighted asset do not, in general, predict market measures of risk. Moreover, certain asset classes, such as sovereign bonds in OECD countries, receive a zero risk weight. The sovereign debt crisis in Europe has shown that these zero risk weights are not justified. Next, the regulatory capital ratios are based on book values, which typically show a decline in asset values with some delay. It is therefore useful to complement the regulatory ratios with market-based indicators.

Table 6 shows a market based leverage ratio. The market value (MV) based leverage ratio divides the market capitalisation of a bank by its total assets. The latter benchmark is inspired by the new Basel III leverage ratio of 3%. But it is strictly speaking different in the sense that the Basel leverage ratio is based

on Tier 1 equity and includes both on- and off-balance exposures in total assets. Furthermore, we report the book value leverage ratio (book value of Basel II Tier 1 equity divided by total assets). To see what the quality of the outstanding loan portfolio of the individual banks is, we also report the amount of NPLs and the ratio NPLs / total gross loans. Clearly visible are the high levels of NPLs in particular Italy, but also in Spain and Greece.

Dexia provides a good illustration of the deficiency of the risk-weighted approach. Dexia reported 10.4% on the Core Tier 1 Capital Ratio, just before its problems re-emerged in October 2011. This is twice the minimum of 5% used as benchmark in the 2011 stress test. On the leverage measure, Dexia scored 1.34% on book value of equity divided by total assets and 0.49% on market value of equity divided by total assets (Acharya, Schoenmaker and Steffen, 2011). These figures were well below the future regulatory benchmark of 3% for the Basel leverage ratio and signalled the problems at Dexia.

Which banks have the full trust of markets and can thus finance themselves without any problem? Examples are well-capitalised banks such as HSBC, JP Morgan and Rabobank with leverage ratios around 6%. The aim of restoring market confidence in banks can be interpreted conservatively as restoring capitalisation of each bank in Europe at least to the level of capitalisation of these banks. The OECD suggests that well-capitalised banks should have a leverage ratio of 5% (Blundell-Wignall and Atkinson, 2012). This is consistent with the recommendations of the Swiss Banking Commission and the UK Independent Banking Commission (the so-called Vickers Committee) for the leverage ratio. The aim would be to require banks to recapitalise up to 5% in a credible, confidence-boosting plan (well above the future regulatory benchmark of 3%). In Table 6, we report the capital needed to restore capital to 3 respectively 5% (based on market values). In the basic scenario to restore capital to 3% of assets, EUR 84 billion would be needed for the largest 60 banks. Note that only banks with a listing are included for the market value based indicator in Table 6. Non-listed banks, like Banque Populaire CdE, Rabobank, the German Landesbanken, Crédit Mutuel, CaixaBank and ABN Amro, are excluded, as there is no market value available for these banks. In the stronger OECD scenario to restore capital to 5% of assets, EUR 365 billion is needed.

4.2 Systemic risk

What are the remaining systemic risks in the financial sector? Each bank's contribution to systemic risk can be measured as its systemic expected shortfall, *i.e.,* its propensity to be undercapitalised when the system as a whole is undercapitalised. The shortfall increases with the bank's leverage and with its expected loss in the tail of the system's loss distribution. The V-Lab at the Stern School of Business, New York University, has developed this measure of systemic risk (see, for example, Acharya, Engle and Richardson, 2012, and Engle, Jondeau and Rockinger, 2012). The Systemic Expected Shortfall is presented for the major European banks in Table 6. The V-Lab selects the large publicly listed banks (top 60 of listed banks).

The Expected Shortfall is calculated according to the method described in Acharya, Engle and Richardson (2012). It is defined as the capital that a firm is expected to need if we have another financial crisis, complying with a capital requirement threshold as a percentage of total assets. In our analysis, this threshold is put at 3%. To calculate the Expected Shortfall, the method evaluates the losses that an equity holder of a particular bank would face if there were a future crisis, which is defined as a situation in when over the next six months the broad market falls by 40%. By measuring a bank's sensitiveness to the market (*e.g.* through its beta), the V-Lab runs scenarios to measure the impact of the market fall on the bank's equity. A general market fall of 40% is a rather tough scenario. In the stress-test scenario, the total Expected Shortfall for the major European banks amounts to EUR 241 billion. This is about three times as much as the recapitalisation scheme for the basic scenario with a 3% leverage ratio (based on market values).

All three measures for further capital needs (3% MV/Assets, 5% MV/Assets, Expected Shortfall) point to a need for recapitalisation. The banks in need of the largest amounts of capital are Crédit Agricole, Deutsche Bank, Barclays, Société Générale and RBS. It is telling that the official measure, book value of equity to total assets at 3%, only reveals Crédit Agricole and Deutsche Bank of these five banks as undercapitalised. More generally, almost all banks in Table 6 report a book value leverage ratio above 3%. Clearly, market value of equity and book value of equity show complementary insights. In Figure 9a and 9b, we regress the book value of equity (Basel II Tier 1 Capital) against the market value of equity. If both metrics convey the same information, we would expect a regression line through the origin, in a 45° angle. Both regression lines are not cutting through the origin, but below it. Apparently, the market values relatively high book values conservatively.

Figure 9a. BV Equity / MV Equity regression 2013-H1

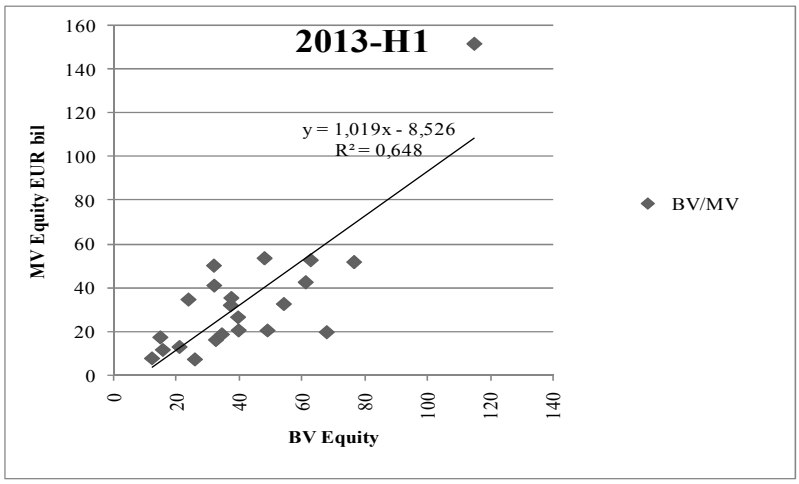
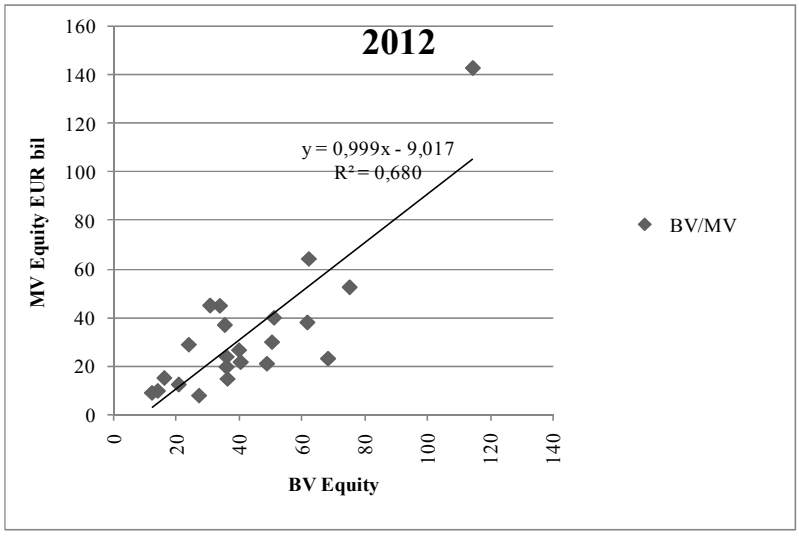


Figure 9b. BV Equity / MV Equity regression 2012



Note: The graphs plot the market value of equity (y-axis) against the book value of equity (x-axis).
Source: Table 6.

Table 6. Capital positions and expected shortfall of largest European Banks

		On latest accounts date				On 15 November 2013			
Bank name	Latest accounts date	NPL (€ bn)	NPL/ Gross Loans (%)	BV Equity/ Assets (%)	MV Equity/ Assets (%)	MV Equity/ Assets (%)	Capital needed for 3% MVequity/ Assets (€ bn)	Capital needed for 5% MVequity/ Assets (€ bn)	Expected Shortfall (€ bn)
Credit Agricole SA *	06/2013	44.5	6.9%	1.8%	0.9%	1.2%	31.5	67.2	40.3
Deutsche Bank AG	09/2013	9.3	2.4%	2.9%	1.9%	1.9%	19.0	54.8	34.9
Barclays PLC **	09/2013	33.4	6.4%	3.6%	3.0%	2.9%	2.4	36.0	23.8
Societe Generale	06/2013	25.7	7.1%	3.2%	1.7%	2.6%	4.5	29.5	19.8
Royal Bank of Scotland Group PLC	06/2013	49.5	9.6%	4.8%	1.4%	3.1%		26.9	18.4
ING Group NV ***	06/2013	16.2	3.0%	3.5%	2.3%	3.2%		20.3	15.7
BNP Paribas	09/2013	29.3	4.0%	4.1%	3.4%	3.7%		24.9	14.9
Dexia SA	06/2013	1.4	1.0%	4.2%	0.0%	0.0%	7.3	12.3	11.9
UniCredit SpA	06/2013	70.0	12.2%	5.5%	2.3%	3.3%		14.8	11.7
Commerzbank AG	06/2013	17.8	7.6%	4.1%	1.2%	1.8%	7.7	20.5	11.4
Natixis	06/2013	5.0	5.1%	2.6%	1.8%	2.3%	3.9	15.0	8.6
Credit Suisse Group AG	09/2013	1.4	0.7%	5.1%	4.9%	4.7%		2.5	5.6
Banca Monte dei Paschi di Siena SpA	06/2013	27.7	18.2%	4.8%	1.1%	1.2%	3.9	8.2	4.6
Intesa Sanpaolo SpA	06/2013	48.1	12.5%	5.3%	2.9%	4.3%		4.7	4.2
Banco Popolare SC	06/2013	13.6	14.3%	4.5%	1.2%	1.7%	1.7	4.3	2.6
Danske Bank A/S	06/2013	12.4	5.6%	4.8%	3.0%	3.8%		5.5	2.4
CaixaBank	09/2013	25.5	11.5%	5.2%	4.6%	5.0%		0.1	1.6
Espirito Santo Financial Group SA	06/2013	2.6	4.9%	7.3%	1.2%	1.2%	1.5	3.3	1.4
Unione di Banche Italiane SCPA	06/2013	10.2	10.8%	6.2%	2.0%	3.4%		2.0	1.2
Banco Comercial Portugues SA	06/2013	4.1	6.8%	7.2%	2.3%	2.6%	0.3	2.0	1.0
UBS AG-REG	09/2013	0.9	0.4%	3.7%	6.8%	6.2%			0.8
Banca Popolare di Milano Scarl	06/2013	3.9	11.0%	6.7%	1.9%	2.8%	0.1	1.1	0.8
Banca Carige SpA	06/2013	3.6	12.7%	3.6%	2.2%	2.5%	0.3	1.2	0.6
Storebrand ASA	09/2013	0.0	0.6%	3.5%	3.4%	3.8%		0.7	0.6
Banco de Sabadell SA	09/2013	20.9	17.2%	5.2%	3.7%	4.3%		1.1	0.4
Aareal Bank AG	06/2013	0.7	2.7%	5.3%	2.4%	3.6%		0.6	0.4
Banco Popular Espanol	09/2013	16.3	15.0%	6.0%	4.4%	4.8%		0.4	0.4
Banca Popolare dellEmilia Romagna	06/2013	8.9	17.4%	5.9%	2.4%	3.6%		0.9	0.3
Banca Popolare di Sondrio SCARL	06/2013	1.9	7.5%	5.7%	3.6%	3.9%		0.3	0.1
Banco BPI SA **	09/2013	0.9	3.3%	7.8%	3.0%	3.8%		0.5	0.1
Banco di Desio e della Brianza SpA	06/2013	0.6	8.1%	8.2%	2.4%	3.2%		0.2	0.0
Oldenburgische Landesbank AG	06/2013	N/A	N/A	4.1%	3.7%	3.6%		0.2	0.0
Banco di Sardegna SpA	06/2013	2.4	22.6%	7.9%	0.4%	3.6%		0.2	0.0
HSBC Holdings PLC	06/2013	29.1	3.9%	5.7%	7.5%	7.6%			
Banco Santander SA	09/2013	39.0	5.6%	4.9%	5.6%	6.1%			
Lloyds Banking Group PLC	09/2013	47.4	7.7%	4.4%	6.0%	6.2%			
Nordea Bank AB	09/2013	6.7	1.9%	3.9%	5.8%	5.9%			
Banco Bilbao Vizcaya Argentari	09/2013	21.5	6.2%	6.1%	7.8%	8.0%			
Standard Chartered PLC	06/2013	4.6	2.1%	6.5%	8.3%	8.5%			
DNB NOR ASA	09/2013	3.0	1.7%	4.8%	6.1%	7.0%			
Skandinaviska Enskilda Banken AB	09/2013	0.8	0.6%	4.2%	5.8%	6.5%			
Bankia SAU	06/2013	18.3	13.3%	3.8%	2.5%	4.3%		2.0	

Svenska Handelsbanken-AB	09/2013	0.8	0.4%	4.0%	6.8%	7.4%			
KBC Group NV	06/2013	11.2	8.5%	6.2%	4.7%	6.6%			
Deutsche Postbank AG	06/2013	2.7	2.6%	2.7%	4.2%	4.8%		0.3	
Banco Espirito Santo SA	09/2013	2.8	5.6%	7.6%	4.0%	5.1%			
Mediobanca SpA **	09/2013	0.9	2.1%	8.0%	5.7%	6.8%			
Piraeus Bank SA **	06/2013	10.8	22.4%	8.7%	0.1%	7.4%			
Bankinter SA **	06/2013	1.9	4.3%	4.7%	3.9%	6.4%			
Pohjola Bank PLC **	09/2013	0.3	2.1%	4.3%	6.9%	10.2%			
Jyske Bank A/S	09/2013	N/A	N/A	6.9%	7.8%	8.7%			
Credito Emiliano SpA	06/2013	1.1	5.2%	5.1%	3.9%	6.0%			
DVB Bank SE	06/2013	0.8	3.9%	5.0%	4.6%	4.6%		0.1	
Sydbank A/S	09/2013	0.8	7.8%	8.1%	7.4%	8.1%			
Van Lanschot NV	06/2013	0.6	4.5%	7.0%	3.6%	4.8%		0.0	
SpareBank 1 SMN	06/2013	0.2	1.1%	9.3%	5.2%	5.8%			
Credito Bergamasco SpA	06/2013	1.4	11.2%	8.7%	5.2%	6.4%			
Asya Katilim Bankasi AS	06/2013	0.3	4.2%	9.5%	5.7%	6.3%			
TOTAL (€ billion)							**84**	**365**	**241**

Notes: BV of Equity is the reported Basel II Tier 1 Capital. MV of equity is the market capitalisation. Loan data is per H1-2013, unless stated otherwise. Capital needs are calculated for the basic scenario (3% market based leverage ratio), the OECD scenario (5% market based leverage ratio) and the stress-test scenario based on the expected shortfall, calculated according to the method described in Acharya *et al* (2012). It is defined as the capital that a firm is expected to need to recapitalise to a 3% equity to assets threshold in case of another financial crisis. To calculate the Expected Shortfall, the method evaluates the losses that an equity holder would face if there were a future crisis, which is defined as a situation when over the next six months the broad market falls by 40%.

* Loan data at group level
** Loan data per year-end 2012
*** Loan data at bank level
Sources: V-Lab at Stern School of Business (NYU), annual reports, Bankscope.

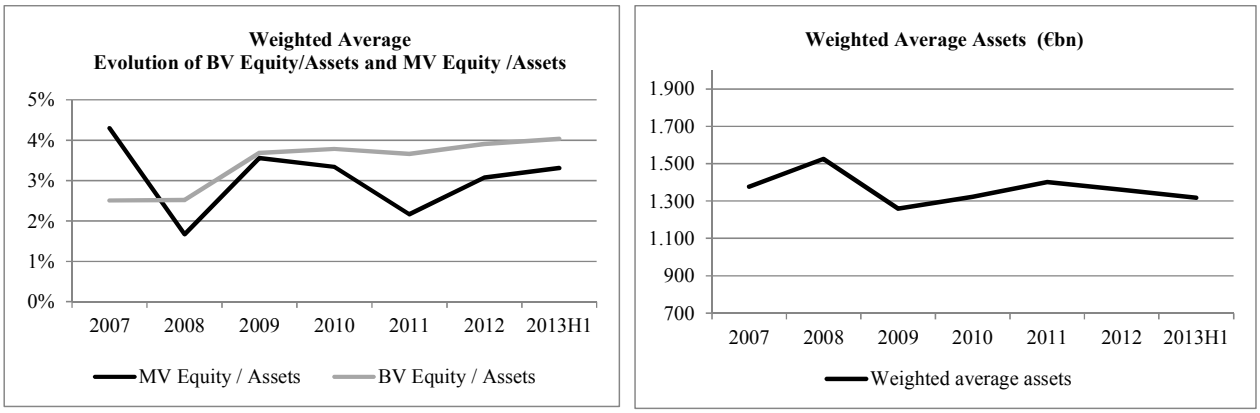
5 Impact on credit supply and competition

Sections 2 to 4 lay the empirical foundation of the European banking sector for our examination of the impact on credit supply and competition. These issues are discussed in turn.

5.1 Credit supply

At the aggregate level, the Baltics and Ireland have witnessed a strong decline in bank assets, combined with a reduction of cross-border supply of credit (Tables 1 and 3). So, foreign banks have reduced their presence in these countries, which has not been replaced by domestic banks. By contrast, the reduction in foreign credit has been replaced by domestic credit in other CESEE countries, notably Poland. Next, Luxembourg and Belgium show a strong decline in assets at 25 and 10% respectively. Foreign penetration has been flat for Luxembourg, indicating that domestic and foreign credit have gone down hand in hand.

Figure 10. Capital and weighted average assets for top 22 European banks



Source: Tables 2 and 6, Bankscope.

For individual banks, the trend in weighted average assets is not very revealing. Note that only banks with a listing are included in Figure 10 and Table 7. Non-listed banks, like Banque Populaire CdE, Rabobank, the German Landesbanken, Crédit Mutuel, CaixaBank, ABN Amro, and Allied Irish Banks, are excluded from our Top 30 banks, as there is no market value available for these banks. Figure 10 shows a stable pattern with a dip from 2008 to 2009 and a slow reduction in assets from 2011 onward. It may be useful to distinguish between well-capitalised and less-capitalised banks to examine potential credit crunch effects (Kalemli-Ozcan, Sorensen and Yesiltas, 2012). To that purpose, we divide our group of 22 major European banks in tertiles. Table 7 ranks the banks from high to low market capitalisation divided by total assets, based on year-end 2012 values. This is our market based leverage ratio. Table 7 indicates that the 1st tertile is well capitalised in the range from 4.3 to 9.4%. Banks, like Standard Chartered, HSBC and BBVA, are in this group. The 2nd tertile comprises banks with a market based leverage ratio from 2.8 to 4.3%. The 3rd tertile contains the much- undercapitalised banks with a market leverage ratio from 0.8 to 2.8%. The banks with the largest capital needs, as identified in Section 4, are in the 3rd tertile (Crédit Agricole, Deutsche Bank, Barclays, Société Générale and RBS) or at the bottom of the 2nd tertile (BNP Paribas).

Table 7. Tertiles of top 22 banks in Europe in 2012

Bank	MV equity/Assets at Dec-12
Tertile 1	
Standard Chartered (UK)	9.4%
HSBC (UK)	7.0%
BBVA (Spain)	5.9%
Banco Santander (Spain)	5.1%
DNB Group (Norway)	5.1%
Erste Group (Austria)	4.4%
UBS (Switzerland)	4.3%
Tertile 2	
Nordea Group (Sweden)	4.3%
KBC Group (Belgium)	4.0%
Lloyds Banking Group (UK)	3.6%
ING Bank (Netherlands)	3.2%
Credit Suisse Group (Switzerland)	3.2%
Intesa Sanpaolo (Italy)	3.0%
BNP Paribas (France)	2.8%
Tertile 3	
Danske Bank (Denmark)	2.8%
UniCredit (Italy)	2.3%
Barclays (UK)	2.2%
Société Générale (France)	1.8%
Deutsche Bank (Germany)	1.5%
Royal Bank of Scotland (UK)	1.5%
Commerzbank (Germany)	1.3%
Crédit Agricole (France)	0.8%

Sources: Tables 2 and 6, Bankscope.

Figure 11 shows the three groups of banks on two dimensions: *1)* the market-to-book ratio of equity; and *2)* the development of average assets from 2007 to 2012. Figure 11 provides a revealing picture with clear distinctions. Those banks in the 1st tertile, which are capitalised well above 4%, have a market-to-book ratio above one. The market thus values the strength of this group of banks. Importantly, they also show asset growth over the full period (except for a small dip from 2008 to 2009) and from year-end-2012 to 2013-H1 (visible across all tertiles). By contrast, banks in the 2nd tertile, between 2.8 and 4.3% capital, and the 3rd tertile, well below 3% capital, trade at a market-to-book ratio below one. Also, they show a decline in asset growth compared to 2008.

Conclusions on credit supply

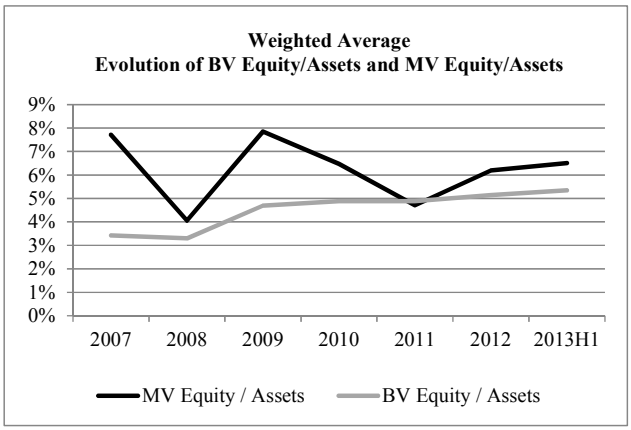
How should we interpret these results? The new Basel III leverage ratio is 3%. A market based leverage ratio below 3 to 4% may indicate that banks are not yet ready to support new lending. It appears that several banks in Europe are still below this threshold and thus not yet ready to support recovery. These banks, consisting of two out of the three tertiles, seem to contribute to a 'credit crunch' in Europe, by slowing down their supply of lending (deleveraging). Only the very well capitalised banks increase their lending at a gradual pace. It should be noted that these are overall results based on total assets of banks. More research on exact lending data, which is a sub-set of total assets, may be useful to determine exact credit crunch effects.

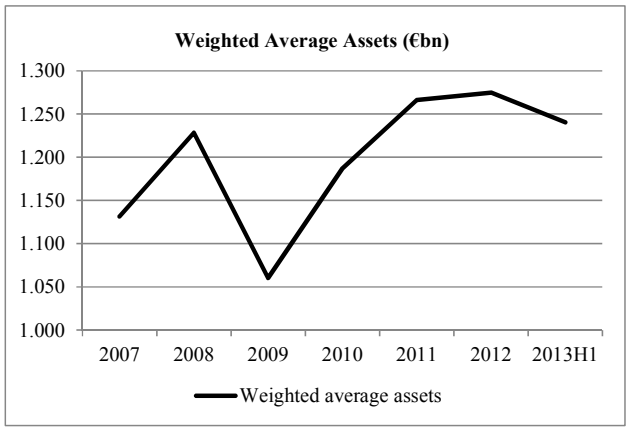
The results suggest a link between capitalisation and deleveraging. Those banks that are weakly capitalised improve their position through deleveraging (as well as building capital through retained earnings). This is a slow and painstaking process, where the latest data suggest that there are severe problems. That would in turn suggest that these banks are not likely to contribute to new lending, even if

the recovery would start at some point. Only the 1st tertile of very well capitalised banks (above 4 to 5% market capitalisation to total assets) contribute to lending. The overall conclusion is that 'credit crunch' effects may be felt.

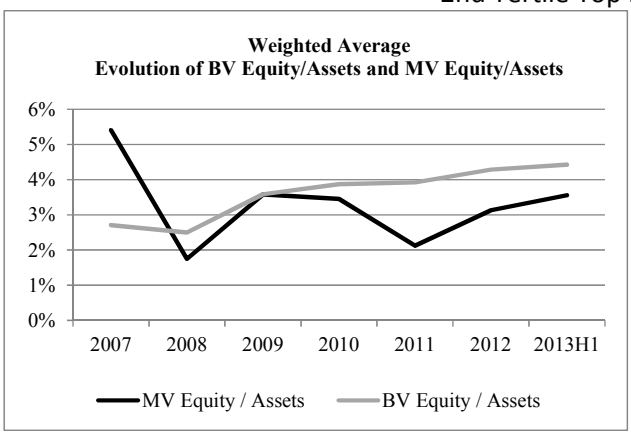
Figure 11. Capitalisation and weighted average assets for tertiles of top 22 European banks.

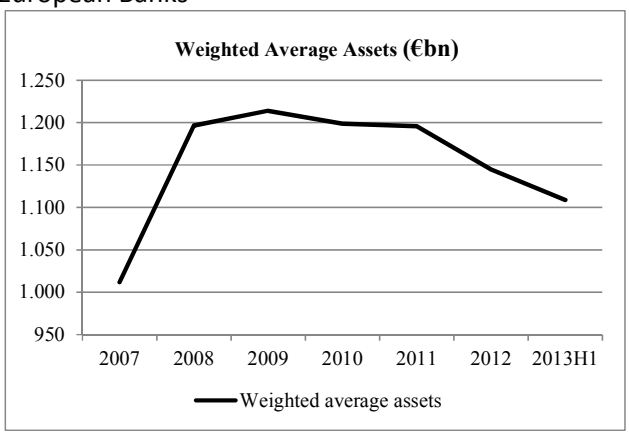
1st Tertile Top European Banks



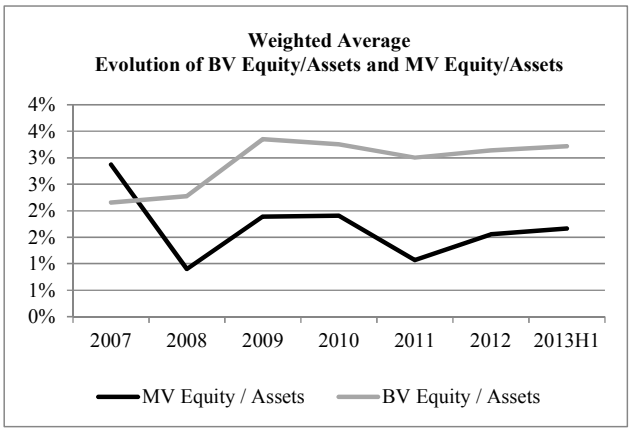


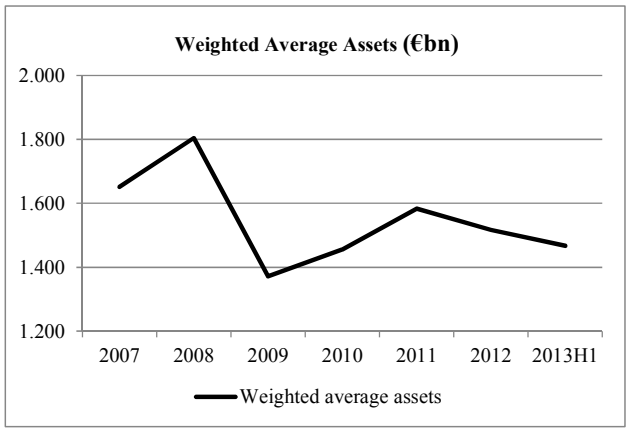
2nd Tertile Top European Banks





3rd Tertile Top European Banks





Note: UBS is part of tertile 1. Due to their restructuring programme, started in 2013, their amount of assets is reducing, causing a significant drop in the weighted average assets of tertile 1.

Source: Tables 2 and 6, Bankscope.

5.2 Competition

Crisis management has led to consolidation in the banking sector through (sometimes forced) mergers and acquisitions (M&As) of ailing banks. As a result, some markets have become more concentrated. But concentration is one only of several proxies to measure competition. Measuring competition in banking is challenging. Interest margins may, for example, not be a good indicator of competition, as the margin also reflects the credit risk of the borrower. Modern theory analyses the contestability of the banking market (Claessens and Laeven, 2004). Indicators for contestability include entry requirements (for domestic and foreign banks), activity restrictions, and switching costs. There is no conclusive evidence on changes in these indicators caused by the financial crisis.

We therefore investigate the more traditional measures of market structure. The presumption is that more concentrated markets are less competitive. But it is not clear to what extent concentration measures the intensity of competition. Another concern is the assumed one-way causality from market structure to performance. Performance may also have an impact on market structure. Notwithstanding these concerns, we provide some evidence on the increased concentration in the wake of the financial crisis. Increased concentration is, at least, an indication of reduced competition.

Concentration can be measured through the Herfindahl Index, which is the sum of per-bank market shares squared (multiplied by 10 000). In principle, the European Commission (DG Competition) permits mergers up to the threshold of 2 000 for the measured Herfindahl Index. Another common measure is the n-bank concentration ratio: C_n. We measure the C5 ratio, the sum of the market share of the five largest banks. While the C_n ratio only measures the top-end of the market, the Herfindahl Index measures the competitiveness over the full market range and is therefore most informative.

The data are based on the EU structural financial indicators of the ECB. Using Bankscope data, Bijlsma and Zwart (2013) find higher levels of concentration than the ECB. Tables 8 and 9 provide the full data for all EU countries. The trends are pictured in Figures 12 to 14. The evidence points towards a modest increase in concentration for most country groupings, except for CESEE. But the pick-up in concentration has been reversed in the last year, 2012. For the EU as a whole, the C5 ratio increased from 44% in 2008 to 46% in 2012 (6% increase) and the Herfindahl Index remained flat at 650. Several countries (Belgium, Bulgaria, Estonia, France, Latvia, Netherlands, Austria, Finland, and Sweden) show a decrease in concentration on both indicators. Three countries are above the hurdle of 2 000, beyond which DG Competition of the European Commission gets worried about lack of competition. These countries are Estonia at 2 500, the Netherlands at 2 000, and Finland at 3 600 (coming from 2 500 in 2007). Germany showed a very large increase (61% on the Herfindahl Index), but is still the least concentrated market in the EU.

Moving to the CESEE, we notice a decrease in concentration. This is due to the reduction of market share by the Western banks, which dominate most of the CESEE markets (see reduction in cross-border penetration in Table 3 and Figure 6). This is an improvement for competition, as the CESEE had a very concentrated market to start with. The Herfindahl Index for the full set of CESEE countries decreased to 900, while for the subset of the Baltics to 1 700.

Next, the peripheral countries show increased concentration. The Herfindahl Index for the peripheral countries (Greece, Ireland and Portugal) increased from 1 000 to 1 200. This amounts to an average increase of the Herfindahl Index of 20%. The wider group of distressed countries also shows an increase from 500 to 650 (close to 30%).

Conclusions on competition

In sum, the financial crisis has produced a slightly more concentrated banking system, except in CESEE. Stability may have been enhanced by forced mergers and acquisitions, but at the expense of competition. This is particular true for the distressed countries (Greece, Ireland, Portugal, Spain and Italy). It may thus be advisable to be more cautious with (forced) M&As as crisis management tool for solving potential banking problems.

Table 8. Competition measure – Herfindahl Index in EU countries from 2005 to 2012.

Countries	2005	2006	2007	2008	2009	2010	2011	2012	2008-12
Belgium	2,112	2,041	2,079	1,881	1,622	1,439	1,294	1,061	-44%
Bulgaria	698	707	833	834	846	789	766	738	-12%
Czech Repub.	1,155	1,104	1,100	1,014	1,032	1,045	1,014	999	-1%
Denmark	1,115	1,071	1,120	1,229	1,042	1,077	1,192	1,130	-8%
Germany	174	178	183	191	206	298	317	307	61%
Estonia	4,039	3,593	3,410	3,120	3,090	2,929	2,613	2,493	-20%
Ireland	600	600	700	800	900	900	800	1,000	25%
Greece	1,096	1,101	1,096	1,172	1,184	1,214	1,278	1,487	27%
Spain	487	442	459	497	507	528	596	654	32%
France	727	726	679	681	605	610	601	545	-20%
Italy	230	220	328	307	298	410	407	410	34%
Cyprus	1,029	1,056	1,089	1,019	1,089	1,124	1,027	996	-2%
Latvia	1,176	1,271	1,158	1,205	1,181	1,005	929	1,027	-15%
Lithuania	1,838	1,913	1,827	1,714	1,693	1,545	1,871	1,749	2%
Luxembourg	373	333	316	309	310	343	346	345	12%
Hungary	795	823	840	819	864	828	849	872	6%
Malta	1,330	1,171	1,177	1,236	1,250	1,180	1,203	1,314	6%
Netherlands	1,796	1,822	1,928	2,168	2,032	2,052	2,061	2,026	-7%
Austria	560	534	527	454	414	383	423	395	-13%
Poland	650	599	640	562	574	559	563	568	1%
Portugal	1,154	1,134	1,098	1,114	1,150	1,207	1,208	1,191	7%
Romania	1,115	1,165	1,041	922	857	871	878	852	-8%
Slovenia	1,369	1,300	1,282	1,268	1,256	1,160	1,142	1,115	-12%
Slovakia	1,076	1,131	1,082	1,197	1,273	1,239	1,268	1,221	2%
Finland	2,730	2,560	2,540	3,160	3,120	3,550	3,700	3,010	-5%
Sweden	845	856	934	953	899	860	863	853	-10%
United Kingdom.	399	394	449	412	467	522	523	436	6%
Euro area	656	645	662	691	658	707	715	689	0%
Non-euro area	545	537	589	568	590	622	630	557	-2%
EU	623	613	640	654	638	682	690	650	-1%
Baltics	2,166	2,109	1,987	1,890	1,865	1,702	1,698	1,663	-12%
CESEE	987	962	959	900	910	882	880	871	-3%
Periphery	877	872	908	978	1,039	1,063	1,030	1,168	19%
Distressed	451	429	489	508	520	581	598	648	28%

Note: The Herfindahl Index is the sum of per-bank market share squared (multiplied by 10 000). The average figures for euro area, non-euro area, EU, Baltics, CESEE, Periphery and Distressed are asset weighted. See Table 1 for the composition of the country groupings. The last column reports the difference between 2008 and 2012 (as a percentage).

Source: EU Structural Financial Indicators, ECB.

Table 9. Competition measure – C5 in EU countries from 2005 to 2012 (in %)

Countries	2005	2006	2007	2008	2009	2010	2011	2012	2008-12
Belgium	85%	84%	83%	81%	77%	75%	71%	66%	-18%
Bulgaria	51%	50%	57%	57%	58%	55%	53%	50%	-12%
Czech Repub.	65%	64%	66%	62%	62%	62%	62%	62%	-1%
Denmark	66%	65%	64%	66%	64%	64%	66%	66%	-1%
Germany	22%	22%	22%	23%	25%	33%	34%	33%	45%
Estonia	98%	97%	96%	95%	93%	92%	91%	90%	-5%
Ireland	48%	49%	50%	55%	59%	57%	53%	57%	3%
Greece	66%	66%	68%	70%	69%	71%	72%	80%	14%
Spain	42%	40%	41%	42%	43%	44%	48%	51%	21%
France	52%	52%	52%	51%	47%	47%	48%	45%	-13%
Italy	27%	26%	33%	31%	31%	40%	39%	40%	27%
Cyprus	60%	64%	65%	64%	65%	64%	61%	63%	-2%
Latvia	67%	69%	67%	70%	69%	60%	60%	64%	-9%
Lithuania	81%	82%	81%	81%	80%	79%	85%	84%	3%
Luxembourg	35%	32%	31%	30%	29%	31%	31%	33%	11%
Hungary	53%	54%	54%	54%	55%	55%	55%	54%	-1%
Malta	75%	71%	70%	73%	73%	71%	72%	75%	2%
Netherlands	84%	85%	86%	87%	85%	84%	84%	82%	-5%
Austria	45%	44%	43%	39%	37%	36%	38%	37%	-6%
Poland	49%	46%	47%	44%	44%	43%	44%	44%	0%
Portugal	69%	68%	68%	69%	70%	71%	71%	70%	1%
Romania	59%	60%	56%	54%	52%	53%	55%	55%	1%
Slovenia	63%	62%	59%	59%	60%	59%	59%	58%	-1%
Slovakia	68%	67%	68%	72%	72%	72%	72%	71%	-1%
Finland	83%	82%	81%	83%	83%	84%	81%	79%	-5%
Sweden	57%	58%	61%	62%	61%	58%	58%	57%	-7%
United Kingd.	36%	36%	41%	37%	41%	43%	44%	41%	11%
Euro area	44%	44%	44%	44%	44%	47%	48%	47%	6%
Non-euro area	42%	42%	46%	43%	46%	47%	48%	45%	5%
EU	43%	43%	45%	44%	44%	47%	48%	46%	6%
Baltics	80%	81%	79%	81%	80%	75%	76%	78%	-4%
CESEE	58%	57%	57%	56%	55%	55%	55%	55%	-1%
Periphery	58%	59%	60%	63%	65%	64%	63%	66%	5%
Distressed	39%	38%	41%	41%	42%	46%	47%	49%	19%

Note: C5 equals the aggregate size of the five largest banks relative to the size of all banks. The average figures for euro area, non-euro area, EU, Baltics, CESEE, Periphery and Distressed are asset weighted. See Table 1 for the composition of the country groupings. The last column reports the difference between 2008 and 2012 (as a percentage).

Source: EU Structural Financial Indicators, ECB.

Figure 12. Herfindahl Index and C5 in the EU

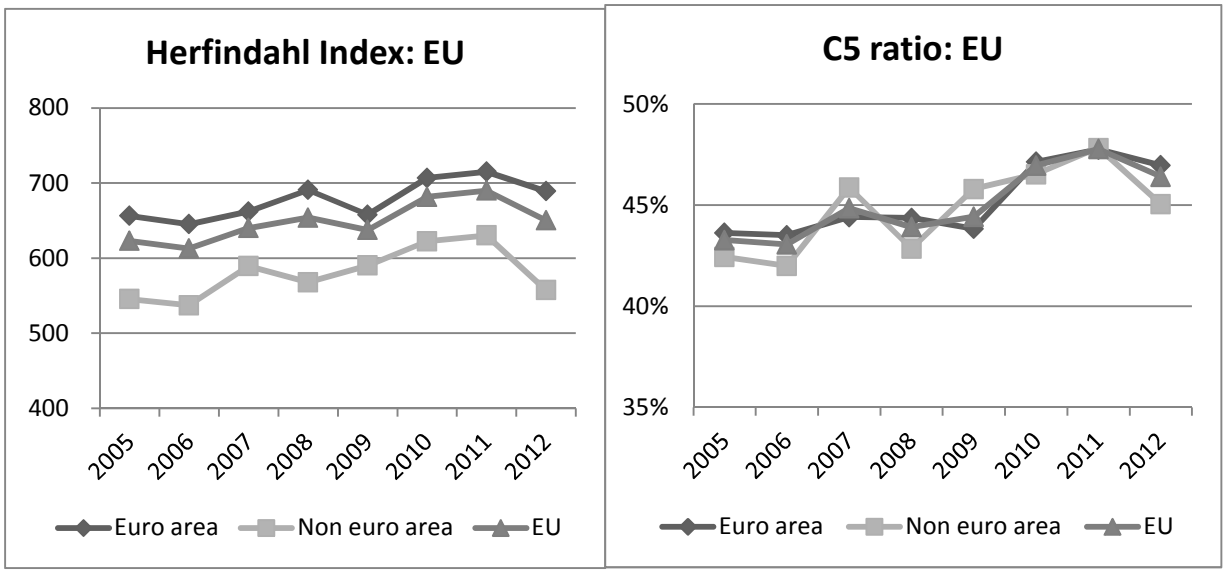


Figure 13. Herfindahl Index and C5 in CESEE

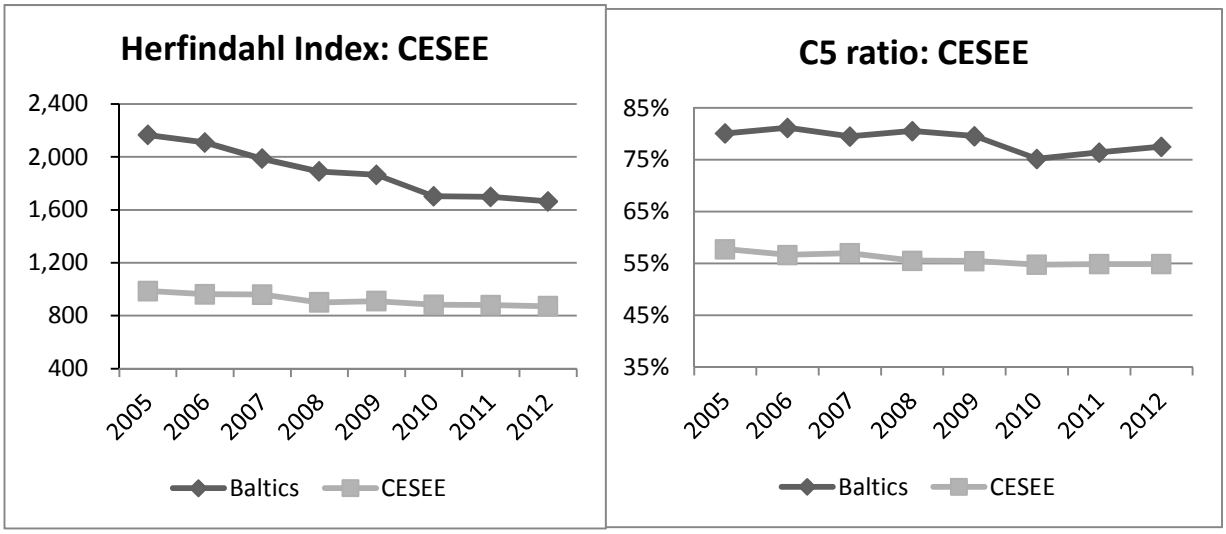
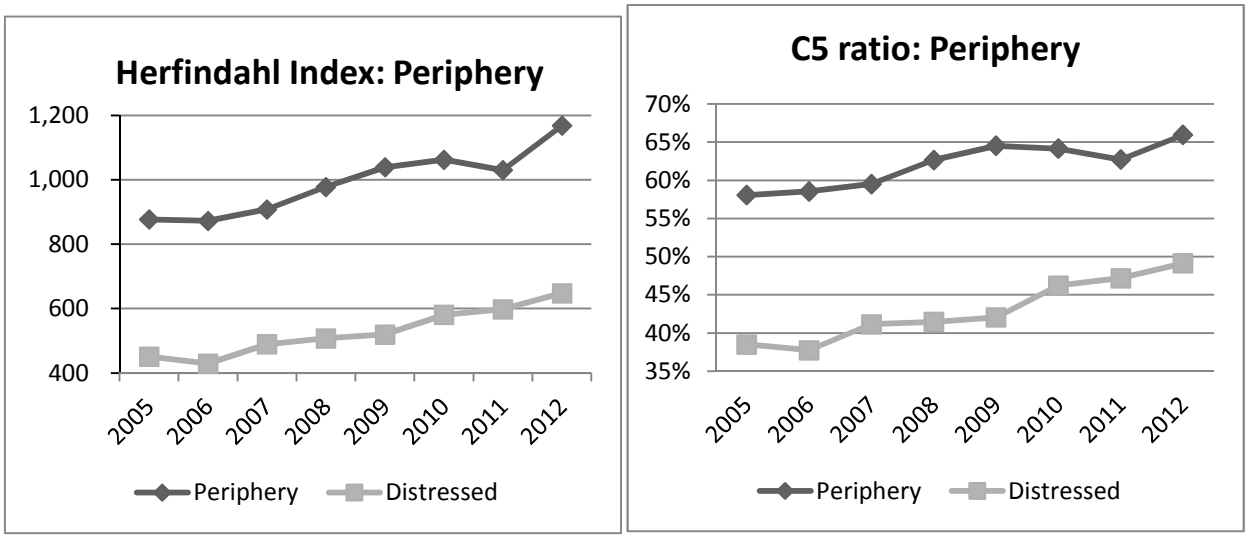


Figure 14. Herfindahl Index and C5 in Periphery



6. Summary and Recommendations

Summary

This paper reviews the state of the European banking system. The 2008-9 global financial crisis and subsequent 2010-12 sovereign debt crisis have left their mark on European banks. First, there is evidence of deleveraging. While overall asset growth is more or less flat in the EU, country data show a strong trend of deleveraging (-10 to -20% from 2008 to 2012) in the Baltics and the Periphery (Greece, Ireland and Portugal). At the bank level, we observe a strong deleveraging (-23%) for banks that received state aid, while non-state aid banks have grown their balance sheet (+4%). Second, cross-border flows have also been reduced within the EU. In particular, the Baltics and wider group of CESEE countries show a decline of 12 percentage points over the 2008-2012 period. Similarly, the Periphery has experienced a decline of 9 percentage points. The withdrawal from crisis-stricken countries has contributed to the deleveraging in these countries. It has also lead to a national reorientation within Europe. Third, we examine the capital position with a view to the forthcoming asset quality review by the ECB. Our basic scenario of recapitalising European banks to a market-based leverage ratio of 3% shows a capital shortage of EUR 84 billion.

What is the impact on credit supply and competition? At the bank level, we find an impact on credit supply. As expected, strongly capitalised banks (a market based leverage ratio of more than 4%) kept on lending, while the medium and weakly capitalised banks show a decline. Furthermore, the price-to-book ratio for the latter two groups of banks is below one. This indicates that the market perceives these banks as weak and assigns them a low stock price. Our findings provide prima facie evidence of a credit crunch in Europe. By contrast, the impact of the crises on competition is modest, with a small increase in banking concentration in the distressed countries (Greece, Ireland, Portugal, Spain and Italy).

Recommendations

The main challenge of the Banking Union is to counter the fragmentation of the European banking market. The new euro-area perspective should replace the emerging national tendencies. In that spirit, the CESEE countries may exercise their option to join Banking Union at some point in the future, as their financial system is much dependent on the Western-European banks, which are mostly covered by the

Banking Union. CESEE policy-makers would thus get a seat at the ECB's Supervisory Board and contribute to the supervisory assessment and decision-making on these large European banks.

Next, capital is a good indicator of the health of a financial institution. Supervisors should supplement the Tier 1 Capital Ratio (based on risk-weighted assets) with a leverage ratio (based on unweighted total assets), as the risk-weighted approach shows some deficiencies. The simple leverage ratio provides a useful backstop. It is also helpful to complement the regulatory ratios, which are based on book values, with market-based indicators. We therefore introduce the market based leverage ratio (based on the stock price of a bank's equity) as a signal for supervisors. Based on this indicator, we find an earlier reported capital shortfall of EUR 84 billion.

Finally, a strong and decisive recapitalisation is key to get the banking sector back in the good equilibrium, in which they contribute to economic growth. Our simulations show that well capitalised banks support lending. It is important to conduct the Asset Quality Review by the ECB and the Stress Test by the EBA as swift as possible. The outcome of these joint tests should be announced in terms of absolute euro amounts instead as a capital ratio. In the latter case, banks may restore their capital ratio by reducing assets (deleveraging) instead of increasing capital. Banks should also get a short time frame (up to 3 to 6 months) to restore capital.

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