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Business models in banking – how did they evolve and how do they need to be changed in the post-crisis period?

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Executive summary

Business models in banking – how did they evolve and how do they need to be changed in the post-crisis period?

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This article provides a brief overview of how business models developed in banking and outlines possible strategies with which banks can restructure their business models in the post-crisis period. At present, it is particularly large, investment-oriented banks that are under pressure to change their business models, since many business areas that guaranteed high returns pre-crisis have become unprofitable. To ensure a sufficient level of profitability, these banks have to refocus on the core competencies and core markets in which they have comparative advantages. While maintaining their focus on corporate and investment banking, they will also need to be more active in retail banking to better diversify their income structure and to meet regulatory requirements. Small, retail-oriented banks have to rethink their business models as well, even though they were much less affected by the 2007/2008 financial crisis. This article shows that these banks will be better off if they increase their share of non-interest income by cross-selling additional services or products to their customers. Diversifying into non-interest income is also beneficial, because competition in retail banking will continue to be high for structural reasons even if interest rates start to go back up. Overall, this paper implies that better-diversified banks are able to generate higher risk-adjusted returns and are more stable. However, while this may reduce idiosyncratic risk, it may also increase the level of systemic risk in the banking sector if banks diversify their activities in a similar way. This suggests that, from a financial stability perspective, it is necessary to have both diversified as well as specialized banks.

Business models in banking – how did they evolve and how do they need to be changed in the post-crisis period?

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Abstract
In this paper, we give a brief overview of how business models developed in banking and outline possible strategies with which banks can restructure their business models in the post-crisis period. We show that large banks with a focus on investment banking and trading activities were not the only entities affected by the crisis and in need of change. Small, retail-oriented banks have to rethink their business models as well, even though they were much less affected by the 2007/2008 financial crisis. The important difference between the two types of banks, however, lies in how their business models need to be changed.

1 The paper represents the author's personal opinions and does not necessarily reflect the views of the Deutsche Bundesbank or its staff.

1. Introduction

Banks' business models have changed considerably over the past few decades. Banks have gone from engaging mostly in traditional commercial banking activities to, over time, becoming increasingly active in non-traditional activities, such as investment banking and proprietary trading. While this has created new opportunities for banks to generate profits, it has also made banks more complex and exposed them to greater income fluctuations. This fact became evident during the 2007/2008 financial crisis, which primarily affected large, investment-oriented banks. Due to these banks' size and systemic importance, the recently introduced Basel III banking regulations are intended mainly at reducing their riskiness. These regulations include higher capital and liquidity requirements, both of which will reduce banks' profitability, since their ability to make profits depends much on the extent to which they can leverage their balance sheet and engage in short-term funding. Profitability will likely decrease further if the recommendations of the Liikanen Group (2012) are implemented.[2] This group proposes that banks should move their trading activities to a separate legal entity. These entities could remain within the banking group, but would have to refinance themselves independently. The idea is to prevent banks from using insured deposits to subsidize their trading activities; this should lead to more risk-adequate pricing and reduce margins in the trading business. Overall, therefore, bank profitability appears unlikely to return to pre-crisis levels. For this reason, many banks are under pressure to rethink their business models.

In this paper, we give a brief overview of how business models developed in banking and outline possible strategies with which banks can restructure them in the post-crisis era. We particularly focus on banks located in the European Union (E.U.), although many points made in this paper also apply to banks from other countries. We show that large banks with a focus on investment banking and trading activities are not the only entities affected by the crisis and in need of changing their business models. Small, retail-oriented banks have to rethink their business models as well, even though they were much less affected by the crisis. The important difference between these two types of bank, however, lies in how they have to change their business models.

2 Similar proposals are contained in the Vickers Report in the U.K. and Volcker Rule in the U.S. For an overview see Lang and Schröder (2013).

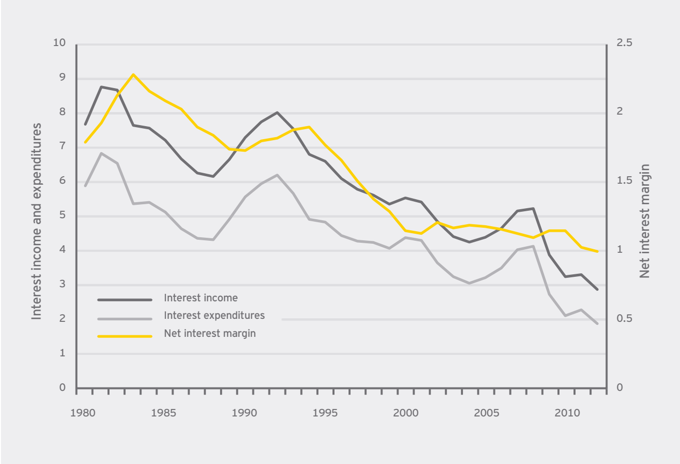

Figure 1: Interest income and interest expenditure of banks in Germany (as a percentage of total assets)
Source: Bundesbank (2013). Figure shows the development of the interest income and interest expenditure of banks in Germany (as a percentage of total assets) and the net interest margin between 1980 and 2012. The interest margin is the ratio of net interest income to total assets. Up to and including 1998, all figures are expressed, as a percentage of average business volume. In 2011, aggregate total assets increased by about 10% in accounting terms as a result of the Act Modernising Accounting Law (Bilanzrechtsmodernisierungsgesetz).

Analyzing business models is not only important for investors and analysts, but has recently become important for supervisors as well. While the latter were in the past often concerned with capital, liquidity and risk management, the financial crisis has demonstrated that it is also necessary to take a more detailed look at banks' business models. In general, business models describe how banks generate profits, which customers they serve and which distribution channels they use. Analyzing business models, therefore, goes beyond looking at traditional indicators of bank risk and profitability and should give supervisors a deeper understanding of the sustainability of bank profits and the risks incurred. This allows them to be more forward-looking.

This paper is structured as follows. In the next section, we will briefly describe the main drivers of banks' business models over the past few decades. In Sections 3 and 4, we broadly distinguish banks according to their business model and how they have performed during the crisis. Possible strategies with which banks can change their business models, and how this may affect the structure of the E.U. banking sector in the post-crisis era, are outlined in Section 5. Section 6 concludes.

2. Regulatory, technological and strategic drivers of business models

Over the past few decades, the banking sector has become increasingly competitive. This is reflected in the significant fall in the net interest margins over that period. In Germany, for example, the net interest margin has declined from more than 2% in the mid 1990s to 1% in recent years (see Figure 1). To offset this decline, many banks have expanded into other, non-traditional areas of business, which range from the sale of insurance and mutual funds to asset management, underwriting, market making, mergers and acquisitions. These changes indicate that banks have moved away from the traditional commercial banking business model in which a bank makes loans and takes deposits to a more "modern" investment-oriented business model.

Technological advances have been an important driver of increased competition. They have given financial markets and non-banks an advantage over banks and significantly accelerated their growth over the past decades.[3] Technological innovations have, for example, made it easier for investment funds to manage their securities and customer accounts. This has lowered the costs of managing a fund and allowed non-banks to offer a broader range of products [Berger (2003)]. Public equity and debt markets have also benefited from innovations in IT, for example, in the area of data handling, experiencing significant reductions in trading costs [Berger (2003)]. Technological innovations have also facilitated the development of securitization markets. Advanced technological tools have made it possible to obtain more accurate pricing and significantly enlarged the set of securitized instruments [Berger (2003)]. All of this has contributed to larger and deeper financial markets and significantly increased the number of products and providers, which might explain why customers have increasingly turned to alternative savings and investment products offered by non-banking institutions.

3 Berger (2003) gives different examples of technological changes and examines their economic impact on the banking sector. He finds improvements in costs and lending capacity due to improvements in "back-office" technologies, as well as consumer benefits from improved "front-office" technologies. His research also indicates significant overall productivity increases through improvements in the quality and variety of banking services and shows that technological progress has probably spurred industry consolidation.

This is reflected on both sides of banks' balance sheet. On the liability side, banks have faced an outflow of customer deposits into higher-yielding investments offered by non-bank institutions, such as insurance companies or investment funds. Because it has become more difficult for banks to attract customer deposits, banks have been increasingly turning to wholesale markets for funding. This has not only increased the extent of maturity transformation, but has also allowed banks to increase their lending beyond the growth of their customers deposits and to manage their balance sheet in a more procyclical manner [Adrian and Shin (2010)]. On the asset side, the declining importance of banks' lending activities is reflected in the ratio of loans to non-banks to total assets, which has decreased significantly over the past few decades. In Germany, for instance, the ratio decreased from about 60% in the 1980s to less than 40% in 2012, while the ratio of deposits from non-banks to total assets declined from 50% to nearly 40%.

Technological innovations have also intensified competition among banks. Innovations such as online banking, for example, have raised transparency and have made it easier for customers to compare different banks' products. It is also easier for new institutions to enter the market, since new entrants do not need to have a branch network to distribute their products if they use the internet as their distribution channel. This has significantly reduced costs and allowed some banks to offer more attractive interest rates to their customers and to gain market share at the expense of banks with a larger branch network and higher operating costs. Market entry has also been facilitated by the technology of information exchanges, such as credit bureaus [Berger (2003)]. These exchanges collect data from financial institutions, trade creditors, public records and other sources; aggregate and summarize them; and then provide credit reports or credit scores to lending institutions, thus allowing banks to lend to customers with whom they do not have a close relationship. This has substantially lowered the cost of making a loan, since it is no longer necessary for banks to build a close relationship with their customers in order to collect information on their creditworthiness. However, loans that are granted based on hard information, such as credit scores also need to be more standardized, which reduces banks' scope for differentiating their products and charging higher prices. This suggests that technological innovations have not only made lending more competitive, but have also changed the nature of lending, with transactional lending becoming more important relative to relationship lending. This shift may be best illustrated by the evolution of consumer credit, as, for example, is described in White (2007). Combined with greater price sensitivity and reduced customer loyalty, this has reduced the comparative advantage of those banks that focus on relationship banking, because they face higher costs due to their branch network and the large number of employees necessary for their business model.

Financial integration is another important driver of competition in the banking sector. Deregulation and liberalization have caused the banking and financial markets to become more integrated over the past few decades.[4] In Europe, an important step toward an integrated market for financial products was the implementation of the Second Banking Directive in 1989, which introduced a "single passport" for E.U. banks. This passport grants banks located within the E.U. the right to offer services, either through the cross-border provision of services or through the establishment of branches, in any other member state without seeking authorization from the host countries. Another important step toward an integrated market was the introduction of the euro in 1999, since it eliminated currency risk across the euro area and made it easier to take advantage of borrowing and investment opportunities abroad. Because of these and other initiatives, the number and the market share of foreign banks has significantly increased over the past few decades.[5] However, financial integration has not only raised the level of competition at home, but has also made it easier for banks to expand abroad and to offset declining profits in their home markets through higher profits in foreign markets.

The growth of financial markets has also increased competition in traditional lending and deposit markets, forcing banks to look for non-traditional sources of income to make up for the shortfall. The growth of insurance products and mutual funds, for instance, has allowed banks to earn commission income on sales of these products. A number of banks have also set up their own asset management companies in order to generate additional revenues from fund management. Some banks have also started underwriting debt and equity issues, as well as issuing derivatives, and trading securities on their own account on the secondary markets. As a result, banks nowadays offer a much larger range of products and services and are conducting a growing proportion of their activities off-balance sheet [Goddard et al. (2007)].

Consequently, while reducing their net interest income, the growth of financial markets has also allowed banks to increase their non-interest income. From a financial stability perspective these changes are positive, since they leave banks with a more diversified income structure and make them less dependent on their home market. However, they have also raised the number of business models and have made banking significantly more complex than in the past.

3. Systematizing business models in banking

Decades ago, banks were mainly focused on domestic markets and commercial banking activities. Nowadays, banks are much more active abroad, and non-traditional activities have become much more important. This has spawned an array of business models. In this section, we give a brief overview of the business models that currently exist in the banking sector. In Table 1, we briefly describe banks' business models along two main dimensions.

The first dimension distinguishes banks by their products and the customers served. In general, bank customers can be classified as retail (e.g., households and small and medium-sized enterprises) and wholesale customers (e.g., large firms and institutional investors, such as insurance companies and pension funds). As retail and wholesale customers have different financing needs, the products offered differ significantly. For example, while retail customers primarily demand transaction services, savings accounts, mortgages and personal loans, services for wholesale customers are more complex and include wholesale lending, underwriting, market making, consultancy, mergers and acquisitions and fund management. The second dimension according to which we distinguish banks' business models is the range of products offered. We call banks that confine

4 There are, however, still large differences in the degree of integration across markets. While wholesale markets are already more highly integrated based on price and quantity indicators, retail markets, such as loans to households and small and medium-sized enterprises, lag behind (see various issues of the ECB Report on *Financial Integration in Europe*). Due to switching costs, differences in fiscal and legal systems and greater information asymmetries, retail-banking markets are still mainly local.

5 For more information on the impact of foreign banks on the retail-banking market in Germany, see Köhler (2008).

	Retail-oriented	Investment-oriented
Specialized	Focus on a specific group of retail customers (e.g., consumers, car buyers and small enterprises) Typically provide standardized retail products (e.g., consumer credit and car loans) Interest income is the most important source of income (non-interest income often unimportant) Customer deposits are the primary source of funding (wholesale funding unimportant)	Focus on one or a small number of investment products or on a specific group of wholesale customers Non-interest income much more important than for retail-oriented banks Primarily wholesale-funded (customer deposits unimportant)
Diversified	Provision of a broader range of differentiated retail products and services (e.g., loans, mortgages and financial advisory) to different types of retail customers Interest income is the most important source of income; non-interest income usually more important than for specialized retail banks; more diversified income structure More diversified funding structure, but customer deposits still most important source of funding	Provision of a broad range of products that includes underwriting, M&A, merchant and corporate banking, investment management and trading to different types of wholesale customers Non-interest income much more important than for retail-oriented banks (more diversified income structure than specialized investment-oriented banks) More diversified funding structure, but wholesale funding still the most important source of funding

Table 1: Systematization of business models in banking
Source: The table systematizes banks' business model based on their products and the customers served (retail- versus investment-oriented banks) and the degree of specialization (specialized versus diversified).

themselves to a small range of activities "specialized banks"; such specialization gives these banks a comparative advantage in terms of costs or skills. This contrasts with "diversified banks," which provide a broad range of different products and services to take advantage of economies of scale and scope that result from the mixing of different activities. Based on these two dimensions, banks can broadly be categorized into four different groups.

The first group comprises "specialized retail banks." These banks offer a limited number of products to retail customers. Examples of specialized retail banks include auto banks and consumer finance banks. These banks use the internet or business partners, such as car dealers or retailers, as their distribution channels, which allows them to operate without (or with only a small number of) branches and employees. Due to their limited local presence, they do not form close customer relationships, which would give them access to soft information. They use hard information from credit scores instead and engage in transaction lending with standardized products that allow them to generate economies of scale. This contrasts with "diversified retail banks," which have a larger number of branches and are more closely located to their customers. This allows them to build up a close relationship with their customers, to gather soft information over time, which goes beyond publicly available information, and to provide a broader and more differentiated range of products and services. Diversified retail banks are, therefore, more likely to be relationship lenders. A characteristic that both of these types of retail banks share is that lending is usually their most important activity and customer deposits their most important source of funding. Because of their focus on lending and deposit-taking, they usually generate a large share of their operating income from interest income, while other sources of income are less important.

Investment-oriented banks may also be specialized or diversified. An example of "specialized investment-oriented banks" are investment boutiques. They usually focus on one or a small number of areas of investment products or on a specific group of wholesale customers. Depending on their specialization, they offer a variety of services. For example, while some banks may act as investment advisors, others may specialize in trading in certain assets or commodities. This contrasts with "diversified investment-oriented banks," which offer a broad range of products that includes underwriting, mergers and acquisitions (M&A), merchant and corporate banking, investment management and trading with different types of wholesale

	All banks	Large banks	Medium-sized banks	Small banks
Number of banks	3,691	37	513	3,141
Market share of banks [in % of total assets]	100.00	74.32	22.58	3.10
Market share of banks [in % total number of banks]	100.00	1.00	13.90	85.10
Average banks size [in € billions]	9.73	723.80	15.67	0.34
Assets [in % of total assets]				
Cash and cash balances with central banks	3.30	3.76	2.10	0.76
Available-for-sale assets	4.75	4.12	7.44	5.49
Financial assets held for trading	21.43	25.45	4.83	1.24
Total loans and advances	55.86	51.38	68.95	69.41
Held-to-maturity investments	0.82	0.33	2.83	4.55
Liabilities [in % of total assets]				
Total deposits from credit institutions	9.33	8.15	12.62	13.87
Total deposits other than from credit institutions	39.43	35.83	47.20	70.62
Total equity	5.0	4.77	5.39	7.59
Income structure and net interest margin [1]				
Net interest income [% of total operating income]	58.88	57.12	62.67	67.05
Net non-interest income [% of total operating income]	41.12	42.88	37.33	32.95
Net interest margin	1.27	1.19	1.40	2.28
Indicators of loan quality[2]				
Gross total doubtful and non-performing loans [% of total debt instruments and total loans and advances]	3.92	3.70	4.65	2.79
Total loss provisions [% of total gross doubtful and non-performing loans]	50.38	48.73	54.31	43.88

Table 2: Descriptive statistics (2011)
Source: ECB (2013).
The table shows descriptive statistics for several bank characteristics in 2011. Banks are broken down into three different groups by size. The first group of banks consists of small banks with assets of less than €1b. A second group of banks comprises medium-sized banks with assets ranging from €1b to €100b. The third group consists of very large banks with assets of more than €100b.
1) Operating income comprises net interest income, net fee and commission income and net trading and foreign exchange income. The net interest margin is net interest income as a percent of total assets.
2) It should be noted that the indicators of loan quality might be driven by differences between national definitions of impaired assets (non-performing and doubtful assets) and provisions.

customers. Because of the services provided, investment-oriented banks generate a significantly larger share of their operating income from non-traditional activities than retail-oriented banks. They are also more dependent on non-deposit funding and more oriented toward transaction banking (as opposed to relationship banking).

The business model matrix presented in Table 1, of course, only gives a simplified picture of the business models that exist in the banking sector and their main characteristics. In practice, business models are much more complex and differ along several other dimensions. The decision to engage in transaction or relationship banking, for example, is usually not that clearly defined, and the decision on how much of each the bank does depends on factors such as technology, regulation and competition [Boot (2000)]. Boot (2000) finds that banks are more likely to be relationship oriented if they face competition from other banks, while competition from capital markets leads to a greater transaction orientation. Consequently, even though banks may mix relationship and transaction banking, investment-oriented banks tend to be more active in transaction banking, while relationship banking is more important for retail banks.

The decision to engage in retail or investment banking is often not that clear-cut either, and banks often mix both types of activities. Depending on the importance of these activities, we call these banks either "retail-oriented universal banks" or "investment-oriented universal banks." Universal banking is the dominant business model in Europe. This contrasts with the U.S. where for a long time the Glass–Steagall Act prevented the emergence of universal banks and led to the separation of investment and commercial banks, with the latter providing retail and wholesale lending for both households and large corporations. The adoption in 1999 of the Gramm–Leach–Bliley Act did away with the traditional separation between investment and commercial banks in the U.S., allowing for the establishment of universal banks that combined a wide range of banking activities in one bank holding company. Critics argue that this has allowed U.S. investment banks to use insured deposits to fund their trading activities, which many believe to be a major cause for the 2007/2008 financial crisis. To prevent this cross-subsidization, the Dodd–Frank Act was enacted in 2011. An important part of this Act is the Volcker Rule, which prohibits insured depository institutions and their affiliates from engaging in proprietary trading. Even though the Volcker Rule does not go as far as the Glass–Steagall Act in separating commercial and investment banking, it will significantly limit banks' activities.

4. Descriptive analysis of business models in the E.U. banking sector

In this section, we present some indicators that are commonly used to describe banks' business models. For this purpose, we use data from the ECB Consolidated Banking Statistics [ECB (2013)], which split banks into three groups by size. The first group of banks comprises small banks with assets of less than €1b. Typical examples of small credit institutions are savings and cooperative banks, which mostly operate in individual regions of a country. A second group of banks comprises medium-sized banks with assets ranging from €1b to €100b. In contrast to many small banks, these banks often operate nationwide. The third group consists of very large, internationally-operating banks with assets of more than €100b. We will shortly see that small banks are more active in retail banking, while medium-sized and large banks have a greater focus on investment banking activities.

First, however, we want to give a brief overview of the relative importance of small, medium-sized and large banks. Table 2 demonstrates that a large proportion of banks in the E.U. are small banks. Based on their assets, they are unimportant, however. For example, even though 85% of all credit institutions in the euro area are small, they only account for 3% of the assets. This, however, does not imply that small banks should be ignored in the financial stability assessment. Even though the failure of an individual small bank is less likely to have systemic implications, small banks' distress might become systemic if a large number of them fail at the same time owing to exposures to certain asset classes, they have systemic connections to other intermediaries or are not immediately replaceable [Acharya and Yorulmazer (2007)].

Table 2 points to further significant differences between small, medium-sized and large banks. First, small and medium-sized banks have a much higher loans-to-assets and deposits-to-assets ratio than large banks. This is evident in both cases of banks that focus on retail banking. The positive correlation between lending and deposit-taking activities is consistent with theoretical models that predict that banks engaged in relationship lending can enhance their stability by combining lending and deposit-taking activities [Song and Thakor (2007), and Kashyap et al. (2002)]. Large banks, in contrast, are much more active in investment banking and trading activities, which is reflected by their holdings having significantly higher proportions of trading assets.[6] The share of assets held to maturity, in contrast, is significantly lower. Large banks also hold a significantly higher proportion of cash and cash balances with central banks and available-for-sale assets than small banks, which ensures the generation of liquidity within a short period of time at a predictable value. This is particularly important for banks that obtain funding primarily on the wholesale markets, since wholesale funds are more likely to be withdrawn prematurely and are less stable than deposits, not the least because they are protected by deposit insurance [Shleifer and Vishny (2010)]. Consistent with that, we find that large banks have a much higher ratio of bank deposits to total assets than small and medium-sized banks.

In summary, business models differ considerably with bank size. While large banks are more active in non-traditional activities, such as trading and investment banking, and fund their activities on wholesale markets, small and medium-sized banks concentrate on lending activities and use deposits as their primary source of funding. Their retail orientation is also demonstrated by the share of net interest income to total

6 Trading assets are assets that have been acquired by the bank with the purpose of resale in the near term in order to profit from short-term price movements. They include bonds and other fixed-income securities, shares, and other variable-yield securities held for trading purposes.

operating income, which is significantly higher for small banks. Large banks, on the other hand, have a large non-interest income share, which is characteristic for investment-oriented banks. Non-interest income includes activities, such as income from trading and securitization, investment banking and advisory fees, brokerage commissions, venture capital and fiduciary income, and gains on non-hedging derivatives. With respect to the matrix of business models presented above, large banks, therefore, have a more investment-oriented business model, whereas small banks are more active in retail banking.

It should be said, however, that there may also be small banks that provide specialized investment banking services, and retail banks that are quite large in size. On average, however, bank size is a good proxy for distinguishing between retail-oriented and investment-oriented banks, since many characteristics describing these business models are related to their size.[7]

4.1 Impact of different business models on risk and return in the E.U. banking sector

The previous analysis indicates that business models differ significantly with bank size. To find out which banks have the greatest need to change their business models, we now analyze how banks performed during the financial crisis. We do so, first, by looking at indicators commonly used to assess bank performance. In the second step, we present recent findings in the academic literature that analyzes the impact of business models on bank risk and return.

An indicator that is often used to measure bank performance is pre-tax return-on-equity (RoE). Figure 2 suggests that large banks performed significantly worse than small and medium-sized banks in 2008, but also showed higher returns in 2009 and the following years. This contrasts with medium-sized banks, which performed better in 2008, but whose RoE decreased significantly thereafter. Small banks reported a negative RoE in 2011 as well. However, compared to large and medium-sized banks their RoE was much more stable over time, indicating that small banks were much less exposed to income fluctuations than large and medium-sized banks. Importantly, the better performance of large banks is driven not only by greater leverage, but also by a higher return-on-assets (RoA) than small and medium-sized banks.

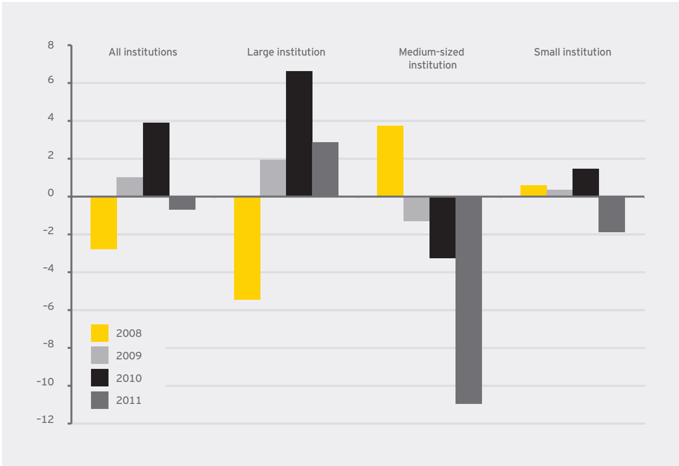

Figure 2: Return-on-equity (ROE)
Source: ECB (2013). Figure shows the development of the return-on-equity (ROE) between 2008 and 2011 for small, medium-sized and large banks in the E.U. Small banks have assets of less than €1b. The assets of medium-sized banks range from €1b to €100b. Large banks have assets of more than €100b.

This comparison of RoE suggests that large banks were particularly hit by the financial crisis in 2008. As markets stabilized and stock prices recovered, the profits of large banks rebounded and exceeded those of small and medium-sized banks. Their profits started to decline as of 2009 because of the economic downturn that increased credit risks and led to loan losses. It was particularly the medium-sized banks that saw loan losses, as indicated by the higher ratio of doubtful and non-performing loans and loss provisions in Table 2.[8] The return of small banks, in contrast, was much more stable. Overall, the descriptive analysis suggests that large banks have more volatile returns, and therefore, seem to be more risky than small banks. Small banks, in contrast, have more stable returns, but are also

7 In the empirical banking literature, bank size is often used as a proxy for a bank's ability to process soft information. Berger et al. (2005a, b), for example, show that smaller firms borrow from smaller banks and that while smaller banks do increasingly use credit scoring methods, they still have stronger relationships with their borrowers than large banks. Larger banks are less involved in relationship banking, because they are less capable of passing along soft information within the hierarchy [Berger and Black (2011)]. In contrast to small banks, they focus more heavily on hard facts, such as credit ratings, and are engaged in transaction banking [Brown et al. (2012)].

8 Please note that these results should be interpreted with caution, since they might be driven by differences between national definitions of impaired assets (non-performing and doubtful assets) and provisions.

less profitable than large banks, which is consistent with the view that retail banking is a relatively stable, but also low-return, activity [Hirtle and Stiroh (2007)]. It should be noted that there were also small banks that reported large losses during the financial crisis. These banks were mostly specialized in mortgages and considerably increased their lending in the pre-crisis period.[9] Furthermore, not all large banks performed badly, relatively. Some large and more retail-oriented banks were also less affected by the crisis.[10] This indicates that it is not necessarily the size that matters for bank risk, but rather the extent to which banks diversify their activities.

4.2 Literature on income diversification in banking

The previous section indicated that levels of diversification might have an important influence on bank risk and return. To further investigate this hypothesis, we now take a closer look at the academic literature on diversification in banking. This literature usually examines the impact of geographic and income diversification on bank risk and return. In this paper, we focus on the literature on income diversification.[11] This literature analyzes whether the expansion into non-traditional activities has made banks more stable and allowed them to generate higher returns.

Theoretically, the benefits of income diversification are appealing. Owing to a better diversified income structure, banks are able to recoup losses in some business areas through alternative sources of revenue in other areas. For example, by expanding into investment banking, banks can offset declining revenues in retail banking. This should lower the volatility of returns and lead to higher risk-adjusted returns. In theory, therefore, diversification into non-interest income activities, such as investment banking and trading, is beneficial for banks. In practice, however, the benefits of income diversification are less clear. Several authors argue that non-interest income is usually more volatile than interest income and allows banks to be more leveraged, because regulators often require banks to hold less capital against non-interest income activities [DeYoung and Roland (2001), Stiroh (2004a, b)]. All of this might offset the benefits of diversifying into non-interest income and make banks more risky, not less.

Overall, therefore, it is an empirical question whether expanding into non-interest income activities makes banks more stable. For this reason, many empirical studies have been published over the past few decades. Most of these studies find only little evidence of gains from diversifying into non-interest income.[12] Motivated by the financial crisis, more recent studies examine not only the impact of income diversification, but also how the diversification of funding sources affects banks' risk and return. It is not clear whether diversification into wholesale funding makes a bank more or less risky, either. Experience from the financial crisis suggests that banks that are dependent on deposits for funding are stable, because customer deposits are less likely to be withdrawn prematurely than wholesale funds. The price of wholesale funds also adjusts more quickly to reflect a bank's riskiness. Customer deposits, in contrast, are more stable and slower to be repriced, not least because they are protected by deposit insurance [Shleifer and Vishny (2010)] and held for liquidity purposes [Song and Thakor (2007)]. However, according to theory, wholesale funding may also reduce risk-taking if sophisticated wholesale financiers are better at monitoring than small depositors [Calomiris and Kahn (1991)]. Similar to the results for income diversification, the academic literature provides mixed evidence on the effects of funding diversification on bank risk and return as well.

Altunbas et al. (2011), for example, find that banks that were more dependent on non-deposit funding were more likely to fail during the financial crisis, while a better diversification of income sources was found to increase their stability. Demirgüc–Kunt and Huizinga (2010) find some risk diversification benefits at very low levels of non-interest income and non-deposit funding as well. For most banks, however, a higher share of non-interest income

9 These banks are mainly located in E.U. countries that experienced real-estate bubble in the pre-crisis period, such as the Spanish cajas.
10 In Spain, for example, Banco Santander and Banco Bilbao Vizcaya Argentaria (BBVA), the country's two largest banks, were much less affected by the crisis than the considerably smaller cajas. Ayadi et al. (2011), for example, show that among Europe's largest banks those identified as retail banks performed better and were more stable during the financial crisis.
11 For papers on geographic diversification in banking see García–Herrero and Vazques (2013) and Böninghausen and Köhler (2012).

12 Many studies focus on U.S. banks [see DeYoung and Roland (2001), DeYoung and Rice (2004), Goddard et al. (2008), Stiroh (2004a, b) and Stiroh and Rumble (2006)]. For Europe, the evidence is also mixed. Lepetit et al. (2008), for example, show that banks that have expanded their non-interest income activities are more risky than banks that mainly supply loans. Mercieca et al. (2007) obtain similar findings for a sample of small European banks. Chiorazzo et al. (2008), in contrast, find that Italian banks will have significantly higher risk-adjusted returns. For Germany, Busch and Kick (2009) show that savings and cooperative banks are significantly more profitable as well if they increase their share of non-interest income, while they find no impact of non-interest income on commercial banks' profitability. There is also evidence to suggest that banks from developing countries benefit from increasing their non-interest income share [Sanya and Wolfe (2011)].

and non-deposit funding is associated with greater instability. Common to both studies is their focus on listed banks, which are usually larger and have a more investment-oriented business model. This might have an important implication on how non-interest income affects bank risk.

While investment-oriented banks might be better off increasing their share of interest income, unlisted banks such as savings and cooperative banks might benefit from expanding into non-interest income. Unlike investment-oriented banks, they generate most of their income from retail banking activities and mainly depend on interest income. For these banks, a higher share of non-interest income might be beneficial, since it would make them less dependent on interest income and on movements of interest rates and net interest margins. Expansion into non-interest income activities may also make these banks more resilient to overall economic conditions that affect their loan portfolios. This suggests that banks that focus on retail banking might be affected differently by an increase in non-interest income than investment-oriented banks, which already have a high share of non-interest income. Hence, to come to more general conclusions about the impact of non-interest income on risk, it is important to enlarge the sample of banks and to include listed and unlisted banks.

Köhler (2012) takes this as a starting point to analyze the effect of non-interest income on risk and return in the E.U. banking sector. Using a large sample of listed and unlisted E.U. banks, he shows that smaller banks, in general, and savings and cooperative banks, in particular, become significantly more stable if they increase their share of non-interest income.[13] Investment banks, in contrast, become significantly more risky. They do not only report a significantly higher non-interest income share, but also significantly differ from retail-oriented banks in terms of their activities. For example, while retail-oriented banks usually earn account administration, loan and consultancy fees and commission income from the sale of insurance products, investment-oriented banks derive most of their non-interest income from underwriting, treasury management, securitization and clearing, and other transaction-related services. Income from the latter set of activities is usually more volatile, because it tends to be more cyclical and closely linked with market evolution. This indicates that the risk characteristics of these two sets of activities are fundamentally different.

Further evidence in support of this hypothesis is provided by DeYoung and Torna (2013) for U.S. banks. They test whether banks that have a higher share of income from non-traditional banking activities were more likely to fail during the financial crisis. They find that it is not the non-interest income per se that made banks more likely to fail, but rather the type of non-interest income. More specifically, they find that a higher share of income from asset-based non-traditional activities, such as investment banking and asset securitization, makes distressed banks significantly more likely to fail, while a higher share of fee-based non-traditional activities, such as insurance sales significantly reduced the probability of failure. The latter usually represent a large share of non-interest income generated by retail-oriented banks.

In summary, most empirical studies find only little evidence of gains from diversifying into non-interest income businesses. This is because the greater volatility of these different sources of income, combined with the greater complexity and leverage of banks that have a higher proportion of non-interest income will offset the benefits of diversifying into non-interest income businesses. This implies that a higher share of non-interest income should make banks more risky. A more recent paper that includes data for the financial crisis indicates that this particularly applies to larger and more investment-oriented banks. Smaller and more retail-oriented banks, in contrast, might become more stable if they diversify into non-interest income. It is important to note that this does not imply that retail banks should expand into investment-banking and other areas in which they have little experience or comparative advantage, since this result might in fact make them more, and not less, risky [Stiroh (2004a), Mercieca et al. (2007) and Goddard et al. (2008)]. Instead, they should increase their share of fee-based non-interest income. The effect of income diversification on a bank's risk and return, therefore, crucially depends on that bank's overall business model.

13 Köhler (2012) finds that diversifying into non-deposit funding has a different impact as well. While retail-oriented banks become significantly less stable if they increase their share of non-deposit funding, investment banks become significantly more stable. These findings indicate that it is important to enlarge the sample of banks and to include different types of banks with different business models to come to general conclusions about the effects of non-interest income and non-deposit funding on bank stability.

5. Restructuring business models in the post-crisis period

Business models have significantly changed over the past decades, as banks have become increasingly more active in non-traditional activities. While this has allowed banks to offset declining net interest margins, it has also exposed them to greater income volatility. Driven by an increase in demand, rising stock prices and a low stock market volatility many investment-oriented banks increased their capacities in the pre-crisis period. Due to cyclical reasons, such as the weak economy, low interest rates and less trading activity, many of these banks now have to cut costs and reduce their staff to adjust their capacities to the post-crisis reduction in demand for their products. According to a recent survey by EY (2013), for example, almost 50% of all European banks are planning to cut jobs over the next six months. Reducing costs and cutting jobs alone may, however, not be sufficient. For structural reasons, investment-oriented banks need to rethink their business models in general.

An important structural reason is the implementation of the Basel III banking regulations, which will significantly raise capital requirements. This will make business more costly and reduce the extent to which banks can raise their profitability by increasing their leverage. Growth will also be limited by higher liquidity requirements, which reduce the extent to which banks can fund their activities by wholesale funds and make customer deposits a more important source of funding. Banks also have to rethink their business models, because the recommendations of the Liikanen Group (2012), if implemented, will force them to move their trading activities into a separate legal entity. This will particularly affect banks with a large trading exposure.[14]

Overall, the recent regulatory reforms will particularly affect large, investment-oriented banks, since they are more active in trading, more dependent on wholesale funding and more highly leveraged. This, however, does not imply that small, retail-oriented banks do not need to change their business models. Because the lending and deposit markets will likely become more competitive, these banks are under pressure to rethink their business models as well. The important difference between those types of banks, however, will lie in how they have to change their business models. Because of that, we will now separately outline possible strategies with which banks can restructure their business models in the post-crisis period.

5.1 Possible strategies for large banks

The greatest pressure to restructure their business models is currently on large banks. As argued above, these banks tend to be more active in investment-banking and trading. Due to pressure from regulators and investors, they will likely have to reduce their dependence on non-interest income, in general, and trading income, in particular. The results from the recent academic literature suggest that this should lead to a better diversification of income sources and make them more stable.

Expansion into retail banking activities is, however, difficult for several reasons. First, as outlined at the beginning, net interest margins have decreased significantly over the past few decades. This trend is likely to continue. Second, in order to gain market share, banks have to offer more attractive interest rates than their competitors, which further eats into their net interest margin. Moreover, large banks will find it hard to build close relationships with their customers, because retail banking was long seen as less profitable than investment banking and, therefore, abandoned by many banks. As argued above, large banks are also at a disadvantage relative to small banks in processing soft information and building relationships with their customers. This means that they are more dependent on hard information to evaluate the creditworthiness of potential borrowers and are more focused on transactional banking, which is more competitive. This is reflected by their net interest margin, which is significantly lower than that of small banks (see Table 1). The move toward retail banking will, therefore, at least in the short- and medium-term, likely put additional pressure on the profitability of large banks.

Because of this outlook, large banks should not completely abandon investment banking activities, but rather add lending and deposit-taking to their business mix to better diversify their income structure. The challenge for large banks is thus to mix investment banking with traditional commercial banking activities while maintaining a sufficient level of profitability and being sufficiently diversified. One way to make profits and maintain a diversified portfolio of activities is to refocus on core activities and core markets in which they have comparative advantages

14 The Liikanen Group recommends that if a bank's assets held for trading and available for sale exceed a threshold of 15% to 25% or €100bn then the bank would be referred to a supervisor to decide whether it needs to ring-fence its trading activities from its deposit-taking side.

over their competitors in terms of their expertise and experience or size. This means that banks have to close unprofitable areas and sell business lines in which they are too small, while in core businesses in which size is critical for success (e.g., consumer lending, global custody, asset management and payments) acquisitions may help them to strengthen their comparative advantage. Overall, the restructuring of business models is a difficult and time-consuming process and is occurring at a time when overall economic and financial conditions are weak and bank profitability is already low.

5.2 Possible strategies for small banks

In contrast to large banks, small banks usually focus on retail banking. Because investment banking allows banks to offset declining net interest margins and to generate higher returns, their business model has long been regarded as old-fashioned. This view has changed over the past few years, since the financial crisis has revealed the weaknesses of the investment banking business model. This, however, does not mean that the business models of small banks do not need to be changed. In fact, because the structural trends in the banking sector outlined at the beginning of the article are likely to persist, competition in lending and deposit markets will increase further. In recent years, the increase in the level of competition has become even stronger, since larger and more investment-oriented banks have rediscovered the merits of retail banking and increased their lending and deposit-taking activities to better diversify and to meet regulatory requirements, such as the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR). However, higher liquidity requirements will not only increase competition, but will also significantly reduce the possibilities for small banks to engage in maturity transformation to prop up their net interest margin.[15] This will put additional downward pressure on their net interest margin, which is currently already low due to the low levels of interest rates. Since it is not clear for how long interest rates will remain low, and because of structural developments in the banking sector, the net interest margin will likely be low for the foreseeable future. Probably, this will particularly affect small banks, since they generate most of their income from interest and are, therefore, heavily dependent on movements of interest rates and net interest margins.

To ensure sufficient profitability in the future, small banks, therefore, have to restructure their business models as well. The academic literature suggests that one possible way for small banks to generate higher returns and to become more stable is to increase the share of non-interest income. In the past, mostly large banks have expanded into non-interest income activities. This might have been driven by the fact that large banks usually earn lower net interest margins than small banks, which due to their focus on relationship banking, have some degree of market power that might have deterred them from increasing their non-interest income share significantly (see also Table 1). However, given the changes in customer behavior and the growing importance of transactional banking, their comparative advantage over large banks will likely decrease, and their interest margin will shrink. A more diversified income stream is also beneficial because it makes them less dependent on the level of interest rates. This should also reduce their incentive to increase credit risks during periods of low interest rates in search of yield [Delis and Kourtas (2011)]. Banks may also be less likely to engage in maturity transformation in order to offset declining interest margins, thus possibly reducing interest rate risk.

Overall, therefore, small banks have to restructure their business models in a manner different from that which is beneficial to large banks. The discussion on the inherent riskiness of investment banking activities and the reform proposals of the Liikanen Group (2012) that aim to reduce these risks should, therefore, not distract small banks from the fact that a higher share of non-interest income may help them better diversify their income and to become more stable. It is important to note that this does not mean that small banks should expand into investment banking, as many large banks did over the past decades. Owing to their small size and their lack of expertise and experience in investment banking, they are at a disadvantage compared to large banks in this business and might become less stable [Mercieca et al. (2007) and Goddard et al. (2008)]. A better strategy for these banks to expand the share of their non-interest income would be to build on their close relationships with their customers and to cross-sell additional financial services demanded by retail customers.

15 In Germany, particularly cooperative and savings banks rely on income from maturity transformation. According to Memmel (2011), their median share of earnings from term transformation was in the range of 13% and 15% between 2005 and 2009, while it amounted to less than 5% for the median private commercial bank.

Cross-selling may be the most practicable way to increase profits in stagnating or shrinking markets, in which lending volumes can only be extended if interest rates are reduced below the level of their competitors or if loans are granted to borrowers that have not received a loan from other banks because they asked for loan rates that are too low or provided insufficient collateral relative to their credit quality. Cross-selling may thus represent a strategy with which banks can increase their profits without incurring greater risks from lending activities. Increasing the rate of cross-selling and the share of non-interest income may, however, not be enough to ensure sufficient long-term profitability. Small banks also have to become more cost-efficient. So far, they can compensate for their cost disadvantages over large banks through higher net interest margins. The market power of small banks will, however, likely decrease if customers become more price-sensitive and less loyal to their banks. Furthermore, although proximity to a bank is still important, other distribution channels, such as online or mobile banking, have become more important over time. Because of the variety of different distribution channels, nowadays it is the customer that decides how to interact and not the bank. Banks have to react to these changes and to rethink the role of their branches. It is likely that this will change their function and reduce the number and the size of their branches.[16] For banks, these changes will open up opportunities to improve their cost efficiency. However for smaller banks, in particular, these changes might be challenging, since they need to cut branches and staff while maintaining their comparative advantage over large banks owing to their close customer relationships. The closing of branches and job cuts, furthermore, will not alleviate the increasing burden of non-branch-related and non-staff-related overhead costs that arise, for instance, from IT infrastructure. Technological outsourcing is one strategy to reduce such overhead and to allow banks to refocus on their core competencies. Outsourcing is, however, not risk-free, and the potential for outsourcing is limited, since critical and complex functions cannot be outsourced. Furthermore, outsourcing always requires some sort of standardization, which reduces flexibility.[17] Additional overhead costs arise as a result of the new Basel III regulations, since banks will probably need to recruit extra staff in order to ensure compliance with the new regulatory framework. These costs are usually disproportionally higher for small banks, since they will most likely not be able to completely pass the higher regulatory costs through to their customers [Santos and Elliott (2012)]. For these reasons, a further consolidation will likely be necessary among small banks in future.

5.3 Possible impact on the structure of the E.U. banking sector

The restructuring process will not only affect banks' individual business models, but will also have an impact on the structure of the E.U. banking sector as a whole because it will likely lead to M&A. Because many banks are unloading their non-core businesses, the number of investment opportunities is expected to rise going forward. This will particularly affect large, investment-oriented banks, because they face the greatest pressure to become more streamlined and focused. They are also disproportionately affected by higher capital and liquidity requirements that force them to significantly deleverage and to reduce their capital usage.

While large, investment-oriented banks will, hence, most likely be the sellers, large, retail-oriented banks may be potential acquirers, since they have been relatively stable during the crisis. For example, the Spanish Banco Santander not only exited peripheral units by offloading its sub-scale businesses in Switzerland and the Czech Republic, but also strengthened its core markets by taking over the Polish Kredyt Bank from the KBC in 2012 to combine it with its Polish division. This indicates that some banks might also act as both seller and acquirer during their restructuring. Medium-sized banks with a solid capital base may also seek to strengthen their core businesses and markets by building scale in an effort to become more competitive.

Besides restructuring, the second major driver of M&As is consolidation. This will particularly affect small banks. Due to growing competition in lending and deposit markets, they are

16 For more information on the future of branch networks, see Köhler und Lang (2008).

17 According to ECB (2004), the greatest potential risk of outsourcing is the loss of control over the activities or services being outsourced and an undesirable dependency on the service provider.

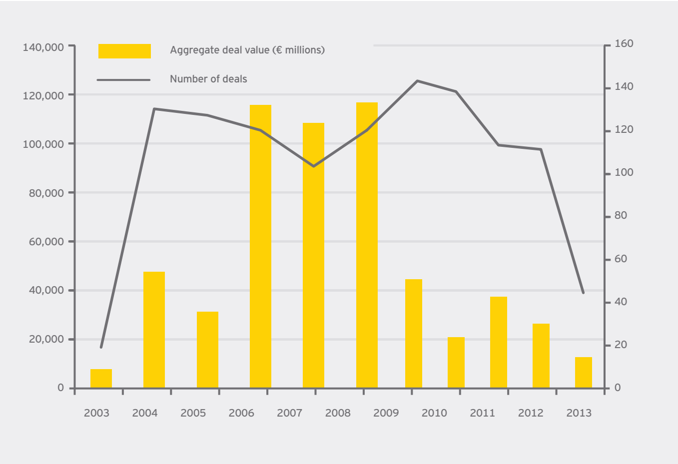

Figure 3: M&A activity in the E.U. banking sector
Source: Zepyhr (2013). Figure shows the total number and the total deal value (in € millions) of M&A in the E.U.-15 banking sector for the period between 2004 and the first half of 2013. Acquisitions of minority stakes are not included. The acquired institutions are commercial banks, savings banks, cooperative banks, branches and agencies of foreign banks, personal and business credit institutions as well as mortgage bankers and brokers.

under pressure to increase their cost efficiency as well. One strategy is to take over, or merge with, other institutions and to increase scale. A larger size may not only allow them to generate economies of scale, but also help smaller banks to better diversify [Demsetz and Strahan (1997) and Emmons (2004)]. The relationship between bank stability and size is not linear, however. As banks grow, the portfolio diversification effects of a larger bank size might be offset by diseconomies of scale due to managerial inefficiencies and greater complexity. Furthermore, as shown in the descriptive analysis, larger banks are more active in investment banking and trading and have a higher financial leverage, which might offset the diversification benefits of a larger bank size [Demsetz and Strahan (1997) and DeYoung and Roland (2001)].

In summary, M&A activity is likely to increase in the years to come. At present, however, it is still moderate, because many banks are unwilling to acquire businesses from other banks due to capital restrictions, uncertainty and investor skepticism. Furthermore, many banks may first wish to restructure their business model before they invest. The currently low level of M&A activity is reflected in Figure 3. The graph shows that M&A activity has significantly decreased since the beginning of the financial crisis, with the total deal value going down from almost €120b in 2008 to €12b in June 2013. Most targets that were acquired during this period were located in the U.K. (29%) and Spain (17%) and were crisis-driven, where national governments took control of failing banks. These transactions demonstrate that the crisis has changed the nature of M&A in the E.U. banking sector. While most deals in the pre-crisis period were strategic and aimed at building scale and expanding business lines, a large number of deals nowadays involve troubled banks that were (partly) nationalized through bailouts. In some deals, the government or regulatory authority did not directly nationalize the bank, but arranged or initiated a deal with private institutions. Government ownership will, however, likely be only a temporary phenomenon, since E.U. governments are expected to seek an orderly exit in the medium to long term. This should open up additional investment opportunities. In the future, the number of strategic deals should, therefore, rise again as many banks aim to restructure their business models and regain their strength to act as potential buyers on M&A markets.

Consolidation should also accelerate. In particular, in countries with a large number of banks relative to their population, a considerable potential for consolidation remains unexploited. According to Figure 4, these countries are primarily Austria, Denmark, Finland, Germany and Sweden, since the small numbers for Luxembourg and Ireland reflect their position as international financial centers. The need for further consolidation is also reflected by the small average bank size in these countries. In Austria and Germany, this is due to the large number of local savings and cooperative banks. According to EY (2013), most of the deals in these countries are expected to take place in more than three years from now, while most deals involving British and Spanish banks are crisis-related and expected to take place over the next 12 months.

To conclude, the financial crisis is a catalyst to M&A and will lead to a further consolidation of the E.U. banking sector. Small and large banks are differently affected by this process. Large banks will concentrate on their core activities and be left with less complex business models than pre-crisis. Because of comparative advantages, they will tend to be focused on corporate and investment banking. However, in order to become more diversified and to meet regulatory requirements, they are likely to increase their retail banking activities and sell basic, highly standardized financial products that allow them to

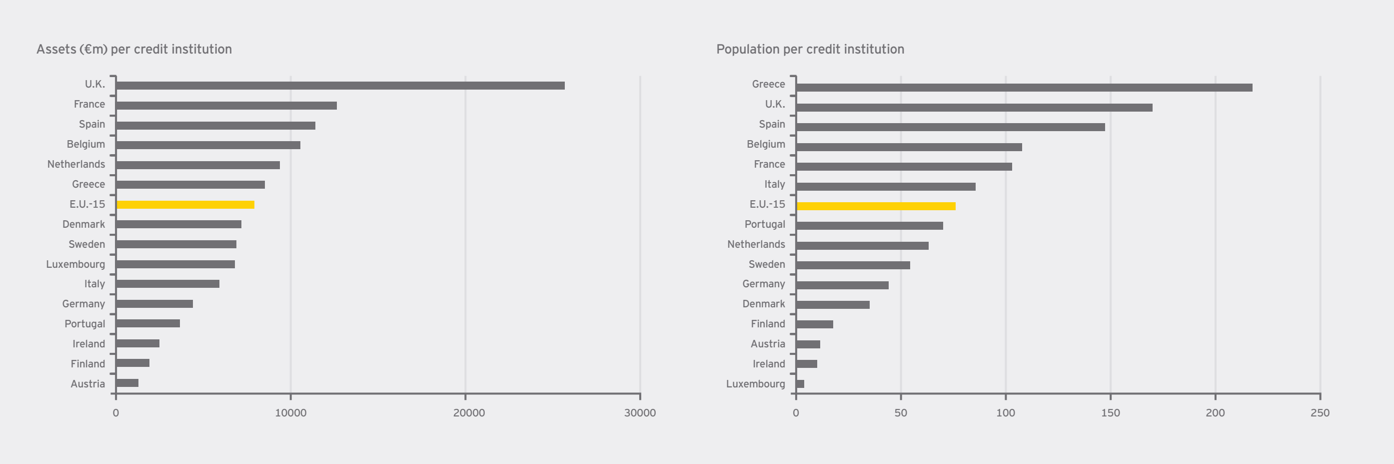

Figure 4: Consolidation in the E.U. banking sector (2012)
Source: ECB (2013). Figure shows the population per credit institution and the average bank size in the E.U.-15 banking sector in 2012. The yellow color bars represent the E.U.-15 average.

generate economies of scale from their size. This transactional banking approach contrasts with small banks which, even though they tend to grow in size, will remain focused on more personalized, high-value-added products, such as small business loans and personalized investment and trust services, with profit margins driven by the willingness of customers to pay higher prices for these services. Relationship banking thus provides a niche for small banks that many large banks find less attractive or are less capable of providing [Berger and Udell (1995, 2002)]. However, it is likely that the successful implementation of this strategy will require them to complement their traditional services with a wider scope of financial services that allows them to earn non-interest income and to partly offset the decline in net interest margins. Consequently, even though the crisis will accelerate the consolidation process significantly, the overall structure of the E.U. banking sector with a small number of larger, investment-oriented banks, on the one hand, and a large number of smaller, retail-oriented banks, on the other hand, will likely persist in future.

6. Conclusions

In this paper, we showed how business models evolved in the E.U. banking sector and how they need to be restructured to ensure sufficient profitability. At present, it is particularly large, investment-oriented banks that are under pressure to change their business models, since many business areas that guaranteed high returns pre-crisis have become unprofitable. We showed that these banks have to refocus on the core competencies and core markets in which they have comparative advantages. While maintaining their focus on corporate and investment banking, they will also need to be more active in retail banking to better diversify their income structure and to meet regulatory requirements. This move will not be an easy one and will likely put additional pressure on the profitability of large banks in the short and medium term.

Smaller, more retail-oriented banks have to rethink their business models as well, although they were much less affected by the financial crisis of 2007/2008. To become more profitable and stable, they should increase their share of non-interest income by cross-selling additional services or products to their customers. Diversifying into non-interest income is also beneficial because competition in retail banking will continue to be high for structural reasons even if interest rates start to go back up. It should be noted, however, that this does not imply that retail banks should expand into investment banking and other areas in which they have little experience or comparative advantage, since this might make them more, not less, risky. Small, retail-oriented banks and large, investment-oriented banks, therefore, differ in how they have to restructure their business models. Overall, this implies that better-diversified banks are able to generate higher risk-adjusted returns and are more stable. However, while this may reduce idiosyncratic risk, it may also increase the level of systemic risk in the banking sector if banks diversify their activities in a similar way. This suggests that, from a financial stability perspective, it is necessary to have both diversified as well as specialized banks.

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