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European Banking: An Overview

T. Beck and B. Casu

Introduction

This Handbook aims to offer a broad overview of key issues in European banking, taking stock of its performance after the recent crises and looking forward to challenges ahead. The European banking landscape has profoundly changed since the mid-2000s, partly driven by the regulatory response to the 2007–8 global financial crisis and subsequent sovereign debt crisis in the eurozone. Even after substantial regulatory reforms, debates on further steps needed to strengthen the EU regulatory framework to limit future risks arising from the banking system are ongoing. A distinct political debate on the benefits of increased integration has moved to the forefront of the political agenda in light of the results of the Brexit referendum, which might end the "passporting rights" of UK based financial institutions. This historic choice is already having a profound impact on financial markets. For many economists and policy makers the key aim is now to ensure that the eurozone is resilient to potential negative shocks, possibly encouraging further reform and increasing integration.

To this end, the European Commission (EC) pursued a number of initiatives, including stronger prudential requirements for banks, improved depositor protection and common rules for managing bank failures. An important step in the direction of increased integration was the creation of a

T. Beck • B. Casu (✉)
Cass Business School, City, University of London, London, UK
e-mail: Tbeck@city.ac.uk; b.casu@city.ac.uk

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Single Rulebook, applicable to all financial institutions in the EU and foundation for the Banking Union (BU), which is currently made up of the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM) and applies to countries in the eurozone, though with the option of other countries opting into it.

Although the new regulatory architecture is now in place, its successful implementation depends crucially on how the eurozone deals with the legacy of the financial crises and it is here that the USA and the eurozone seem to have taken divergent paths after 2008 (Hoshi and Kashyap 2015). The eurozone's banking industries appear increasingly segmented, with an overexposure to domestic risks. The persistent weakness of some eurozone banking systems puts the implementation of the newly agreed rules to the test, as the discussions in 2016 on the recapitalization of Italian banks through the bail-in of retail investors holding junior debt instruments show.

Beyond the banking system, regulatory reforms have covered an array of other segments of Europe's financial system, ranging from insurers to equity funds. The Banking Union initiative has recently been complemented with a Capital Market Union (CMU) initiative. Unlike the Banking Union, this initiative relates to the whole European Union and not only the eurozone. Unlike the Banking Union initiative, the CMU contains a series of different initiatives in the regulatory, legal and infrastructure frameworks of financial markets. The Banking Union and CMU initiatives also complement each other, however, in that they constitute efforts to move away from a bank-bias in most European financial system towards more market- and equity-based systems.

It is against this background that this Handbook aims to provide an understanding of the key issues facing European banks. The Handbook is composed of five main parts. Part I, *European Banking: Through the Crisis and Beyond*, offers an overview of the European banking sector in terms of financial structure, ownership and business models and corporate governance, as well as the payment system. Part II, *Performance and Innovation in European Banking* discusses the key themes of bank competition, efficiency and performance. In addition, it looks at the impact of technological development on the banking sectors and how banks are embracing the opportunities it offers. Finally, it explores the issues of bank diversification and the relevance of small business lending.

Part III, *Financial Stability and Regulation*, addresses the key issues of financial reforms and the increasing complexity of financial regulation. It also looks at the impact of state aid and the impact of monetary policy. Finally, it considers the increasing interactions between banks and markets. Part IV, *Cross-Border Banking*, looks at recent trends in cross-border banking in

Europe and evaluates the establishment of the Banking Union. Finally, Part V, *European Banking Systems*, offers a detailed analysis of the main issues facing national banking system in key European banking markets.

The reminder of this chapter offers a summary of the key issues discussed in the Handbook as well as an overview of European banking.

The EU Single Market for Financial Services

The European Union (EU) was formally established in 1993 by the Maastricht Treaty; although its history dates back to the post-war period.[1] The signing of the Maastricht Treaty also marks the official start of the EU single market project, leading to the establishment of the single currency, the euro, and of the European Central Bank (ECB) in 1999. The current constitutional basis of the EU is the Lisbon Treaty, which came into force in 2009. Membership of the EU has grown through a number of enlargements.[2] Today, the EU is the largest integrated economic area in the world, accounting for more than 20 % of the world's gross domestic product (GDP). Campos et al. (2014) and Campos et al. (2016) show that the economic benefits from EU membership are large and substantially outweigh the costs. Using a methodology known as SCM (synthetic counterfactuals method) to provide an estimate of per capita GDP if a given country had not become a member of the EU, the authors suggest substantial and permanent benefits, concluding that there are positive pay-offs of EU membership, clearly above the direct costs.

Since the introduction of the First Banking Co-ordination Directive in 1977 (77/780/EEC), the deregulation of financial services, the establishment of the Economic and Monetary Union (EMU) and the introduction of the euro have helped create the Single Market for financial services. European authorities consider financial integration one of the key issues for making Europe more efficient and competitive and, ultimately, for contributing to sustainable economic growth.

Until the 1980s the EU financial and banking sectors were mainly domestically oriented. National governments regularly acted as protectors of their banks

[1] In 1951, Belgium, France, Germany, Italy, Luxemburg and the Netherland formed the European Coal and Steel Community (ECSC) and in 1957 the Treaty of Rome established the European Economic Community (EEC).

[2] Denmark, Ireland, United Kingdom joined in 1973. Greece joined in 1981. Portugal and Spain joined in 1986 whereas Austria, Finland and Sweden joined in 1995. Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and the Slovak Republic joined in 2004; Bulgaria and Romania in 2007 and Croatia in 2013.

and state ownership was still prevalent in some EU countries. Interest rate restrictions and capital controls were common, and branching restrictions existed. The First Banking Co-ordination Directive in 1977 started a legislative process directed towards creating an integrated and competitive European banking system. These objectives reflected wider changes in the domains of economic policy, internationalization, technological advances and globalization. Possibly the most far reaching legislation in the harmonization of EU banking, the 1989 Second Banking Co-ordination Directive (89/646/EEC), sought to enhance competition by establishing EU-wide recognition of single banking 'passports' issued in any member state as well as the principle of home-country supervision with minimum standards (including capital) at EU level. The EU passport meant that a financial services provider authorized in a EU member state was able to offer the same services throughout the EU, competing on an equal basis and within a regulatory framework that is consistent across the Union.

In addition, the Second Banking Co-ordination Directive allowed banks to operate as universal banks: that is to engage directly in other financial activities, such as financial instruments, factoring, leasing and investment banking. The single market for financial services also implied the liberalization of non-bank financial intermediaries: insurance companies and investment firms were granted a single EU 'passport' with mutual recognition as a result of directives enacted in the early 1990s.

As part of the EU's single market programme, the introduction of the euro in 1999 was viewed as a central element in the harmonization process. The euro first replaced national currencies in 1999, while the eurozone now comprises 19 member states.[3]

A milestone towards the realization of the single market was the launch of the EU's Financial Services Action Plan (FSAP) in 1999: the fundamental aim of the FSAP was to promote a more competitive and dynamic financial services industry. In 2005, the FSAP was replaced by the White Paper on Financial Services which set out the Commission's objectives from 2005 to 2010. One of the White Paper's key objectives was to ensure the coherence of the regulatory framework and the development of consistent legislation. Co-ordination and harmonization of financial supervision in the EU was pursued through the so-called Lamfalussy procedure which was launched in 2001 and aimed to simplify and speed up the complex and lengthy EU legislative process.

[3] The euro area (also known as and referred to in this book as the Eurozone) includes the following countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Spain, Slovenia and Slovakia.

From this very brief overview, it is apparent that since the mid-1990s, a large body of EU regulation has been put in place to improve cooperation, convergence, harmonization and standardization of financial regulation and supervision. These initiatives, however, created a rather complex framework of sometimes overlapping committees. Critically, this EU-level framework was not adequate to address the 2008 global financial crisis, as became clear during the financial turmoil and government interventions. Many governments first took national measures before gradually coordinating EU-wide responses. This led to widespread criticism and a major public debate about changes in EU institutional arrangements, particularly with respect to the resolution of cross-border bank groups.

In 2009, a High-Level Group on financial supervision published a report outlining the proposals for reform of the EU regulatory framework (High-Level Expert Group on financial supervision in the EU 2009). The report, known as the de Larosière Report, outlined recommendations on regulation and supervision of EU financial markets. A key issue highlighted by the report related to the lack of a common rulebook across EU member states, which led to inconsistencies in crisis management and financial stability oversight. Therefore, the report proposed a two-level approach to reforming the EU financial architecture centred around the creation of a new systemic risk board for the oversight of financial markets and high level co-ordination among national supervisors. The report recommended the creation of a European Systemic Risk Council (ESRC), chaired by the President of the European Central Bank.

The European Commission followed most of the report's recommendations and the new structure for European financial supervision started to take shape in November 2010 when the EU Council of Finance (ECOFIN) agreed upon the creation of a new European Systemic Risk Board (ESRB) and a European System of Financial Supervisors (ESFS), comprising three functional authorities: the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA).

The establishment of the European System of Financial Supervision has contributed to improving cooperation between national supervisors in EU member states. It has also contributed to the development of a single rulebook for financial services. To further strengthen cooperation and improve supervision with the aim of restoring confidence in banking markets and in the euro, in 2012 the European Commission put forward a longer-term plan (known as the Van Rompuy plan). This plan included the Banking Union, which aims to deliver an integrated financial safety net for the Eurozone, consisting of (i) a single European banking supervision (Single Supervisory Mechanism—SSM); (ii) a common deposit insurance (Single Deposit Guarantee Mechanism, or SDM); (iii) a common resolution framework (Single Resolution Mechanism, or SRM) and (iv) a single rulebook (common legal framework, EBA single rulebook). We will discuss this in more detail in the "Cross-Border Banking" section of this introductory chapter.

When discussing cross-border banking services, it is important to distinguish between retail and wholesale activities. Wholesale banking services are often supplied in an international competitive market. On the other hand, retail banking services are essentially national in nature and traditionally provided on a domestic basis. It has long been recognized that it may be difficult to achieve a single market for retail financial products. Since the earliest assessments of conditions in European financial services, there has been the recognition that retail financial services markets are segmented by national boundaries. Cross-border trade in retail financial services is limited and markets are far from integrated. Various studies have identified that there remain substantial price differences in retail financial services across the EU. These price differences reflect a broad array of factors, not least the different institutional, legal and risk features in the various national markets relating to labour, taxation, health and safety, consumer protection and contract law.

In general, most integration obstacles seem to be a result of natural or policy-induced elements. Such obstacles to further integration are apparent in a wide range of areas; some of these barriers are natural and therefore can only be partially influenced by policymakers, others require further regulation.

Regulations governing the retail financial services sector are also country-specific and it remains problematic to undertake cross-border activity without physical establishment of branches or subsidiaries. The existing fragmentation in retail financial services has also been in some cases intensified by the response of some national supervisors to potential stability concerns triggered by the eurozone crisis, including prudential measures with "ring-fencing" effects, such as measures aimed at retaining liquidity, dividends and other bank assets within national borders. EU regulators have reacted to concerns of decreased integration by promoting EU the development of a Single Rulebook, to ensure common rules, supervision and resolution across the EU.

The global financial crisis and the eurozone crisis clearly have had a profound impact on the EU banking landscape. The regulatory framework has changed in the direction of a more integrated Banking Union. In the next section we will review the main structural features of EU banking markets.

European Banking Through the Crisis and Beyond

National banking systems within the EU vary considerably in terms of bank size, types of banks and ownership structure. The size of the banking and financial sectors varies considerably across EU area countries, ranging from Luxemburg (over 100 times GDP) to Lithuania (below 100 % of GDP), as illustrated in Fig. 1.1. While size decreased slightly between 2008 and 2014, the broader financial sector remained unchanged in more recent years, thus reversing the trend initiated by the outbreak of the financial crisis. Cross-country differences are also evident in relation to the presence of foreign banks (either branches or subsidiaries) and their relative weight in the domestic banking system.

The process of consolidation of the banking sectors in eurozone countries has continued, due to increased pressure on cost-cutting and restructuring. With a few exceptions, most countries experienced a marked decrease in the number of banks between 2008 and 2014 (ECB 2015). Austrian, French, German and Italian credit institutions accounted for around 69 % of eurozone credit institutions at the end of 2014, a slight increase compared with 67 % in 2008. At the end of 2014, France and Germany still had the largest banking sectors in the eurozone, with total asset values of €7.2 trillion and €7.1 trillion, respectively (ECB 2015). The decrease in the number of banks was also reflected by the increase in banking sector capacity indicators: population per branch and assets per bank employee increased between 2008 and 2014. Market concentration, proxied both by the Herfindahl Index and

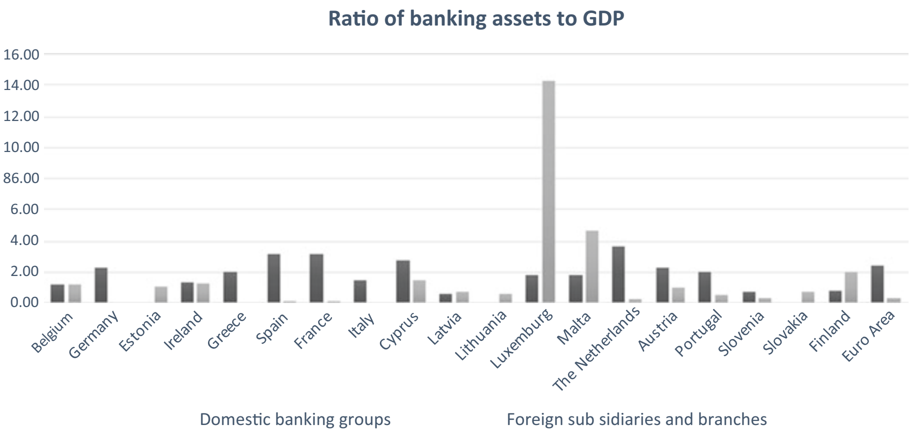

Fig. 1.1 Ratio of banking assets to GDP (*Source*: EBC structural financial indicators (2015) and authors' elaborations)

by the concentration ratio, has increased since the financial crisis. Table 1.1 illustrates the key banking sector statistics for the eurozone countries in 2014.

Despite the aforementioned reduction in the number of banks across the eurozone, a recent report by the European Systemic Risk Board (ESRB 2014) asks whether Europe is overbanked. Recent statistics seem to indicate that the European banking sectors are large relative to the size of the economy following an exponential growth which accelerated in the 1990s. They are also large compared with other sources of financial intermediation, such as bonds and equity markets. European banks are among the largest in the world and European financial systems have failed to become more market-based, bucking international trends (ESRB 2014).

Langfield and Pagano address these issues (Chap. 2, *Financial Structure*) and ask whether the structure of financial markets matters in terms of the efficiency of financial intermediation. Financial structure should optimally reflect the comparative advantages of banks and capital markets in mitigating financial frictions (Allen and Gale 2000). Langfield and Pagano argue that bank-based financial structure can either help mitigate market frictions or exacerbate them. As a result, the relative importance of banks and markets can substantially affect the quantity and the quality of credit allocation among firms and households, the stability of the financial system, and ultimately productivity and economic growth. However, a country's financial structure not only reflects the comparative advantages of banks and capital markets in

Table 1.1 Eurozone banking sector statistics (2014)

	N. of credit institutions	N. of foreign branches	Population per credit institution	Population per branch	Assets per bank employee	HHI	CR(5)
Belgium	43	65	108,320	3,093	19,466	982	66
Germany	1,698	105	45,552	2,334	12,054	301	32
Estonia	30	7	35,562	10,785	4,415	2,445	90
Ireland	414	33	10,347	4,643	37,400	677	48
Greece	21	20	274,820	4,090	8,713	2,195	94
Spain	144	84	205,593	1,452	14,744	839	58
France	413	90	133,405	1,759	19,895	584	48
Italy	592	79	90,739	1,979	13,424	424	41
Cyprus	32	25	14,956	1,386	8,320	1,303	63
Latvia	49	10	33,816	6,254	3,292	1,001	64
Lithuania	82	7	32,909	4,801	2,847	1,818	86
Luxemburg	110	40	3,772	2,573	37,297	329	32

Source: **EBC structural financial indicators (2015). HHI refers to the Herfindahl Index, calculated as the square of the market share of all the credit institutions in the respective banking sector. The HHI index ranges between 0 and 10,000. CR(5) refers to the share of the five largest credit institution in percentage. Assets per employee are in € thousands.**

mitigating financial frictions; it is also influenced by public policy and political structures. In the EU, the expansion of the banking sector occurred against the background of financial integration following monetary unification. This possibly reflected an attitude of "banking nationalism" (Véron 2013), aimed at fostering the growth of large universal banks as national champions in an attempt to prevent a wave of cross-border mergers and acquisitions (M&As). Bank supervisors helped to promote national champions by treating banks leniently. The authors suggest that by overprotecting domestic banks, governments encourage moral hazard and excessive risk-taking. In addition, inadequate regulation and lax supervision further distort banks' incentives. They conclude that moral hazard is mitigated by improved bank regulation and supervision frameworks and by removing barriers to the developments of capital markets.

In terms of banking models, the EU banking landscape is dominated by large universal banking groups. EU deregulation fostered the growth of a "market-based banking" model, whose effect was to create wide-ranging interconnectedness between banks and markets. The prevailing argument is that universal banking offers diversification benefits. However, the reality during the crisis demonstrated the dangers of the way in which the universal banking model operates and a number of major structural reforms to contain banks' "financialization" (that is a substantial growth not only in size but also in the scope and volume of financial markets activities carried out by banks.) This trend is reflected by the growth and composition of bank's balance sheets, with a shift from traditional lending activities to dealing and market making activities. This shift occurred in parallel with the growth of the *shadow banking sector*, defined as a system of credit intermediation involving entities and activities outside of the regular banking system (FSB 2012). This alternative financing system has been in place since the early 1980s and can be potentially beneficial to the economy by complementing traditional banking in support of economic activity or by supporting market liquidity, maturity transformation and risk sharing. However, the system can also become a source of systemic risk, as evidenced during the global financial crisis. Both the increase in shadow banking activities and their interconnections with banks have spurred an academic and policy debate on their role in the financial system, and renewed the need to understand their operations.

A consensus narrative seems to argue that the excessive diversification of EU banks, as well as the presence of large and complex financial conglomerates, has led banks into risky non-bank activities and acted as a catalyst for the global financial crisis. This claim is analysed by Dontis-Charitos, Staikouras and Williams (Chap. 3**,** *Bank Diversification and Financial Conglomerates in*

Europe). The authors present a comprehensive review of the literature and conclude that despite the voluminous work on bank diversification, the evidence still yields conflicting conclusions and fails to provide a clear answer as to whether bank diversification increases systemic risk.

This inconsistency may also be derived by the fact that not all types of banks faced the same challenges and/or responded in the same way to crises because of their diverse business models. Ayadi and de Groen (Chap. 4, *Banks' Business Models in Europe*) propose a definition of bank business models based primarily on a distinction between the key banking activities (i.e. retail versus market or mixed) and the funding strategies (i.e. retail versus market or mixed), which broadly builds on an asset-liability approach. The authors identify four main business models: investment banking, wholesale banking, focused retail banking and diversified retail banking. After identifying the business models in European banks, the authors examine the interaction with the ownership structure.

EU banking markets are also characterized by the existence of different types of bank: commercial banks, saving banks, cooperative banks and, in some countries, state-owned banks. Goddard, McKilliop and Wilson (Chap. 5, *Ownership in European Banking*) provide an overview of the key features of the different ownership forms. One key distinction is between shareholder-based and stakeholder-based institutions. Commercial banks are primarily shareholder-based institutions whereas cooperatives, savings and mutual financial institutions are also known as stakeholder-based. In most European countries they are the main providers of credit to the household and corporate sector and of retail payments services. It is often argued that the key difference between stakeholders-based financial institutions and shareholder-oriented commercial banks lies in the objectives pursued by managers. While the key objective for commercial banks is shareholders' wealth maximization, managers of stakeholder based financial institutions have to fulfil a range of different targets, from providing banking services to specific geographical areas, professions or individuals with specific characteristics. However, this does not imply that managers of stakeholder based financial institutions do not have in their remit profit generation, insofar that profit is related to the institution's solvency and growth prospects. This is also known as a "double bottom line", i.e. where profit maximization has to be combined with social and other objectives (Anguren Martín and Marqués Sevillano 2011).

The global financial crisis highlighted significant differences among EU banking sectors, both in terms of the overall losses and the speed of the subsequent recovery. Another key aspect emphasized by the crisis relates to flaws in corporate governance, which are thought to have played a key role in promoting and rewarding excessive risk-taking (Mehran et al. 2011; Adams and Mehran 2012; Beltratti and Stulz 2012). At the EU level, the crisis prompted a revision of the comprehensive corporate governance rules already in place, either in the form of directives or outright in the form of a European regulation. At the same time, a number of EU regulators are considering quotas for publicly listed companies′ board as a requirement of their Codes of Good Governance (CGGs).

Working on the notion that corporate governance is influenced by cultural values, the standard classification of a market-based Anglo-Saxon system versus a bank-based continental European system seems to be still prevalent in shaping corporate governance arrangements. Hagendorff and Srivastav (Chap. 6, *Pay Structures in European Banks*) discuss executive compensation and its implication for the banking industry and assesses recent proposals to reform pay in the banking industry. They highlight the need to understand better how to structure managerial compensation in a way that it can mitigate risk-taking behaviour and align the interests of managers and shareholders while also ensuring financial stability. European pay reforms have largely adopted a prescriptive format to address the risk-taking incentives embedded in compensation contracts. For instance, the Capital Requirements Directive—IV (CRD-IV) proposes an upper limit on the proportion of performance-based compensation and that a substantial proportion of variable pay should consist of long-term instruments (e.g. equity) that should be deferred over a period of at least three years.

The shift in regulatory attitudes towards performance-based pay in European banks is also evident in the fraction of bonuses in terms of managerial pay: bonus payments have fallen since 2008, although the proportion of equity-based compensation has increased over the same period, this shift has largely been towards long-term deferred equity awards. As a result, the wealth of European bank executives should have become more aligned with long-term bank stability.

Performance and Innovation in European Banking

The profound changes in the economic and regulatory environment in which European banks work have important repercussions for their efficiency and performance. However, banks also face renewed competition from non-bank providers using technological advances for financial innovation in the form of new products, new delivery channels and new institutions and markets. At the same time, the crisis has negatively affected SME lending, resulting in multiple regulatory and policy responses. The ultimate question, however, is whether the increased competition and the new regulatory frameworks make European banks more efficient and stable at the same time. The chapters in this section of the handbook touch on these different areas.

One often overlooked key component of a well-functioning markets is the payment system, defined as any organized arrangement for transferring value between its participants. The payment system is a by-product of financial intermediation, as it facilitates the transfer of claims in the financial sector. Bolt, Jonker and Plooij (Chap. 7, *European Retail Payments Systems: Cost, Pricing, Innovation and Regulation*) provide an overview of recent developments in European retail payments, including changes in instrument composition, payment costs, innovations, new players and regulatory framework. In recent years, the EU adopted regulation aimed at lowering several entry barriers for new providers of payment services and to provide the market with the regulatory stimulus to further the development of an efficient, competitive and innovative EU-wide retail payments market. Without doubt, one of the key developments is retail payment innovations: contactless payments, mobile payments and digital wallets, which will affect pricing and competition in the retail payment market. Key drivers for payment innovation are technological change, end-user preferences, the increasing number of non-banks offering payment services and regulatory framework.

The recent crises and the regulatory responses have also had profound repercussions for market structure and competition in European banking. De Jonghe, Diepstraten and Schepens (Chap. 8, *Competition in EU Banking*) provide an overview of different measures of bank concentration and competition and their development across Europe over time. They also discuss the vast theoretical and empirical literature on the relationship between market structure, competition and bank stability, whose conclusions are still ambiguous. One important recent finding, however, has been the critical interaction between regulatory frameworks and competition in their effect on bank stability (Beck et al. 2013).

The theme of innovation is also explored by Schwienbacher (Chap. 9, *The Internet, Crowdfunding and the Banking Industry*). He discusses network effects and the horizontalization of financial institutions that arise from the Internet and the data possibilities offered by social media. He also discusses crowdfunding and peer-to-peer lending and the extent to which this will affect banking business models. This area is clearly still very under-researched and as data will become available over the next years, we can expect substantial new research here.

The crisis has turned the focus of policy makers to small and medium-sized enterprises (SME) lending, as this segment of the corporate population has been more than other segments negatively affected by the financial crises and the consequent lending retrenchment. Given that two-thirds of employees work in SMEs, multiple policy initiatives have tried to address this challenge, using guarantee and special funding schemes. Carbo-Valverde and Rodríguez-Fernández (Chap. 10, *Small Business Lending*) analyse small business lending in Europe, both from the theoretical and empirical perspectives. They document SMEs' challenges in accessing external funding and show substantial variation both across countries and over time. The authors also offer an extensive survey of different lending techniques to reach out to SMEs, including relationship lending and different forms of transaction-based lending, such as asset-based lending or credit scoring.

The recent changes in the regulatory framework and institutional structure raise questions on their effects on bank efficiency. Galema and Koetter (Chap. 11, *European Bank Efficiency and Performance*) provide an overview of the key estimation methods for efficiency and discuss selected applications to the European banking sector. They then go on and apply stochastic frontier analysis to investigate the extent to which the reallocation of supervisory powers is associated with efficiency differences between European banks. Their evidence suggests that supranational supervision by the SSM coincides with larger inefficiencies. This result may indicate the additional administrative burden, at least during the run-up towards a more homogenous approach banking supervision in the EMU. It is important to stress, however, that these findings do not necessarily imply causality. In the context of the debate on the perceived benefits of increased integration of eurozone banking markets following the global financial and sovereign debt crises, a recent study by Casu et al. (2016) evaluates the long-term impact of regulatory reform on bank productivity, starting from the inception of the Single Market in 1992. The authors also assess the cross-border benefits of integration in terms of technological spillovers. Their findings suggest that productivity growth has occurred for eurozone countries, driven by technological progress, both at the country and the eurozone level, although the latter slows or in some cases reverses since the onset of the crisis. They also find some evidence of technological spillovers, which have led to progression toward the best technology. However, they also note significant long run differences in productivity and conclude that technological improvements are increasingly concentrated in fewer banking industries.

Financial Stability and Regulation

The global financial crisis has led to an array of regulatory reform initiatives, while the European sovereign debt crisis has led to the introduction of the Banking Union, which we have already discussed and will return to below. The post-2008 regulatory reforms can be understood in the context of regulatory super-cycles, as identified by several observers (Aizenman 2009; McDonnell 2013), bringing to an end a long period of regulatory easing and financial liberalization that started across the developed world in the 1980s. These regulatory reforms, mostly agreed on by global fora such as the G20, have been implemented across the EU in the form of the CRD IV, as already discussed above.

Carletti and Leonello (Chap. 12, *Regulatory Reforms in the European Banking Sector*) discuss not only these recent regulatory reforms, including capital and liquidity requirements and activity restrictions, but also assess them on the basis of theoretical models of bank fragility and how to address such fragility. Specifically, they point to three market failures that call for regulatory responses: the vulnerability of banks to retail and wholesale runs, moral hazard problems within the banking system resulting in the tendency towards excessive risk-taking and different sources of systemic risk. They also point to the tendency of financial system actors of evading new regulations by shifting certain transactions and products into the non-regulated, shadow banking system. This more general challenge for regulators concerning the regulatory perimeter requires a dynamic regulatory approach looking beyond existing rules (Beck et al. 2015). It is important to remember that regulating one type of institution will lead to the emergence of others and point to the need to design regulation in a forward-looking way. This would imply that the regulatory perimeter has to be adjusted over time and that the focus of prudential regulation (both micro- and macro-prudential) might have to shift over time as new sources of systemic risks arise.

One important challenge for regulators is the increasing complexity of financial intermediaries, which regulators typically address with increasingly complex regulations. Haldane and Neumann (Chap. 13, *Complexity in Regulation*) question this approach. They first describe the historical path towards increasing complexity in regulation across European countries; while the Basel I Accord ran to 30 pages, the Basel II Accord ran already to 347 pages, more than a tenfold increase. Importantly, these figures understate the trends towards complexity due to the use of internal risk models under Basel II. More complex regulation also increased the use of resources in supervision. Haldane and Neumann make a strong case that this increased regulatory complexity ultimately failed during the crisis, both due to mis-assessments and regulatory arbitrage induced by the complexity of the regulations. Steps toward using simpler tools, such as the leverage ratios under the Basel III Accord, are certainly a welcome development in this context.

One important feature of crisis resolution in Europe since 2008 has been the use of state aid and guarantees of both assets and liabilities. Specifically, while any state aid has to be approved by the EC under EU rules, the EC issued a blanket permission to apply such state aid to failing banks in 2008, with the caveat that remedial measures would be taken at a later stage. This quid pro quo has been subject to intense debate (Beck et al. 2010), as several large European banks were forced to divest themselves of some of their subsidiaries in return for having received state aid during the crisis. Gropp and Tonzer (Chap. 14, *State Aid and Guarantees in Europe*) offer a systematic overview of the different forms of state aid and guarantees applied during the crisis across Europe and provide a theoretical and empirical assessment of their effects on financial stability. Critical for such assessment, they gauge whether the application of such aid and guarantees can be explained by political factors. Theory predicts opposing effects of state aid and guarantees, on the one hand strengthening franchise value and sound lending by banks, on the other hand providing incentives for excessive risk-taking. The authors' reading of the empirical literature lets them conclude that the ultimate outcome depends on the institutional and political setting in which such guarantees are applied.

One important factor explaining excessive risk-taking and fuelling real estate booms in several peripheral eurozone countries has been the very low interest rates environment, especially after the entry into the eurozone by countries with previously much higher interest rates. This loose monetary policy resulted in higher risk-taking by banks, both in intensive (higher volume of lending) and extensive (lending to riskier borrowers) margins. Dwarkasing, Dwarkasing and Ongena (Chap. 15, *The Bank Lending Channel of Monetary Policy: A Review of the Literature and an Agenda for Future Research*) provide a comprehensive literature review of the recent empirical literature on the risk-taking channel of monetary policy, focusing on both local and international channels. Critical in identifying the impact of monetary policy on risk-taking by financial institutions is being able to distinguish between demand and supply factors and controlling for endogeneity. The use of loan-level as well as application data as provided by credit registries and their combination with bank-level and borrower-level information allows disentangling of demand and supply, while the fact that eurozone interest rates are set in Frankfurt for the average of the eurozone rather than (possibly diverging) individual economies allows addressing the identification challenge. The authors document evidence for the risk-taking channel of monetary policy; this finding has been critical in challenging the pre-2007 inflation targeting paradigm, which saw monetary policy as exclusively targeting monetary stability and micro-prudential regulation targeting financial stability. The break-down of this separation of instruments has also given rise to an extensive discussion and increasing research on macro-prudential regulation.

One important supervisory tool applied both during the crisis resolution phase, but also institutionalized in the aftermath of the crisis, are supervisory stress tests, as discussed by Petrella and Resti (Chap. 16, *Supervisory Stress Test Results and Investor Reactions*). These tests were successfully used by the US authorities in 2008 as an entry point to the recapitalization of banks. In the EU, on the other hand, several rounds of such tests have lacked credibility, partly due to divergent national standards and political interference in the process. It was not until late 2014 and in the context of establishing the SSM, that the Comprehensive Assessment, consisting of the Asset Quality Review and the stress tests, of the largest 125 banks in the Eurozone, provided some comfort on the actual state of eurozone banking. The Asset Quality Review had the objective of making asset evaluations consistent across the eurozone, resulting in quite aggressive adjustments in some cases, while the stress test had the objective to gauge the resilience of banks' capital position to a severe recession. Comparing the implementation of stress tests and market reactions to them between the USA and Europe allows the authors some critical conclusions, including that (i) the definition of the macroeconomic scenarios is particularly significant, (ii) the results of the stress test depend crucially on the assumption used to simulate the evolution of the banks' balance sheets over time, (iii) the market reaction to the publication of results in times of turmoil is strongly affected by the availability of a strong, credible, unconditional public backstop (existing in the USA, non-existing until recently in the Eurozone) and (iv) that the information provided by the supervisors after the stress-tests might have different impacts on market reactions.

Cross-Border Banking

Several chapters in this Handbook touch on the construction of the Banking Union within the eurozone. The Banking Union was designed with the primary purpose of cutting the deadly embrace between sovereigns and banks that could and can be observed (at the time of writing) across several peripheral eurozone countries. Discussions on creating a supra-national financial safety net started soon after the onset of the crisis, although it was the sovereign debt crisis that ultimately provided the necessary impetus for governments to proceed.

The sovereign-bank loop works in two ways. First, banks carry large amounts of bonds of their own government on their balance sheets (Battistini et al. 2014). As a consequence, a deterioration of a government's credit standing would automatically worsen the solvency of that country's banks. Second, a worsening of a country's banking system could worsen the government's budget because of a potential government financed bank bailout. Another important reason for a supra-national financial safety net is the sustainability and stability of a Single Market in banking across the eurozone. The financial trilemma states that the three objectives of financial stability, cross-border banking and national financial policies cannot be achieved at the same time; one has to give (Schoenmaker 2011).

The Banking Union consists of several pillars, as documented by Schoenmaker (Chap. 17, *The Banking Union: An Overview and Open Issues*); most importantly, the SSM, hosted by the ECB since November 2014 and the SRM that came into effect in January 2016, together with new bail-in rules under the Banking Recovery and Resolution Directive (BRRD). Mainly for political reasons (and more specifically related to the fact that legacy problems from the recent crises have not been addressed), a European Deposit Insurance Scheme has not been implemented yet. Schoenmaker concludes that that bank risk-sharing is only partly achieved in the current set-up of the Banking Union and some work remains to be done, notably in the field of deposit insurance. Moreover, the mix of national agencies (for deposit insurance) and European agencies (for supervision and resolution) makes the Banking Union arrangement potentially instable.

Re-establishing a Single Market in banking has been one important objective of the Banking Union. What have been the pre- and post-crisis trends in cross-border banking across Europe? De Haas and van Horen address this question in their chapter (Chap. 18, *Recent Trends in Cross-Border Banking in Europe*), considering both the physical presence of multinational banks and direct cross-border bank flows. They document a strong reliance in Central and Eastern Europe on multinational, especially West European, banks, while there were increasing cross-border bank flows across all regions of Europe before the crisis. Several countries in Eastern Europe, most notably Ukraine, experienced a reduction in foreign bank presence after 2008. However, in spite of the trends towards retrenchment, especially by Western European banks that needed to comply with stricter capital requirements in the wake of the crisis, the successful implementation of the Vienna Initiative also helped ensure that foreign banks continued their operations in many of these countries. The downward adjustment in cross-border bank flows, on the other hand, has been much more severe and has led to an increasing fragmentation of the European banking market. The decline in cross-border bank lending has partially been replaced by bank lending from other source countries—in particular the USA—and by an increase in corporate bond issuance and the funding of the European corporate sector has slowly shifted towards more bond-based and less bank-based funding. As it stands right now, it might be too early to say whether the funding and asset structure of Europe's banking systems has reached a new equilibrium, given that new regulations and the outstanding resolution of the Eurozone crisis still have to play out.

European Banking Systems

This Handbook includes five chapters that discuss the major EU banking systems and document their diversity. Molyneux (Chap. 19, *Banking in the UK*) discusses the development of the British banking sector, especially post-2008. The turmoil of the global financial crisis, the euro sovereign debt crisis, the mis-selling of payment protection insurance (PPI), Libor, FX and other rate fixing scandals have been a litany of disasters, resulting in the failure of several banks, the nationalization of two major banks, but also by significant regulatory reforms, partly driven by global initiatives, discussed above, and partly by the findings and recommendations of the Vickers Commission, which proposed sweeping changes to the structure of banks, including ring-fencing core bank business for stability purposes. In addition, the regulatory structure was changed, combining prudential regulation and monetary policy responsibilities under the roof of the Bank of England. Molyneux provides an extensive overview of these different developments and their effect on banks, including also the emergence of challenger banks, fostered by policy makers to address the lack of competition in the UK banking market. He concludes that, overall, the capacity for the UK banking system to withstand major shocks has improved. It remains to be seen what further challenges and adjustments are in stock for the UK banks and regulators following the vote for Brexit (Britain exit from the European Union as a result of a referendum vote in June 2016).

An analysis of the Italian banking system—as undertaken by Becalli and Girardone (Chap. 20: *Banking in Italy*)—has to start with the 1936 Banking Act, which was in force for over 50 years. The process of liberalization started in Italy in the mid-1980s and was substantially influenced by the wide deregulation and harmonization efforts at the EU level. It culminated with the enactment of a new banking law in 1993. The long crisis, which since 2007 has affected both financial systems and the real economy and has resulted in, among other things, a large amount of non-performing loans (NPLs) in the balance sheets of European, and particularly of Italian banks, a problem that has not been addressed for many years. At the time of writing, the crisis of the Italian banking system has come yet again to the fore after the Brexit vote in the UK.

Germany's banking system is rather special for an advanced country, in that less than half of banking assets are privately owned, with the remainder made up by locally owned savings banks and stakeholder-based cooperative banks. Behr and Schmidt discuss the structure and challenges of Germany's banking system (Chap. 21, *Banking in Germany*), pointing out that, in contrast to other countries, the three-pillar structure in Germany has proven surprisingly stable, partly for political reasons. They discuss how the financial crisis of 2007–8 affected the German banking system and threatened the existence of some large private-sector banks as well as banks with government involvement, most prominently the Landesbanken. The role of government ownership in the German banking system has been subject to intensive debates, as documented in this chapter. The authors conclude that "whether the German banking system would be better off with or without a strong role of the state, remains an open question".

Maudos and Vives discuss the structure and development of the Spanish banking system (Chap. 22, *Banking in Spain*). Pre-2007, the Spanish banking sector was comprised of three types of deposit institutions: commercial banks, saving banks (*cajas de ahorros*) and cooperative banks. Following the financial crisis, savings banks were restructured and most of them have become banking foundations that own a commercial bank, with the result of a more concentrated banking system. Apart from the direct impact of the outbreak of the Great Recession in mid-2007, the Spanish banking sector has suffered the consequences of the bursting of the property-market bubble resulting from the imbalances that built up in the preceding years of expansion. The Fund for Orderly Restructuring of the Banking Sector (FROB), created in June 2009, has been the first important crisis resolution tool, followed by changes in the regulatory framework for savings banks and the creation of a bad bank following a bail-out by European authorities in 2012. The authors provide an extensive discussion of the different policy actions and lessons learned from the Spanish crisis.

Lepetit, Meslier and Tarazi document the structure of the French banking system (Chap. 23, *Banking in France*) and the major developments since the mid-1980s with the deregulation process triggered by the Banking Act of 1984 and the broader reform of capital markets in 1985. Following these reforms, the French banking system has undergone a consolidation wave, resulting in a system dominated by six banking groups that also include insurance and wealth management subsidiaries, with three of them among the largest 20 European financial institutions. The 2007–8 global financial crisis and the subsequent sovereign debt crisis have led to significant changes in the level and the distribution of foreign exposures. Since 2010, French banks have reduced their involvement in eurozone countries and they have increased their expansion in other Organisation for Economic Cooperation and Development (OECD) countries (United States and Japan).

The final chapter in this section offers a comprehensive discussion of banking sector development in Central and Eastern Europe (Chap. 24, *Credit Institutions, Ownership and Bank Lending in Transition Economies*). Specifically, Haselmann, Wachtel and Sobott document the remarkable development of banking in the former transition economies and note that by the early years of the twenty-first century, the transition of banking sectors in Central and Eastern Europe (though not in many countries of the former Soviet Union) was largely complete. An important dimension of this transformation were foreign banks, mostly from Western Europe. However, while foreign banks were at the core of the transformation of banking systems in the region, they were also at the core of the credit boom that created financial fragilities, which amplified the crisis shock in 2008. As much as a story of foreign ownership, however, the story of banking in transition countries is also a story of substantial institution building, as documented by the authors. Having passed through the first post-transition boom-and-bust cycle, banking systems in the region face new challenges related to regulatory developments in the EU, the continuous weaknesses of some of the large multinational banks in the regions and political developments.

Looking Forward

The chapters of this Handbook document major trends across Europe's banking systems. They also show the uncertainty of future trends. Europe's banking systems still have to come to grips with a changed regulatory environment, a monetary environment of zero or negative interest rates undermining their profitability and increased competition from non-bank financial institutions. The British vote to exit the EU will provide another shock to the system, with possibly important changes in the financial landscape playing out in the next few years.

Banking research has received another boost with the recent crisis; access to bank-level and micro data has proven critical in pushing forward the research agenda. A close interaction between researchers, practitioners and policy makers is important to provide researchers with the necessary access to data and questions and provide practitioners and policy makers with rigorous analysis of practical and policy challenges.

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