

**Consolidation and Concentration:
The Consequences of Banking Regulation**



Inaugural dissertation submitted in partial fulfillment
of the requirements for the degree
Doctor rerum politicarum

Accepted by the
Faculty of Economics and Management
of the Otto-von-Guericke University Magdeburg

Author: Marie Elisabeth Alert

Date and place of birth: 10/16/1994, Brandenburg/Havel

Dissertation submitted on: 12/02/2022

Examiners of the dissertation:

Prof. Dr. Horst Gischer

Prof. Dr. Dr. h. c. Karl-Heinz Paqué

Date of the disputation: 04/04/2024

The present work has been submitted under the title “On the Theory of Economic Regulation
in the Banking Sector”

TABLE OF CONTENTS

Table of Contents	I
List of Abbreviations.....	IV
List of Symbols	VII
List of Figures	VIII
List of Tables.....	XI
1 Introduction.....	1
1.1 Motivation.....	1
1.2 Course of the Study.....	5
2 Theories of Economic Regulation.....	7
2.1 The Concept of Economic Regulation	7
2.2 Theories of Economic Regulation and their Empirical Evidence.....	8
2.2.1 Public Interest Theory of Regulation.....	8
2.2.2 Interest Group Theories of Regulation	13
2.3 Empirical Evidence on the Regulatory Outcome.....	26
2.3.1 Empirical Evidence on the Regulation-Productivity Nexus.....	26
2.3.2 Empirical Evidence on the Regulation-Profitability Nexus	27
2.3.3 Empirical Evidence on the Regulation-Stability and the Regulation-Risk Nexus	28
3 Evolution of Banking Regulation and Supervision in Europe and the United States Over the Last Three Decades	30
3.1 The Evolutionary Process of Banking Regulation and Supervision in Europe	30
3.1.1 Toward the European Economic and Monetary Union	31
3.1.2 Post-crisis Period	38
3.1.3 Toward Full Harmonization of European Banking	42
3.2 The Evolutionary Process of Banking Regulation and Supervision in the United States.....	54
3.2.1 From Free Banking Toward a Tightening of Regulation: A Brief Overview	55
3.2.2 The 80s and 90s: (De-)Regulation in a Dynamically Developing Financial Industry	65
3.2.3 Crisis and Post-Crisis Period	72
3.2.4 Recent Period: Changes to Dodd-Frank	85
3.3 Interim Conclusion: Major Similarities and Differences in Banking Regulation and Supervision between the European Union and the United States.....	86

4	Consolidation and Concentration.....	88
4.1	Terminology.....	88
4.2	Consolidation Process in the EMU and the United States.....	93
4.2.1	Consolidation in the Banking Sector Worldwide.....	94
4.2.2	Consolidation in Europe and the United States in Comparison.....	96
4.2.3	Consolidation in the United States.....	98
4.2.4	Consolidation in Germany.....	104
4.2.5	Consolidation in France.....	111
4.2.6	Consolidation in Spain.....	116
4.2.7	Consolidation in the Netherlands.....	121
4.2.8	Consolidation in Italy.....	125
4.2.9	Structural Implications: Cross-Country Comparisons.....	130
4.2.10	Interim Conclusion.....	134
5	The (Economic) Rationale Behind the Consolidation Process.....	135
5.1	The Concept of Efficiency.....	135
5.2	A Bank's Minimum Efficient Scale and the Optimal Structure of a Banking Sector ..	138
5.3	Explanatory Approaches.....	141
5.3.1	The prospect of Productivity Improvements.....	142
5.3.2	Risk and Stability Considerations.....	155
5.3.3	Motives In Line With the Interest Group Theories of Regulation.....	158
5.4	Interim Conclusion.....	170
6	Empirical Analysis.....	172
6.1	Research Model and Hypotheses.....	172
6.2	Source of Data.....	176
6.3	Econometric Specifications.....	177
6.4	Results.....	185
6.4.1	Descriptive Statistics.....	185
6.4.2	Regression Results.....	186
7	Discussion.....	197
7.1.1	Summary of the Empirical Results.....	197
7.1.2	Implications of the Analysis.....	198
7.1.3	Contribution of Research.....	198
7.1.4	Limitations of Research.....	199
7.1.5	Recommendations for Future Research.....	200

8	Summary of Results and Conclusion	201
8.1	Motivation.....	201
8.2	Findings from the Existing Theoretical and Empirical Literature	202
8.2.1	The Theories of Economic Regulation	202
8.2.2	Evolutionary Process of EU and U.S. Banking Regulation and Supervision...	202
8.2.3	Consolidation and Concentration	203
8.2.4	The Economic Rationale behind the Consolidation Processes.....	203
8.3	Empirical Research Findings	204
8.4	Conclusions and Policy Recommendations	204
8.5	Outlook and Closing Remarks	205
9	List of Cited Literature	207
10	Appendix.....	310
10.1	Consolidation in Germany	310
10.2	Elimination of Outliers	311
10.3	Assumption Tests.....	314
10.3.1	Linearity.....	314
10.3.2	Homoscedasticity.....	316
10.3.3	Non-Autocorrelation.....	318
10.3.4	Normal Distribution of Errors	319
10.3.5	No Multicollinearity	321
10.3.6	Model Specification.....	321

LIST OF ABBREVIATIONS

ACRI	association of Italian savings banks
AnaCredit	Analytical Credit Datasets
BaFin	Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht)
BBVA	Banco Bilbao Vizcaya Argentaria
BCBS	Basel Committee on Banking Supervision
BCC	banche di credito cooperative
BHC	bank holding company
BHCA	Bank Holding Company Act
BIF	Bank Insurance Fund
BilMoG	Accounting Law Modernization Act (Bilanzrechtsmodernisierungsgesetz)
BP	banche popolari
BRRD	Bank Recovery and Resolution Directive
CEBA	Competitive Equality Banking Act
CEBS	Committee of European Banking Supervisors
CEIOPS	Committee of European Insurance and Occupational Pensions Supervisors
CESR	Committee of European Securities Regulators
CFPB	Consumer Financial Protection Bureau
CFTC	Commodity Futures Trading Commission
CIR	cost-income ratio
CR ₅	five-bank asset concentration ratio
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
DEA	data envelopment analysis
DGSD	Deposit Guarantee Schemes Directive
DIDMCA	Depository Institutions Deregulation and Monetary Control Act
DIF	Deposit Insurance Fund
DOJ	Department of Justice
DRR	designated reserve ratio
EBA	European Banking Authority
EBC	European Banking Committee
ECB	European Central Bank

EDIS	European Deposit Insurance Scheme
EESA	Emergency Economic Stabilization Act
EIOPA	European Insurance and Occupational Pensions Authority
EIOPC	European Insurance and Occupational Pensions Committee
EMU	Economic and Monetary Union
ESC	European Securities Committee
ESCB	European System of Central Banks
ESFS	European System of Financial Supervisors
ESM	European Stability Mechanism
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
ESRC	European Systemic Risk Council
EST	efficient structure theory
EU	European Union
FDIC	Federal Deposit Insurance Corporation
FDICIA	Federal Deposit Insurance Corporation Improvement Act
FFIEC	Federal Financial Institutions Examination Council
FHC	financial holding company
FHFA	Federal Housing Finance Agency
FHLB	Federal Home Loan Bank
FHLBB	Federal Home Loan Bank Board
FIO	Federal Insurance Office
FIRIRCA	Financial Institutions Regulatory and Interest Rate Control Act
FIRREA	Financial Institutions Reform, Recovery, and Enforcement Act
FRB	Federal Reserve Board/Board of Governors of the Federal Reserve System
FREP	Financial Reporting Enforcement Panel
FROB	Fund for Orderly Bank Restructuring (Fondo de Reestructuración Ordenada Bancaria)
FSAP	Financial Services Action Plan
FSLIC	Federal Savings and Loan Insurance Corporation
FSOC	Financial Stability Oversight Council
FTEE	full-time equivalent employee(s)
G20	Group of Twenty
GAO	Government Accountability Office

GSE	government-sponsored enterprise
GWB	Act against Restraints on Competition (Gesetz gegen Wettbewerbsbeschränkungen)
Helaba	Landesbank Hessen-Thüringen
HHI	Herfindahl-Hirschman Index
IBBEA	Interstate Banking and Branching Efficiency Act
JST	Joint Supervisory Team
LBBW	Landesbank Baden-Württemberg
LCR	Liquidity Coverage Ratio
MFI	monetary financial institution
MiFID	Markets in Financial Instruments Directive
NCA	national competent authority
NCUA	National Credit Union Administration
NOW	Negotiable Order of Withdrawal
NPL	non-performing loan
NSFR	Net Stable Funding Ratio
OCC	Office of the Comptroller of the Currency
OFR	Office of Financial Research
OLA	Orderly Liquidation Authority
OTC	over-the-counter
OTS	Office of Thrift Supervision
PCA	prompt corrective action
RMP	relative-market power
ROA	Return on assets
RTC	Resolution Trust Corporation
S.p.A.	Società per Azioni
SEC	Securities and Exchange Commission
SIFI	systemically important financial institution
SREP	Supervisory Review and Evaluation Process
SRM	Single Resolution Mechanism
TARP	Troubled Asset Relief Program
TBTF	too-big-to-fail
UCITS	undertakings for collective investment in transferable securities
UFIRS	Uniform Financial Institutions Rating System

LIST OF SYMBOLS

CD_{it}	sum of deposits of individuals, partnerships, and corporations (total of transaction and non-transaction accounts), divided by total assets, for bank i in period t
CL_{it}	sum of loans secured by real estate, loans to finance agricultural production and other loans to farmers, C&I loans, consumer loans, loans to foreign governments and official institutions, and obligations (other than securities and leases) of states and political subdivisions in the United States, divided by total assets, for bank i in period t
$EOUT_{it}$	inflation-adjusted sum of securities, non-loan assets, customer loans, and deposits, divided by the number of full-time equivalent employees, for bank i in period t
$F AE_{it}$	expenses of premises and fixed assets for bank i in period t
LIO_{it}	monetary amount of customer loans, divided by the sum of customer loans and securities, for bank i in period t
NCD_{it}	total deposits less consumer deposits, divided by total assets, for bank i in period t
NIE_FAE_{it}	noninterest expenses excluding expenses of premises and fixed assets, divided by total assets, for bank i in period t
NLA_{it}	total trading assets, premises and fixed assets, other real estate owned, investments in unconsolidated subsidiaries and associated companies, customers' liability to this bank on acceptances outstanding, intangible assets, and other assets, divided by total assets, for bank i in period t
PAY_{it}	sum of inflation-adjusted salaries and employee benefits per full-time equivalent employee for bank i in period t
S_{it}	total securities, divided by total assets, for bank i in period t
TA_{it}	inflation-adjusted total assets for bank i in period t
$TEOUT_{it}$	inflation-adjusted total assets, divided by the number of full-time equivalent employees, for bank i in period t

LIST OF FIGURES

Figure 1: How Does Regulation Affect Market Outcomes According to Peltzmann (1976)?	14
Figure 2: The Three Pillars of Basel II.....	38
Figure 3: The European System of Financial Supervisors	40
Figure 4: The European Banking Union	43
Figure 5: Primary Banking Regulators in the United States since the Enactment of the Glass-Steagall Act of 1933	59
Figure 6: Federal Financial Regulators in the United States since the Enactment of the Commodity Exchange Act of 1936.....	61
Figure 7: Federal Financial Regulators in the United States since the Enactment of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989, as compared to 1936.....	68
Figure 8: Federal Financial Regulators and Organizations in the United States since the Enactment of the Dodd-Frank Act of 2010, as compared to 1989.....	75
Figure 9: Banking Regulatory Structure in the United States since the Enactment of the Dodd-Frank Act of 2010, as compared to 1933	83
Figure 10: The Concept of Consolidation	92
Figure 11: Number and Value of M&A Transactions in Banking Worldwide.....	95
Figure 12: Average Value of M&A Transactions in Banking Worldwide	96
Figure 13: Number of M&A Transactions in Banking in the EMU and the United States	97
Figure 14: Value of M&A Transactions in Banking in the EMU and the United States.....	98
Figure 15: Number of Commercial Bank Mergers in the United States.....	99
Figure 16: Source of Changes in the Number of U.S. Commercial Banks.....	99
Figure 17: Evolution of the Number of U.S. Commercial Banks.....	100
Figure 18: Number of U.S. Commercial Banks with Average Assets.....	101
Figure 19: Evolution of the Number of U.S. Bank Branches and Offices.....	104
Figure 20: Evolution of the Number of Bank Departures in Germany.....	105
Figure 21: Evolution of the Number of Banks in the Three German Banking Sectors	106
Figure 22: Evolution of Bank Size Distributions in Germany by Total Assets (Million Euros)	107
Figure 23: Evolution of the Number of Domestic Bank Branches in Germany	110
Figure 24: Evolution of the Number of Foreign Bank Branches and Subsidiaries in Germany	111
Figure 25: Evolution of the Number of M&As in the French Banking Sector.....	112
Figure 26: Evolution of the Number of Banks in the French Banking Sector	114
Figure 27: Evolution of the Number of Domestic Bank Branches in France	115

Figure 28: Evolution of the Number of Foreign Bank Branches and Subsidiaries in France	116
Figure 29: Evolution of the Number of Bank M&As in Spain, Breakdown by Sectors	118
Figure 30: Evolution of the Number of Deposit Institutions in Spain, Breakdown by Sectors	119
Figure 31: Evolution of the Number of Domestic Branches in Spain	120
Figure 32: Evolution of the Number of Foreign Bank Branches and Subsidiaries in Spain.	121
Figure 33: Evolution of the Number of MFIs and Bank Branches in the Netherlands.....	123
Figure 34: Foreign Bank Branches and Subsidiaries in the Netherlands.....	124
Figure 35: Evolution of the Number of Banks in Italy by Institutional Category	126
Figure 36: Evolution of Bank Size Distributions in Italy by Average Total Assets	127
Figure 37: Development of the Number of Domestic Bank Branches in Italy	129
Figure 38: Development of the Number of Foreign Bank Branches and Subsidiaries in Italy.....	130
Figure 39: The Multidimensional Concept of Social Welfare	136
Figure 40: Optimal Bank Size and Optimal Structure of the Banking Sector	138
Figure 41: Consolidation Driver Regulation?	141
Figure 42: Focus: Interest Group Theories' Motives	159
Figure 43: Constitutional Economic Assessment: SCP Paradigm vs. EST	162
Figure 44: Overview of Research Model 1	174
Figure 45: Overview of Research Model 2	175
Figure 46: New Additions and Departures of Credit Institutions in Germany	310
Figure 47: DFBETA Plots, Excluding Eliminated Outliers.....	311
Figure 48: Added Variable Plots, Excluding Eliminated Outliers, Model 1.....	312
Figure 49: Added Variable Plots, Excluding Eliminated Outliers, Model 2a.....	312
Figure 50: Added Variable Plots, Excluding Eliminated Outliers, Model 2b.....	313
Figure 51: Kernel Density Estimates	315
Figure 52: Augmented Component-Plus-Residual Plots, Model 1	315
Figure 53: Augmented Component-Plus-Residual Plots, Model 2a	316
Figure 54: Augmented Component-Plus-Residual Plots, Model 2b.....	316
Figure 55: Breusch-Pagan Test, Model 1	316
Figure 56: Breusch-Pagan Test, Model 2a	317
Figure 57: Breusch-Pagan Test, Model 2b.....	317
Figure 58: Residual Plots	317
Figure 59: Residual Boxplots, Groups	318
Figure 60: Wooldridge Test, Model 1	318
Figure 61: Wooldridge Test, Model 2a	318

Figure 62: Wooldridge Test, Model 2b	318
Figure 63: Kernel Density Plots	319
Figure 64: Standardized Normal Probability Plots	320
Figure 65: Plots of the Residuals' Quantiles against the Quantiles of a Normal Distribution.....	320

LIST OF TABLES

Table 1: Roadmap Toward the European Economic and Monetary Union (1989–1999).....	33
Table 2: Organizational Structure of EU Advisory Committees in the Financial Services Sector after the Adoption of Directive 2005/1/EC.....	36
Table 3: Ranking Position Changes of the Major U.S. Banks and Thrifts between December 2000 and December 2021, by Asset Size, Inflation-Adjusted in Parentheses.....	102
Table 4: Total Assets of the Leading German Banks in 2021 compared to their Total Assets in 2000 and 2010, in 2015 Prices in Parentheses.....	108
Table 5: Total Assets of the Leading French Banks in 2021 compared to their Total Assets in 2000, in 2015 Prices in Parentheses.....	113
Table 6: Total Assets of the Leading Spanish Banks in 2021 compared to their Total Assets in 2000, in 2015 Prices in Parentheses.....	118
Table 7: Total Assets of the Dutch Leading Banks in 2021 compared to their Total Assets in 2000, in 2015 Prices in Parentheses.....	122
Table 8: Total Assets of the Leading Italian Banks in 2021 compared to their Total Assets in 2000, in 2015 Prices in Parentheses.....	128
Table 9: Structural Indicators in a Cross-Country Comparison (I).....	131
Table 10: Structural Indicators in a Cross-Country Comparison (II) (Concentration).....	132
Table 11: Definition of Model 1 Variables and Preliminary Expectations of the Coefficients.....	179
Table 12: Definition of Model 2 Variables.....	183
Table 13: Summary Statistics.....	185
Table 14: Bank Size Distribution.....	185
Table 15: Regression Results, Model 1, Entire Period.....	186
Table 16: Regression Results, Model 1, 2001 to 2010.....	188
Table 17: Regression Results, Model 1, 2011 to 2021.....	189
Table 18: Regression Results, Model 2a, Entire Period.....	190
Table 19: Regression Results, Model 2a, 2001 to 2010.....	191
Table 20: Regression Results, Model 2a, 2011 to 2021.....	192
Table 21: Regression Results, Model 2b, Entire Period.....	193
Table 22: Regression Results, Model 2b, 2001 to 2010.....	194
Table 23: Regression Results, Model 2b, 2011 to 2021.....	195
Table 24: Shapiro-Wilk Tests for Normality, Model 1.....	319
Table 25: Shapiro-Wilk Tests for Normality, Model 2a.....	319
Table 26: Shapiro-Wilk Tests for Normality, Model 2b.....	319
Table 27: Variance Inflation Factors, Model 1.....	321

Table 28: Variance Inflation Factors, Model 2	321
Table 29: Hausman Test, Model 1	321
Table 30: Hausman Test Model 2a.....	322
Table 31: Hausman Test Model 2b	322

1 INTRODUCTION

1.1 Motivation

The banking sector¹ is one of the most **heavily regulated** sectors, which is subject to a seemingly endless array of regulations. At the international level, the measures developed by the Basel Committee on Banking Supervision set out a common regulatory framework that has already been revised twice since the first Basel Accord was published in 1988. One of the key drivers of regulatory reforms has been banking crises. In especially in response to the 2008 financial crisis, regulation in the banking industry was massively expanded, mainly through the transposition of Basel III and associated (reporting) requirements into national laws. However, the rules not only increased in number but also in their complexity and labor intensity, generating ever higher fixed costs for banks. Although Article 5 of the Treaty on European Union establishes the principle of proportionality, which, exemplarily applied to the area of the remuneration provisions of the Capital Requirements Directive IV, “means that small and non-complex institutions can comply with the principles by implementing less complex, but still appropriate, [...] policies, while large and complex institutions have to implement more sophisticated [...] policies” (EBA, 2015, p. 14), the EU and U.S. banking regulatory frameworks are in practice mainly characterized by a one-size-fits-all regulatory approach. Therefore, differences in business models and the size of banks are quasi neglected, and dissimilar banks are treated more or less equally, apart from some general exemptions. This implies, though, that – with enhanced regulation – small banks with traditional business models are affected to a comparatively ever greater extent, increasingly pressuring them to consolidate or go out of business.² Indeed, in many European countries, the number of small institutions, most of which are cooperative and savings banks, is declining sharply, while also in the United States, consolidation among small community banks is proceeding apace.

¹ On account of the lack of uniform, generally accepted definitions, the terms “banking sector”, “banking system”, “banking market” and “banking industry” are used synonymously to refer to a part of the economy consisting of a network of banks. The term “bank” is, in the context of this thesis, used synonymously with the terms “credit institution” and “financial institution”. Article 4(1) of the Capital Requirements Regulation defines a credit institution broadly as an “undertaking the business of which is to take deposits or other repayable funds from the public and to grant credits for its own account [...]” (European Parliament, & Council of the European Union, 2013b), while a financial institution is defined differently under Article 4(26). Similarly, the FDIC (2019, p. 32) defined a bank as a “financial institution which in the normal course of its business operations accepts deposits; pays, processes, or transacts checks or other deposit accounts; and performs related financial services for the public. Also a bank generally makes loans or advances credit.”

² See, for example, the statement of Dale Wilson, then Chairman and Chief Executive Officer of First State Bank, on behalf of the Texas Bankers Association (Committee on Financial Services, 2014, p. 9).

By fostering **consolidation** processes and harmonizing the regulatory environment, regulation is also forcing the standardization of banking products and services and thus changes in business models (e.g., Llewellyn, 2016). This can be seen in the fact that most banking sectors in Europe and the United States are meanwhile dominated by an ever-dwindling number of very large banks that are increasingly universal and international, while the traditional business models of small cooperative and savings banks are coming under increasing pressure. In Italy, for example, savings banks were privatized as early as the 1990s, and the Spanish savings banks, the “cajas de ahorros”, underwent a restructuring process starting in 2009, which resulted in the consolidation of most of the cajas and their transformation into banks.

From the regulators’ point of view, the above-mentioned developments seem to be endorsed or at least considered more beneficial than a situation in which the scope and complexity of banking regulation are lower, provided that regulators act in the public interest. In the traditional literature, this latter assumption has rarely been seriously questioned, with regulatory reforms having been deemed necessary and the existence of **market failures** having been taken for granted. Among others, the high intensity of state intervention in the financial industry, compared to other industries, or the ideal conception of an organized market even, has been justified by the disastrous effects a bank collapse may have on the real economy, i.e., the systemic risk inherent in the banking system. But also the existence of (negative) externalities and informational asymmetries, both of which constitute forms of market failures that incentivize banks to excessively take on risks, provide economic justification for government intervention. As a matter of course, recently introduced amendments are simply assumed to cure or help cure market failures, at least in the orthodox neoclassical economics literature.

However, even if market failures basically justify regulatory intervention, regulators must also aim to and have the means to correct these market imperfections to induce an allocation that is dominant compared to the market outcome. To achieve a dominant allocation, **regulatory costs** must be more than offset by regulatory gains. The role of regulatory costs is often neglected, though, which is a fatal flaw – especially due to the continuous increase in compliance and direct costs of regulation. Furthermore, regulatory costs also comprise indirect costs, such as those arising from follow-up risks. For example, an increase in regulatory costs may incentivize banks to take on excessive risks in an attempt to increase profits to compensate for the higher costs. Moreover, by increasing the fixed cost of banking institutions, regulation encourages the creation of too-big-to-fail (TBTF) institutions, which may make the extension of the safety net necessary, leading to an increase in social costs as well. In line with this notion, Marsh and Norman (2013b, p. 7) aptly noted with respect to the Dodd-Frank Act of 2010: “So although

policymakers enacted Dodd-Frank to avoid too-big-to-fail situations, in reality, the effect is the opposite.” Such examples show that regulations can have far-reaching implications, including the effects on the bank consolidation process.

Hence, the question arises whether bank regulation, with all its consequences, is welfare-enhancing, especially since even an entirely benevolent regulatory authority or government might not be able to induce a dominant allocation compared to the market outcome. And the assumption of an entirely benevolent regulator may simply be too optimistic. Thus, instead of hastily considering that bank regulation can be explained by social welfare reasons alone, account should be taken of the role private interests, including those of the regulators, play in the regulatory process. For example, rather than being tolerated so that the benefits of regulation can be exploited, the regulatory effect on the consolidation process might be **politically intended** or the means to an end even. In fact, it is not aberrant to assume that governments support the creation of (domestically-owned) national champions through consolidations while preventing competition with foreign banks. At the European level, facilitating cross-border consolidations could help promote European champions that are in a position to compete in the global marketplace. In the European context, it could also be imagined that the effect of the introduction of the European Banking Union on the consolidation process is strived for with the aim of deepening European integration. Accordingly, Danièle Nouy, then chair of the Supervisory Board of the European Central Bank (ECB), revealed in a 2017 speech at the VIII Financial Forum that “cross-border mergers would do more than just help the banking sector to shrink. They would also deepen integration. And this would take us closer to our goal of a truly European banking sector.” (Nouy, 2017). While acknowledging that “a properly functioning market should automatically find the right level of consolidation”, she also noted that “there are [...] some steps that we [the ECB] can take to reduce unnecessary barriers to mergers” (Nouy, 2017). Generally, (regulatory) steps to foster consolidation processes in the United States and the European Union are justified on the grounds of “overbanked” banking sectors that are characterized by overcapacities (e.g., Andreeva et al., 2019; Dombret, 2018; Draghi, 2016; ESRB, 2014; Frydl, 1993; IMF, 2017, p. 32 f.). In the view of the ECB, for example, cross-border transactions – which the Banking Union may facilitate – could enlarge the potential for economies of scale and scope and risk diversification as well as address the overcapacities in the sector (Andreeva et al., 2019, pp. 103, 108). Similarly, in a public lecture, Fernando Restoy, Chairman of the Financial Stability Institute, noted that “a more integrated market for banking services with truly pan-European institutions would not only promote more efficient banks and better served

consumers but also constitute a stabilising device for the euro zone” (Restoy, 2018, p. 3). However, as VanHoose (2017, p. 247) noted, “a regulator [...] could offer risk reduction [and potentially also inefficiency reductions] as a rationale for [the regulatory] choice in an effort to camouflage the fact that the regulator actually has been **captured by the industry**”. The industry may in especially be represented by large banks that do have the capacity to offer regulators (implicit or explicit) rewards and are in a better position to build relationships with regulatory decision-makers and influencers. In order to fare relatively better than their smaller competitors and to prevent market entries, large banks may favor more (homogeneous) regulatory pressure that increases the fixed costs of doing business and serves as a market entry barrier.

The view that regulators are **privately incentivized** to foster consolidations is further supported by the consideration that they themselves have an interest in seeking more regulatory pressure. In fact, heterogeneous business models and sizes of the institutions potentially hamper the positive effects a centralized and harmonized regulation could have on systemic inefficiencies in the regulatory process. In other words, a banking sector with more homogeneous and large banks (i.e., similar business models and size) could lead to economies of scale on the side of the regulator. Since both large banks and regulators might have a (private) interest in seeking more regulatory pressure – without the intention to induce social welfare gains – they may have an incentive to (tacitly) collude in this regard. Therefore, the regulatory effect on the consolidation process might not only be intended or tolerated by the regulators but might provide the means to an end. Put differently, (extensive and dynamic) regulation may be used as a strategy to drive specific business models or banking groups out of the market with the aim of shaping the structure of the banking market instead of inducing welfare gains.

By acknowledging that regulators might not always act in the public interest, this thesis builds upon the private interest theories of regulation and critically scrutinizes bank regulation instead of taking it for granted. In doing so, several interrelated questions arise. Is the current trend of banking regulation toward more regulation economically optimal? Does the fixed cost component of regulatory costs result in a significantly higher relative burden for smaller banks, i.e., are there economies of scale in complying with regulation? Does regulation affect the consolidation process at all and, if so, how strong is the effect? Do regulators aim at consolidation in the first place and, if so, is consolidation desired due to efficiency, stability, or private reasons? Or, differently, is consolidation a byproduct of regulation, meaning that regulation affects consolidation but is not an immediate objective? What other factors play a role in the consolidation process? Regardless of the rationales behind the consolidation process, is the effect of regulation on bank consolidation economically beneficial, or does it actually impose economic costs?

These questions are at the core of this thesis, which aims to identify regulatory effects on both banks' (fixed) costs and the consolidation process to eventually derive recommendations for policy action, if necessary.

1.2 Course of the Study

Having set out the general ideas of the private interest theories of regulation in a relatively intuitive manner, chapter 2, theoretically and comprehensively, discusses the theories of economic regulation by contrasting public and private interest theories. First, however, the concept of economic regulation is introduced to establish a common basis. Afterward, the basic idea of the Public Interest Theory is explained, potential rationales for economic regulation in banking are described, and critical aspects of the theory are highlighted. In a third step, the chronological development of the interest group theories of regulation is presented, from the political Capture Theory, as part of the Public Choice Theory of Regulation, to the Economic Theory of Regulation proposed by advocates of the Chicago school of economics, which also includes a review of the theoretical and empirical literature on the various ways by which interest groups may exert influence over regulators. The discourse on the interest group theories is complemented by an excursus on the Wirecard scandal, which shows that it may be appropriate to challenge the rationale for regulation provided by the Public Interest Theory.

With the two contrasting theories of economic regulation in hand, chapter 3 gives an overview of the structural evolution of EU and U.S. banking regulation and supervision over the past decades. Starting with the European banking sectors, it outlines their transition from national systems of financial supervision to a more comprehensive, cross-euro-area approach, with a particular emphasis on the establishment of the European Banking Union. With a view to the relevance to the present, the presentation of the evolutionary process of the U.S. banking supervision structure and related changes in banking regulation begins with a look at crucial regulatory developments having emerged since the Civil War era, i.e., before 1900, encompassing periods of both intense regulation and deregulation. The chapter concludes with the investigation of regulatory responses to the 2008 financial crisis, with particular attention to the Dodd-Frank Act and recent amendments to the Act.

Following the analyses of the regulatory issues, chapter 4 is devoted to the topic of bank consolidation by first clarifying the terminology of the terms consolidation and concentration, which are crucial for this thesis. This is followed by the presentation of a general overview of the consolidation processes in the global banking sector and, subsequently, an analysis of the trends across Europe. Thereafter, the consolidation processes in the United States and the five

selected EU countries, namely Germany, France, Spain, the Netherlands, and Italy, are investigated separately. Structural implications for the banking sectors under examination are considered in a final step of chapter four to allow for identifying similarities and differences in the level and the intensity of the consolidation processes.

Having covered both the regulatory developments and the consolidation processes in the EU and the United States, chapter 5, connecting the three previous chapters, deals with potential (economic) rationales behind the consolidation trend by taking into account not only the public interest theory but also the private interest theories of regulation. Again, first of all, terminological issues are clarified by defining different types of economic efficiency that make up the multidimensional concept of social welfare. Building on this, a bank's minimum efficient scale of operation and the optimal structure of a banking sector are derived from a theoretical point of view. An empirical literature review on economies of scale and the efficient scale in banking is provided afterward to provide insight into the existing empirical evidence. The chapter concludes with an in-depth examination of various explanatory approaches for the consolidation trend in banking, including motives in line with the public interest theory and those in line with the interest group theories of regulation.

In the next step, a methodological framework for econometric analysis of regulatory effects is developed in chapter 6. In particular, models are specified, which, in short, aim to estimate the amount of bank resources diverted away from output production to compliance. Following the presentation of the models, the data collection process is described. The subsequent methodological section covers the economic specifications of the models and regression assumption tests. Specifically, panel data, i.e., bank accounting data provided by the Federal Deposit Insurance Corporation (FDIC), were used to examine the effects of regulatory adjustments by analyzing changes in selected variables after the implementation of the Dodd-Frank Act. Afterward, empirical results and findings are presented, and, finally, the results are discussed and evaluated, and recommendations for future research are made.

In the concluding 7th chapter, the central questions formulated at the beginning of this thesis are revisited and reconsidered in light of the theoretical and empirical findings. The most relevant arguments are summarized, and economic conclusions are drawn.

2 THEORIES OF ECONOMIC REGULATION

2.1 The Concept of Economic Regulation

When dealing with the theories of economic regulation, it seems useful first to define the concept of economic regulation. Generally, as according to Posner (1974, p. 335), **economic regulation** refers to implicit and explicit legal and administrative measures that affect various dimensions of economic activity. These include constraints on market entry – for example through controlling the issuance of licenses – or rates, among others (Posner, 1974, p. 335). Similarly, Viscusi et al. (2005, pp. 357 f.) consider economic regulation to incorporate all forms of limitations on companies’ decision-making, i.a., regarding market entry and exit, the price but also the quantity and quality, advertising and investments, that are placed on by the government. In banking, basic **regulatory instruments** comprise government safety nets, including deposit insurance schemes and “lender of last resort” facilities, regulations on capital adequacy and asset quality, risk management assessments, restrictions on competition, consumer protection regulations and disclosure requirements, as well as prudential supervision instruments, i.e., regarding the examination of compliance with regulations and the chartering of banks (Berger, 1998; Mishkin, 2019, p. 267 ff.).

The economic literature commonly distinguishes between different regulatory instruments – such as preventive vs. punitive measures (e.g., Meeker, 1926) and principle-based vs. rule-based regulation norms (e.g., Cunningham, 2007; Ford, 2008; Korobkin, 2000). The distinction between preventive and punitive measures is reflected in a similar comparison made with regard to market risk in banking, namely that between prudential regulation and the pre-commitment approach (e.g., Casellina et al., 2020). In particular, while **prudential regulation** refers to (preventive) minimum capital standards that must be controlled through monitoring (e.g., Dewatripont/Tirole, 1994), under the **pre-commitment approach**, banks would be punished if they incur losses larger than their pre-committed market risk capital (e.g., Daripa/Varotto, 1998; Kupiec/O’Brien, 1997). Considering the second pair of opposite instruments, the first-mentioned **rule-based regulations**, as the name suggests, refer to regulatory norms based on rigidly prescribed, purely quantitative rules, while **principle-based regulations** involve more generally formulated norms that leave room for discretion and interpretation (e.g., Cunningham, 2007; Ford, 2008; Korobkin, 2000). Apart from the two distinctions just made, regulations can also be distinguished by their focus on either the microeconomic or the macroeco-

conomic level. In banking, especially the latest financial crisis provided an impetus for macroprudential policies, which had previously been largely neglected (Borio, 2011; Galati/Moessler, 2013).

2.2 Theories of Economic Regulation and their Empirical Evidence

From an orthodox neoclassical point of view, in a market economy – which is based on a free functioning of the market – regulation ought not to be necessary really (Arrow, 1985; Bishop, 1995). At least in markets where prices accurately reflect all information available, the interaction of market players, i.e., their goal of maximizing profits or utility, should lead to an efficient allocation of resources so that government intervention is unnecessary, if not detrimental (Arrow, 1985; Fama, 1970; Samuelson, 1947). This is, of course, a somewhat naïve assumption as, in reality, market imperfections exist (Bator, 1958). Nevertheless, the question arises as to why government intervenes in the market in the first place, for it must be considered that even a perfectly benevolent regulatory authority or government might not be able to induce a dominant allocation compared to the market outcome (Cheung, 1978, pp. 17 f., 74 f.; Noll, 1989, pp. 1258 ff.). At the same time, permanent regulatory changes may lead to reflection upon what forces bring about reforms in the regulatory and supervisory system.

The literature on economic regulation discusses two competing theoretical approaches that seek to provide answers to such questions – namely, the Public Interest Theory and the interest group theories of regulation. While in the banking sector, the Public Interest Theory has predominated until recently, the current literature increasingly recognizes the potential influence of private interests on the regulatory process, although the focus remains on the public interest perspective. In what follows, each approach is considered separately.

2.2.1 Public Interest Theory of Regulation

Already in the 19th century, firms performing services central to the public, including banking, were referred to as “‘public interest’ enterprises”, which subsequently became known as “public utilities” (McCraw, 1975, p. 160). Hence, back then, the term “public interest” was generally not associated with economic regulation but was used as a synonym for common or public goods or social welfare as such (McCraw, 1975, pp. 160 f.). Over time, distinct meanings have been attached to the term, depending on the type of environment, e.g., politics vs. law, among others (McCraw, 1975, pp. 160 ff.). In general, however, it can be said that the concept of public interest, in practice, has come to be used as a form of guidance in regulatory matters (McCraw, 1975, pp. 160 ff.). Around the same time, more precisely since the 1930s, also academics’ works incorporated the welfare economics rationale for regulation (Baumol, 1952; Mitnick,

1980). Pigou (1932), among others, laid the theoretical foundations by indicating that the existence of externalities warrants government intervention.

Until about the middle of the 20th century, the prevailing view was that government agencies undertake regulation for bona fide purposes of public interest, i.e., in response to public demands to correct market imperfections or failures (Posner, 1974, pp. 335 ff.). This aligns with the explanation of Viscusi et al. (2005), who referred to the Public Interest Theory as “normative analysis as a positive theory (NPT) [which] uses normative analysis to generate a positive theory by saying that regulation is supplied in response to the public’s demand for the correction of market failures or the correction of highly inequitable practices” (Viscusi et al., 2005, pp. 377 f.). This means that, according to the Public Interest Theory, regulation is introduced following the demand of the public, which occurs only when capacities for increasing social welfare are seen (Viscusi et al., 2005, p. 378). In accordance with this view, the assumption prevailed that unregulated markets tend to be inefficient and lead to inequitable distributional outcomes (Posner, 1974, p. 336). In addition, it was commonly assumed that regulation does not incur any costs (Posner, 1974, p. 336). Despite the general recognition of this approach at the time, the correctness of the Public Interest Theory was, for the most part, implicitly assumed rather than properly formulated (Posner, 1974, p. 335). Some of the few works that actually addressed the theory are those of Davis (1958, 1971), Friendly (1962), and Herring (1936), all of which differ in various aspects. In banking, several researchers do indeed justify regulation by referring to the various problems of market failure prevalent in the sector (Santos, 2001, pp. 46 ff.). Some of these rationales are presented in more detail below.

Rationale for Regulation

One of the most frequently cited arguments in favor of banking regulation is that it is necessary to tackle the **systemic risk** inherent in the banking system (e.g., Carletti, 2008, p. 452; Cecchetti, 1999, p. 3; Kaufman, 1996). This is based on the grounds that the occurrence of a systemic crisis is costly for the real economy and must therefore be prevented, for example, by deposit insurance, the creation of a lender of last resort, or different forms of capital regulation (e.g., Hellmann/Murdock, 2000, pp. 147 f.; Kaufman, 1996, pp. 19 ff.; Santos, 2001, pp. 47 ff.).³ Lastly, the underlying economic justification for government intervention is supposed to lie in the existence of sources of market failure, such as the existence of (negative)

³ However, the existence of a lender of last resort or deposit insurance leads to another major problem inherent in the banking system, namely that of moral hazard, arising because the insurance of savers’ claims prevents them from thoroughly monitoring the bank, which in turn enables banks to pursue a (more) risky business strategy without depositors demanding higher interest rates (Santos, 2001, pp. 49 f.).

externalities and information asymmetries in the banking sector as well as the public good character of financial stability, which creates incentives for excessive risk-taking and may, therefore, lead to (unintended) instabilities (e.g., Acharya, 2009; Dewatripont/Tirole, 1994; Ülgen, 2018; Wyplosz, 1999).

To avert this risk of instability in the banking sector, some researchers argue, the safety and soundness of individual financial institutions is a mandatory requirement (e.g., Borio, 2003). In their view, market disciplines alone are insufficient to prevent banks from taking excessive risks (intentionally or unintentionally) (e.g., Rochet, 2007, pp. 7 ff.). This is deemed to be the case, i.a., because banks are primarily financed by debt capital, incentivizing them to take on more risk than is economically desirable, the result of which would, according to the proponents of this view, be bank failures (e.g., Carletti, 2008, p. 457 f.; De Nicoló et al., 2012, p. 3; Kogler, 2020). In particular, failures of very large banks are considered to potentially have far-reaching negative effects on the system's stability (e.g., Kaufman/Scott, 2003; Mishkin, 2001, pp. 7 f., 17 f.).

Also, banks' vulnerability to runs is cited as a source of risk to the system (e.g., Diamond/Dybvig, 1983). The reasons why **bank runs** constitute a problem are found by considering the maturity transformation activities banks engage in (e.g., Carletti, 2008, p. 452). The fundamental point is that a bank's liabilities are short-term in nature while its assets tend to be long-term; in other words, the liquidity of a bank's liabilities generally exceeds that of its assets (e.g., Calomiris/Gorton, 1991). The limited amount of liquid assets may then be insufficient to meet a sudden surge in the depositors' demand to immediately withdraw their funds, i.e., in the case of a bank run (e.g., Calomiris/Gorton, 1991). A situation of this sort may arise whenever the depositors' confidence in a bank is shaken, which may drive depositors to panic reactions regardless of the existence of legitimate reasons, as, for example, Diamond/Dybvig (1983) or He and Manela (2016) argued. Others, in contrast, regard the existence of asymmetric information as the underlying problem, hampering depositors from adequately assessing the riskiness of banks' assets, despite their efforts to do so (e.g., Calomiris/Gorton, 1991, pp. 124 ff.; Chen/Hassan, 2006; Gorton, 1985). Assuming, however, that the bank under consideration is indeed in financial difficulty, the withdrawal of funds from that bank would be desirable if there were not the risk of a **contagion effect**, i.e. the risk that the financial trouble of the individual bank failure will trigger problems in other banks and, eventually, in the entire system (e.g., Allen/Gale, 2000; Freixas et al., 2000, pp. 625 ff.; Kaufman, 1988).⁴

⁴ See Dowd (1996, pp. 682 f.) for counterarguments to the alleged risk of contagion.

The contagion effect can arise through several mechanisms. First, there may be a (partly unfounded) loss of confidence in the banking market as a whole, leading to difficulties for all banks to refinance themselves, even for the sound ones (e.g., Bagehot, 1873; Benston/Kaufman, 1996, p. 692).⁵ Furthermore, due to their mutual claims and liabilities, a deterioration in the credit quality of one bank may affect the revenue situation of other banks, which, again, might end in a system collapse (e.g., Allen/Gale, 2000; Rochet/Tirole, 1996). Inherent in these arguments is that of the existence of **negative externalities** in banking – an issue occurring due to banks not fully considering the impact of their own financial distress on the whole financial system in their decision-making and thus not internalizing the resulting costs, which can lead them to take on more risk than is economically desirable (e.g., Acharya, 2009; Benston/Kaufman, 1996, p. 692; Goodhart et al., 2013, p. 8).⁶

The resulting negative consequences for individual (small) depositors in the absence of regulation are considered the second key argument for bank regulation, alongside the systemic risk rationale (e.g., Carletti, 2008, p. 452; Cecchetti, 1999, p. 3; Dewatripont/Tirole, 1994, pp. 29 ff.; Goodhart et al., 2013, pp. 5 ff.).⁷ The **need for depositor protection** is – according to their line of reasoning – justified by the **informational asymmetries** between banks and depositors as well as the state’s duty of care toward its citizens (e.g., Dewatripont/Tirole, 1994, pp. 31 ff.; Waschbusch, 2000, pp. 11 ff.).⁸ In particular, it is argued that the majority of depositors do not have sufficient information and are not sophisticated and not willing enough⁹ to thoroughly monitor how banks invest their funds such that authorities should supervise banks representative of the depositors (e.g., Dewatripont/Tirole, 1994, pp. 31 ff.; Goodhart et al., 2013, pp. 5 ff.; Mishkin, 2001).¹⁰

A third supporting argument for government intervention is related to the competitive conditions rather than the stability of the market. In particular, some authors have suggested that banking may be a kind of **natural oligopoly** (e.g., Dick, 2007). This is based on the grounds of the existence of endogenous sunk costs and (long-term) economies of scale and scope, both of which might lead to a market structure characterized by larger and fewer banks than in a fully

⁵ In contrast, Goodfriend/King (1988), among others, argued that, given the highly developed interbank market, healthy banks may not become illiquid (anymore).

⁶ See De Nicoló et al. (2012) for an analysis of three different forms of externalities that the authors argue justify regulation in the banking sector.

⁷ See Benston (2000), among others, for arguments against bank-specific regulation justified by the consumer protection rationale.

⁸ The asymmetric information problem also prevails between banks and borrowers. However, in the credit market, it is a bank-immanent quality to monitor the lender to avoid moral hazard issues. (Mishkin, 2001, pp. 4 f.)

⁹ The argument that depositors may not be willing enough to gather information relates to their incentive to free-ride on others’ monitoring actions, which would ultimately lead to no action at all (Dewatripont/Tirole, 1994, p. 32).

¹⁰ Dewatripont and Tirole (1994, p. 32) called this the “representation hypothesis”.

competitive market and thus provide the preconditions for banks to exploit the resulting market power (Bikker/Groeneveld, 1998; Dick, 2007).

Criticism

However, in order to induce an increase in overall welfare, regulators must not only aim at and have the capability to correct such market imperfections, but it must also hold true that the (benevolent and competent) regulator is able to induce a dominant allocation relative to the market outcome in a way such that regulatory costs are more than offset by regulatory gains (e.g., Cheung, 1978, pp. 17 f., 74 f.; Winston, 2007). In other words, even if regulatory intervention is basically justified, i.e., market failures do exist, regulation does not lead to an increase in social welfare if the direct and indirect regulatory costs, including the cost of personnel and lobbying, outweigh the benefits brought by the corrected market failures.

Especially if the market failures are not (successfully) tackled, there is indeed the risk of a deterioration in social welfare compared to the situation without economic policy intervention (e.g., Stigler, 1971; Winston, 2007). Revised versions of the original approach admitted that while generating (social) welfare might be the objective of (the creation of) regulatory agencies, they may ultimately fail to meet these expectations due to improper management (Posner, 1974, p. 337). This view would imply that the Public Interest Theory is a positive theory based on normative analysis, as such justifying but not explaining government interference. In line with this notion, Joskow and Noll (1981, p. 36) argued that there was no (empirical) evidence for the theory to hold true, contradicting the view that the Public Interest Theory is a positive theory and therefore considering it as a normative theory only. Also Viscusi et al. (2005, pp. 378 f.) and Posner (1974, pp. 336 ff.) referred to counterevidence but also to the lack of theory, concluding that the Economic Theory of Regulation might be better able to explain the regulatory process, at least if modified appropriately (Posner, 1974, pp. 343 ff.; Viscusi et al., pp. 390 ff.). This is consistent with Heinemann and Schüller (2004), who found little evidence for the Public Interest Theory. Their analysis of bank data from 107 countries in 1999 instead seems to imply that private interests do play a role in the regulatory process, which is in line with the interest group theories of regulation presented in the following.

2.2.2 Interest Group Theories of Regulation

The political Capture Theory

The starting point of the interest group theories of regulation was the Capture Theory. The term Capture Theory usually refers to those works in the **Public Choice Theory of Regulation** considering that over time (private) interest groups may *capture* government officials involved in the regulatory decision-making process, eventually leading to an unbalanced representation of the public. As early as the beginning of the 20th century, Bentley (1908) presented a theory in which he claimed that political groups *capture* control of regulators in an effort to advance their interests. Later in the century, Huntington (1952), in studying regulatory decisions in the transportation business, also pointed to the involvement of various political forces in the process, which he explained by the agencies' alleged need for political backing. Similar lines of reasoning were presented by Bernstein (1955, p. 76), who incorporated different life-cycles in his model of regulatory development processes, with the final stage of regulatory activity being characterized by fully captured regulators. Among others, Posner (1974, pp. 341 ff.) and Viscusi et al. (2005, p. 380) criticized these initial works on the Capture Theory by disapproving of the lack of a (solid) theoretical foundation, claiming that they did not thoroughly explain the mechanisms behind the "captures".

The Economic Theory of Regulation

Beginning in the 1970s, advocates of the Chicago school of economics proposed a more general approach, first clearly formulated by Stigler (1971) as part of a theory today known as the **Chicago theory of government** (e.g., Peltzman et al., 1989) or the **Economic Theory of Regulation** (e.g., Posner, 1974), which is considered a refined version of the Capture Theory (Dal Bó, 2006, p. 205; Posner, 1974, p. 343). In especially Peltzman (1976, 1984) and Becker (1983, 1986) contributed to the theory's formalization.

To be more concrete, the Theory of Economic Regulation factors in the possibility that *all* politically significant forces may have a vested interest in pursuing their own (private) goals in an individually rational manner so that they compete with one another to further those goals rather than to capture the government (Posner, 1974, p. 343). Thus, the theory recognizes that not only regulated firms but also other interest groups can wield influence on the regulatory agencies as determined by **market laws** (Posner, 1974, p. 343). For instance, Stigler (1971) considered occupations, and voters in general, as public interest groups that, as such, exert electoral pres-

sure. He concluded, however, that, in the end, the industry will be well benefited from the regulators that are supposed to control that very industry (Stigler, 1971, p. 3).¹¹ This, according to Stigler, is because the resources and capacities of a few, large firms to organize themselves enable them to advance better their private interests than small and widely dispersed occupations that show a low degree of organization and are therefore not apt to form an influential political lobby (Stigler, 1971). Stigler (1971) suggested that the struggle among the different interest groups to maximize their respective rents or, more specifically, those of their members constitutes a market process, with the actual extent of regulation being the consequence of the prevailing supply and demand forces in the “**market**” for regulation. However, while Stigler (1971) addressed in detail the role of economic groups – i.e., the **demand side** – he largely neglected the supply side, i.e., the regulators, in his analysis.

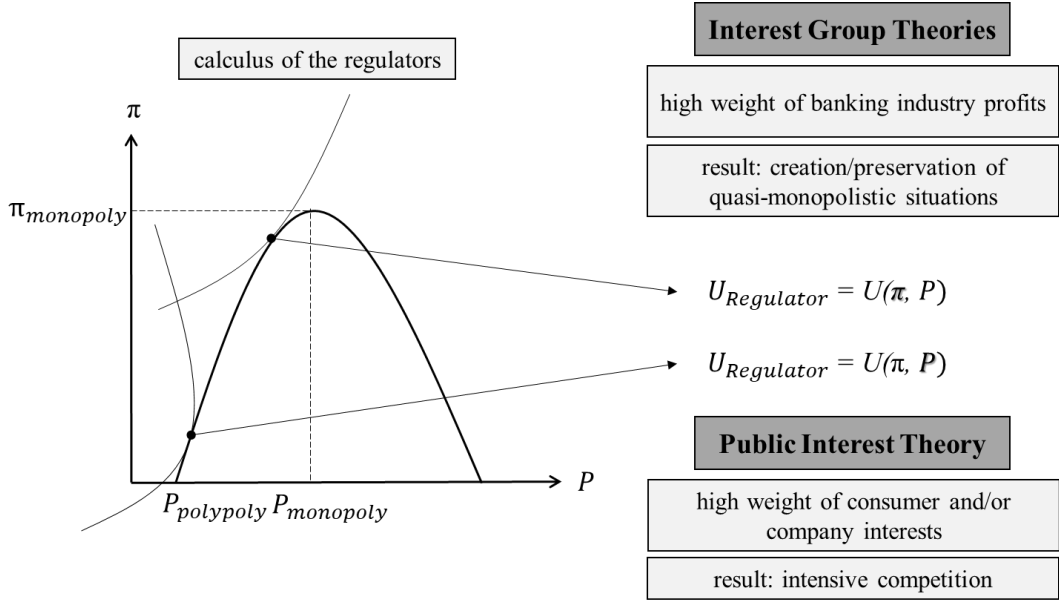


Figure 1: How Does Regulation Affect Market Outcomes According to Peltzman (1976)?

Source: Own representation based on VanHoose (2017, p. 246).

The regulators’ motivations were taken up in more detail by Peltzman (1976), among others, only a few years later. In particular, he modified Stigler’s approach by attaching more weight to the consumers’ impact on the regulatory outcome and providing a more balanced view of both “market” sides, specifying the equilibrium amount of regulation to be supplied by the regulator. According to Peltzman (1976), the **supply** of regulation results from the utility maximization behavior of mandate holders who benefit from either money or votes. Since the interests

¹¹ Stigler (1968, 1971) tested his theory with a study of weight restrictions for trucks on highways as well as a study of occupational licensing.

of firms, i.e., high profits, and those of consumers, i.e., low prices, most often run in opposite directions, regulators face a trade-off such that they must balance the (individual) marginal costs and benefits of their regulatory actions, the result of which is the regulatory equilibrium as defined by Peltzman (1976). See figure 1 for a visualization of the regulators' calculus and the resulting market outcome in line with the approach of Peltzman (1976).

Peltzman (1974) also considered the potential redistribution arising from the lobbying process as well as regulatory costs, i.e., the expenses incurred by interest groups for their lobbying activities. However, he largely neglected certain aspects of the process of influence and the reasons as to why regulators may make use of discretionary power. Among others, Bernheim and Whinston (1986) more precisely rendered the influencing factors that affect regulatory competition by factoring in price sheets firms prepare to specify their willingness to pay for specific policy actions.

Becker (1983) took a similar approach to Peltzman (1974) but formulated it differently. In essence, he focused on the **competition** between interest groups lobbying for subsidies and those opposing the resulting tax rather than on the interrelations between the interest groups and the regulator(s). The policy outcome then depends, according to Becker (1983), on the *relative* political pressure exerted by the groups. He assumed that given this outcome, i.e., the determined level of protection, regulators would tend to choose a regulatory instrument that minimizes the deadweight loss of the income transfer.¹²

Criticizing not only the Public Interest Theory but also the approaches of the advocates of the Chicago Theory, Posner (1974) argued that none of them might actually be able to explain the regulatory process. However, he did not reject them entirely but suggested that the existing schools of thought should be modified. For example, while he supported the view that government officials can transfer economic rents to those groups that are able to persuade them in any way whatsoever, Posner, in his 1971 work, considered the distributive justice argument, i.e., the possibility that regulation can (also) be used as a means of providing services that the market itself would not provide as they would be too costly to generate (sufficiently high) demand, and acknowledged that such forms of regulation might indeed be in the public interest (Posner, 1971, 1974). Furthermore, Posner (1974, pp. 346 f.) argued that the actual outcome might as

¹² Also analogous to Peltzman (1974), Denzau and Munger (1986) considered legislators' trade-offs between rewards from interest groups and constituent satisfaction by developing a model to derive a supply price for public policy. The authors came to the conclusion that (organized) interest groups target the swing voters in each legislative committee, i.e., legislators with rather indifferent constituents because this is the least resource-intensive for them.

well depend, for example, on the nature of the **political system**.¹³ Accordingly, an “entrepreneurial” system may agree to legislation in favor of the industries that attribute the highest value to it. In contrast “coercive” political systems may grant favorable legislation to those credibly threatening any punishment if their interests are not pursued, and “democratic systems” may enact legislation determined by elected representatives.

The economic literature, which builds upon the approaches of the Economic Theory of Regulation, discusses in more detail various ways in which interest groups may exert influence over regulators, comprising not only monetary contributions but also the provision of information and the offer of lucrative post-agency employments, as well as different forms of negative incentivization, such as coercion, among others.¹⁴

For example, Laffont and Tirole (1991) offered a model in which the regulatory outcome is subject to the influence of interest groups due to **bribes** being provided by the regulated to the regulators. Side payments were also considered by Boyer and Ponce (2012), who, in their model, analyzed how function responsibilities are distributed among different regulators. The authors concluded that better outcomes are achieved in a setting with multiple, independent supervisors than in a setting with only a single or subordinate regulator. Shleifer and Vishny (1993), too, inferred from their model that the regulatory structure and the degree of political competition may be critical factors in determining the extent to which bribes play a role in the regulatory process. Also Groseclose and Snyder Jr (1996), Stratmann (1992), and Snyder Jr (1991) elaborated models dealing with interest groups offering resources to regulators to further their own interests. Empirical studies on the effects of **monetary rewards** include that of De Figueiredo and Edwards (2007). They demonstrated a positive impact of campaign contributions on price regulatory decisions in a setup where regulators determined the prices incumbent firms were allowed to charge new entrants. Similarly, the studies of Igan and Mishra (2014) and Mian et al. (2010) indicate that higher contributions from financial institutions increase the likelihood that legislators will support industry-friendly legislation. Moreover, also Kalla and Broockman (2016), based on a randomized field experiment, suggested that firms’ campaign contributions facilitate access to congressional officials. More recently, Lambert (2019) pointed toward a negative impact of bank lobbying on the passage of enforcement actions. In contrast,

¹³ Similarly, Rosenbluth and Schaap (2003) considered electoral structures to play a role with regard to the regulatory system. Evidence on the impact of the electoral process on regulatory outcomes was provided by Boyes and MacDowell (1989), Besley and Coate (2003), and Smart (1994), among others.

¹⁴ Different types of regulatory capture are discussed in chapter 5 as part of the analysis of the (economic) rationale behind the consolidation process.

Wawro (2001) did not find evidence consistent with a significant positive relationship between campaign contributions and the roll-call voting behavior of members of Congress.

Other studies took into account alternative incentives, apart from monetary contributions, that may induce regulators to persuade the interests of the firms they regulate. Among others, Austen-Smith (1995), Austen-Smith and Wright (1992), Ball (1995), Calvert (1985), and Lohmann (1995) have included the **provision of information** to regulators as an influencing factor in their models. However, Duchin and Sosyura (2012) provided evidence suggesting that political connections negatively affect the efficiency of government investment since they appear to benefit connected firms and policymakers rather than address information asymmetries. Also contrasting the view that lobbyists contribute valuable information to members of Congress, the evidence provided by Bertrand et al. (2014) points toward the importance of maintaining connections with politicians rather than the issuance of expertise. Taking a different approach, Hakenes and Schnabel (2014) developed a model in which the bank provides information to the regulator, but the authors additionally considered the sophistication of the regulators in context with the complexity of banking institutions. Specifically, they argued that the inability of regulators to properly assess the risk of banks' activities based on the information provided leads them to simply allow banks to continue their operations to avoid admitting any inabilities to the public.

Bond and Glode (2014) suggested that the opportunity for lucrative post-agency employment in the industry can lead to welfare losses. In particular, their model predicted that during financial booms, the most capable regulators are lured away by the banks while, at the same time, the misconduct of the industry increases. A more optimistic view on this so-called “**revolving doors**” phenomenon was provided by Che (1995), who, in one of his three treatments, factored in the possibility that regulators might be incentivized to increase their (technical) expertise rather than to establish lobbying contacts, which would have a positive effect on the regulatory outcome. Empirical evidence on the “revolving doors” phenomenon was assembled by Cohen (1986), Gormley Jr (1979), Leaver (2009), Lucca et al. (2014), Shive and Forster (2017), and Tabakovic and Wollmann (2018), among others. Igan and Mishra (2014) provided evidence specific to the financial sector.

Another strand of the literature argued that firms could create incentives for regulators not only by rewarding them but also by punishing them for not persuading their interests. Such **negative incentives** include the possibility of the firms to talk down the capabilities of the respective regulator and to complain publicly about policy decisions, as was proposed by the model of Leaver (2009), for example. Similarly, Dal Bó et al. (2006) argued that interest groups might

complement the use of bribes by exerting coercive pressure to influence regulatory outcomes. In their model of negative campaigning, also Skaperdas and Grofman (1995) factored in the possibility that interest groups may provide funds for negative advertisements for politicians. However, for example, Lau et al. (1999) pointed out that empirical research results do not seem to imply that negative political advertisements are particularly effective in influencing the regulatory outcome.

Excursus: Wirecard case

The Wirecard case shows that the Capture Theory may not be all that wrong. Inappropriate incentive structures at all levels of supervision and a supervisory structure that was too opaque and fragmented to create clear lines of accountability led not only to regulatory costs that could not be offset by regulatory gains, but also led to real losses for the society.

A brief word on the background of the **Wirecard** case is perhaps in order. Based in Aschheim, near Munich, the payments processor and financial services provider was founded in 1999, having enjoyed consistent, rapid growth, driven primarily by international expansion (e.g., Deutscher Bundestag, 2021d, p. 1921; Wirecard, 2010, 2019). After all, it was even included in the German DAX 30 in 2018 (Deutscher Bundestag, 2021d, p. 1921; Wirecard, 2018). Although almost right from the beginning accounting irregularities were identified, it was not until 2019 that allegations were taken seriously and an independent special audit was initiated by KPMG, which eventually uncovered the accounting discrepancies (BMF, 2020a; Deutscher Bundestag, 2021d, pp. 1570 ff.; ESMA, 2020).¹⁵ After admitting that 1.9 billion euros of its cash balances were probably non-existent, Wirecard was eventually forced to file for insolvency in June 2020 (BMF, 2020a). As a consequence, the Munich public prosecutor accused ex-managers of the company of commercial gang fraud, falsification of accounts, and market manipulation (Bayerisches Staatsministerium der Justiz, 2020). Meanwhile, a **committee of inquiry** had been set up to investigate the faults made by the German federal government and its executive bodies, including those regarding the interaction with other public as well as private bodies, among others (Deutscher Bundestag, n.d.). The committee should in particular also investigate potential relations between public and private authorities and Wirecard (Deutscher Bundestag, n.d.). The opposition parties of the Liberals, the Left, and the Greens were the initiators of the committee of inquiry, aiming at shedding more light on the roles of the different parties involved, all of whom (deliberately) overlooked Wirecard's accounting fraud for too long a

¹⁵ See KPMG (2020) for the special audit report.

time (Deutscher Bundestag, 2020e). Notable accusations and points of criticism concerning the various players are presented below.

The Supervisory Board

The starting point for the consideration is the criticism expressed about Wirecard's internal control and governance structures (e.g., BMJV, 2021; Deutscher Bundestag, 2020f, pp. 3 f., 2021d, pp. 1561 ff.; IDW, 2020). In particular, the company was blamed for the (lack of) size of its **Supervisory Board**, which did not sufficiently control the Management Board's work (BMJV, 2021; Deutscher Bundestag, 2020f, p. 3, 2021d, pp. 1561 ff.; IDW, 2020). This was also attributed to the lack of a dedicated audit committee on the Supervisory Board for a too long time (Deutscher Bundestag, 2020f, p. 3). In fact, it was not until 2019 that an audit committee was formed and made responsible for the accuracy and veracity of the financial reports (Deutscher Bundestag, 2021d, p. 1563; IDW, 2020).

The Auditor

Apart from the internal control bodies, external auditors were also entrusted with auditing Wirecard's financial statements. Wirecard's long-standing auditor, **EY**, did not raise any objections to Wirecard's balance sheet during the entire audit period of around a decade – although it did note deficiencies in the company's internal control and business processes (BMF, 2020a; Deutscher Bundestag, 2021d, 2021h, p. 1572 ff.; KPMG, 2020, p. 48; Maier, 2021b). The auditing company, even despite doubts, also approved Wirecard's 2016, 2017, and 2018 financial statements with an unqualified audit opinion (BMF, 2020a; Deutscher Bundestag, 2021d, pp. 1573 ff.). Only in 2019, when KPMG's special audit had already established the non-existence of cash holdings amounting to one billion euros, EY informed the relevant authorities that Wirecard was involved in criminal manipulation (ESMA, 2020, p. 122.)

One of the issues of concern that was discussed is the wrong incentive structure for external auditors (e.g., Deutscher Bundestag, 2020d, 2020j; Fröndhoff/Berschens, 2020; Langenbucher et al., 2020, pp. 13 f.). The argument is backed by the fact that listed companies select and pay the auditors that audit them, while the auditors' liability is limited to four million euros (e.g., Deutscher Bundestag, 2020d; Langenbucher et al., 2020, pp. 13 f.). To that, critics added that it is common practice, as it is not prohibited, that auditing firms advise these same companies they are supposed to audit (e.g., Deutscher Bundestag, 2020d, 2020j; Fröndhoff/Berschens, 2020). These issues were recognized in 2010 already when possible reforms were debated at the EU level (European Commission, 2010). However, in especially the "Big Four" PwC, KPMG, Deloitte, and EY, which dominate the audit sector, are so well connected in political

circles that their lobbyists are said to have prevented the reform (Deutscher Bundestag, 2020d; Fröndhoff/Berschens, 2020).

The Auditor's supervisor

The Auditor Oversight Body **APAS** is the public supervisor for auditors, thus also for EY (BAFA, n.d.; Deutscher Bundestag, 2021d, p. 1600). The supervisor began investigating EY in October 2019, although EY had already informed the agency in February about the irregularities found at Wirecard (APAS, 2020; Deutscher Bundestag, 2020b). Critics argued that APAS should have acted earlier and that the agency's relationship with EY was too close (Deutscher Bundestag, 2021d, p. 1601; Fröndhoff/Hildebrand, 2020; Greive/Hildebrand/Sigmund, 2020). Conversely, APAS itself referred to its lack of responsibility for the accuracy of audit statements, emphasizing that its duty is to control audit firms' adherence to the professional code of conduct (APAS, 2020).

Another point of criticism relating to Apas concerned its head, **Ralf Bose**, who privately traded in Wirecard shares shortly before Wirecard's collapse when Apas was already conducting investigations (Deutscher Bundestag, 2020a, 2021d, pp. 1600, 1605). **Peter Altmaier**, who was responsible for the oversight of APAS in his function as Federal Minister of Economics, was criticized for the lack of rules to prevent conflicts of interests and insider dealing as well as for the lack of control (e.g., Becker/Lehmann et al., 2020; DPA, 2020).

The Regulators and Supervisors

The German financial regulator **Federal Financial Supervisory Authority** (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) has also come under heavy criticism (e.g., Bartz, 2021; ESMA, 2020; Iser, 2021; Kipnis/Holtermann, 2020; Osman, 2021b; SMSG, 2020). To understand the critique, it is worthwhile to first look at some of its areas of responsibility. Particularly, it is mandated to ensure the functioning and stability of the financial system and to build confidence for depositors, investors, and other parties involved (BaFin, 2020a). The agency's main task is, therefore, the (direct) supervision of the financial services sector, including the supervision of banks and insurance companies as well as of securities trading transactions, the latter of which includes analyses of securities purchases and sales with the aim of detecting market manipulation (BaFin, 2020a, 2021c). In the event that institutions fail to comply with existing regulations, the BaFin has the authority to impose sanctions (BaFin, 2020a).

However, the regulator's president **Felix Hufeld** argued that the BaFin did not even have the authority to examine Wirecard because it had classified the company as a technology corporation, not as a financial holding company, a decision that was supported by the German Central Bank and the ECB (BaFin, 2020c; BMF, 2020a, p. 4; Greive/Hildebrand/Kröner, 2020a,

2020b). This is why it was, according to Hufeld, only allowed to examine the Wirecard Bank but not the entire company (Greive/Hildebrand/Kröner, 2020a). Instead, he shifted responsibility to the **German Financial Reporting Enforcement Panel (FREP)**, a private-sector body that was in charge of monitoring the accounts of large German companies in the first stage (FREP, 2018, p. 1). As part of its mandate, FREP had to act, i.a., in the event that concrete evidence was found for any infringements of financial reporting requirements or if the BaFin instructed the body to do so (BaFin, 2020b; Deutscher Bundestag, 2021d, pp. 1630 f.; FREP, 2018, p. 2). By contrast, as FREP pointed out in the wake of the Wirecard scandal, its mandate did not include tracing balance sheet fraud or (criminal) investigations (FREP, 2020, p. 3; Schmitt, 2020). In fulfilling its task, FREP relied on the (voluntary) cooperation of the institutions under examination (FREP, 2018, p. 3). If this has not been the case, the BaFin could, at the second stage, intervene if there were severe doubts as to the accuracy of the examination results or as to the proper implementation of the examination as such (BaFin, 2020b; Deutscher Bundestag, 2020g, 2021d, pp. 1630 f.).¹⁶

In the case of Wirecard, the BaFin commissioned the FREP to examine the financial reports in February 2019 for the first time and continuously requested it to include new insights afterward (BMF, 2020a, p. 6; Deutscher Bundestag, 2020l, 2021d, pp. 1632 f.; ESMA, 2020). However, the association did not submit any final, substantial results in due time (Becker/Hesse et al., 2020; Deutscher Bundestag, 2021d, pp. 1632 f.; ESMA, 2020; Maier, 2020; SMSG, 2020). The BaFin took the lack of reports as a reason not to start conducting examinations of Wirecard on their own (Deutscher Bundestag, 2020c).

Critics counter that, in fact, the agency could have been allowed to take action, i.a., by conducting forensic investigations, which the FREP was not allowed to do (Böcking/Gros, 2020; Deutscher Bundestag, 2020g). Moreover, critics argue that early warnings from whistleblowers and the media¹⁷ would have required the BaFin to ask the FREP to examine Wirecard's financial statements well before 2019 (ESMA, 2020). In fact, the BaFin did quite the opposite, though, when in 2019, the Financial Times (e.g., McCrum, 2019a, 2019b; McCrum/Palma, 2019a, 2019b) reiterated its position that Wirecard was involved in fraud. Specifically, the allegations against Wirecard prompted the agency to launch one-sided investigations against the Financial Times and to accuse its reporters of market manipulation (Hesse, 2019). Eventually,

¹⁶ Meanwhile, the BaFin alone is responsible for inspecting the financial statements of capital market-oriented companies. The previous two-stage procedure was changed to a single-stage procedure by the Financial Market Integrity Strengthening Act (FISG) on January 1, 2022. (BaFin, 2021b)

¹⁷ Valuable hints were provided by McCrum (2015), Hesse (2016), Zatarra (2016), and Dohms (2017), among others.

information received from the Munich public prosecutor on a blackmail attempt and an imminent short attack on Wirecard induced the BaFin to ban the short-selling of Wirecard shares for two months on the grounds that the risk of market uncertainties prevailed (BaFin, 2019; Deutscher Bundestag, 2021a, 2021b, 2021d, 2021m, pp. 1634 ff.).¹⁸ This measure not only prevented the offense's investigation but also sent a completely wrong message to private investors (Deutscher Bundestag, 2021c, 2021d, 2021f, pp. 1645 f.).

In the inquiry committee, the questioning of short-seller **Fahmi Quadir** suggested that the BaFin's handling of informants could result from a distorted relationship with short-sellers prevalent in Germany (Deutscher Bundestag, 2021d, pp. 156 ff.).¹⁹ In fact, Quadir reported that the BaFin had declined her offer to help them by providing documents,²⁰ not showing any interest, and indicated that regulators in the United States would have investigated hints from short-sellers (Deutscher Bundestag, 2021d, pp. 156 ff; Osman, 2021a).

Though certainly, the BaFin should have taken the allegations of balance sheet fraud against Wirecard seriously and hence should have called in the **Munich public prosecutor** earlier (ESMA, 2020,) this does not absolve the prosecutor of the responsibility to make inquiries on its own, as according to Florian Toncar, especially in light of the fact that it had access to information that should have made the authority suspicious (Iser, 2021). Therefore, in the view of Florian Toncar, the primary responsibility lies not only with the BaFin but also with the prosecutor (Iser, 2021).

Another critique concerning the BaFin is that the agency's own employees increasingly traded Wirecard shares shortly before the company's collapse (e.g., BaFin, 2021a; Deutscher Bundestag, 2021d, pp. 1891 ff.; ESMA, 2020). Even though a charge was filed against one of the employees on suspicion of **insider trading** eventually, the transactions of all other employees appear to have been legally permitted (BaFin, 2021a; Deutscher Bundestag, 2021d, pp. 1891 ff.). Among others, Deloitte (2021), as part of an examination, reached the conclusion that the (governance) rules and controls on insider trading for BaFin employees were too lax. However, it was not only that concerns were expressed about the behavior of BaFin's employees but also as to potential conflicts of interest of the then head of the FREP, **Edgar Ernst**, who held supervisory board mandates in corporate groups (Deutscher Bundestag, 2021d, 2021e, p. 1630; Fröndhoff/Holtermann, 2021; Hulverscheidt, 2021).

¹⁸ The decision was confirmed by ESMA (2019).

¹⁹ Karl-Theodor zu Guttenberg may have contributed to the distorted picture of short-sellers by publishing an article in the FAZ (Böcking, 2021). See zu Guttenberg (2020) for the relevant article.

²⁰ See Quadir (2019) for the relevant letter to the BaFin.

When examining the BaFin's role in the Wirecard case, it should not be neglected that the BaFin is supported in its oversight by the **German Central Bank** (German Central Bank, 2017). Though indeed one of the central bank's employees did prepare a note that included critical points about Wirecard as early as 2016, her superiors did not react to it (Deutscher Bundestag, 2021d, pp. 839 ff.). As a matter of fact, her superiors seem to have been well-connected to Wirecard's CEO, who was met by a senior central bank official in 2019 (Jennen/Comfort, 2021).

Finally, also the **district government of Lower Bavaria** may have had supervisory responsibilities in the Wirecard case. After all, it is the district government that would have been charged with supervising Wirecard regarding money laundering if they had decided that Wirecard fell under the provisions of the Money Laundering Act (Deutscher Bundestag, 2020l, p. 5, 2021d, pp. 1610 f.). However, they did not do so and remained inactive – arguing that Wirecard was not a financial firm but was primarily engaged in providing the operation and marketing of information services (Deutscher Bundestag, 2020l). While this was the Bavarian government's final statement, the district government of Lower Bavaria already had doubts about the responsibility before the insolvency was declared, having discussed the issue with the BaFin (Bayerischer Landtag, 2020d; BMF, 2020a, p. 8; Deutscher Bundestag, 2020d, 2021l, pp. 1611 f.).

The Ministry of Finance

The BaFin is an authority under the auspices of the Ministry of Finance; its president is to be appointed by the government (BMJ, 2022). As such, it is under the general control of the Federal Minister of Finance – at that time **Olaf Scholz** – who was criticized for not having reacted in a timely manner, although he was informed about the suspicion against Wirecard in February 2019 already (e.g., Becker/Lehmann et al., 2020; BMF, 2020b; Hildebrand, 2020). He rejected the allegations and shifted the blame to the auditors, i.e., EY, that failed to uncover the fraud (BMF, 2020b; Greive/Holtermann, 2020; Deutscher Bundestag, 2021d, pp. 1495 ff.). Also the Secretary of the Ministry of Finance **Jörg Kukies** – who can be seen as the interface between the Ministry of Finance and the BaFin – had received harsh criticism for a meeting he held with Wirecard's CEO Markus Braun when KPMG had already started their special audit, particularly in light of the fact that he had worked for Goldman Sachs, a large-scale investor in Wirecard, before being involved in politics (Bartz et al., 2020; Deutscher Bundestag, 2021d, pp. 1375 ff.; Goffart, 2020; Maier, 2021d; Ott, 2020).

Another party involved and, too, attributed to the Minister of Finance is the **Financial Intelligence Unit** (FIU) – a special unit tasked with fighting against money laundering (Generalzolldirektion, n.d.). Generally, the unit does not investigate itself but merely examines reports

of suspicious activities concerning money laundering or terrorist financing and forwards relevant documents to law enforcement authorities (Generalzolldirektion, n.d.). In the case of Wirecard, the FIU received around 200 notifications relevant to the allegations on the payments processor (Deutscher Bundestag, 2021i), including suspicious activity reports from Commerzbank (Deutscher Bundestag, 2021d, p. 1615; Maier, 2021a). However, the FIU forwarded only a fraction of these to the relevant law enforcement agencies in due time, which led to harsh criticism – not for the first time, though (Deutscher Bundestag, 2021d, pp. 751 ff.; Eckstein et al., 2020). Among others, money laundering investigators of the police accused the special unit of having provided information late and of having withheld even information from the agencies in the past (Eckstein et al., 2020).

Ties between Politicians and Wirecard

In the course of the investigations against Wirecard, it soon became apparent that close ties had been maintained between the payment processor and **German politicians** (e.g., Böcking, 2020; Deutscher Bundestag, 2021d, pp. 505 ff., 1735 ff.; Gammelin et al., 2020a; Iser, 2021; Schmitt et al., 2021). Wirecard's strong political lobby has taken reasonable measures to push through the company's interests and, in fact, has done so quite successfully (e.g., Deutscher Bundestag, 2021i; Eckstein et al., 2021; Gammelin et al., 2020a; Schmitt et al., 2021). In addition to accusations related to lobbying activities, the German government has been accused of having protected and promoted Wirecard politically in order for the alleged digital model company to become a true national champion (e.g., Bartz et al., 2021a; Deutscher Bundestag, 2020i, p. 21882; Funk, 2020; Kaiser et al., 2020). To illustrate the points of criticism as regards the political interference on the issue of Wirecard, a few examples are given in the following.

Most prominently covered in the media was the role of **Karl-Theodor zu Guttenberg** (e.g., Bartz et al., 2021b; Betz/Meyer-Fünffinger, 2020; Böcking, 2021; Deutscher Bundestag, 2021d; Gammelin, 2020). The former Minister of Defense and for Economic Affairs directly lobbied on behalf of Wirecard at the Chancellery, while his global investment and consulting firm Spitzberg Partners supported Wirecard in a takeover in China (Betz/Meyer-Fünffinger, 2020; Deutscher Bundestag, 2020d, 2021k, pp. 1597 f.; Gammelin, 2020). Concretely, in a personal meeting, Guttenberg persuaded the German Chancellor **Angela Merkel** to promote Wirecard in China, which indeed she did as part of her trip to Beijing in September 2019 (Deutscher Bundestag, 2020d, 2020f, 2021k). In fact, she addressed Wirecard's potential market entry in China even though the allegations against Wirecard were already well-known (Deutscher Bundestag, 2020d, 2021k; Sigmund, 2020). In particular, the chancellery was informed two weeks

before the China visit about investigations into possible market manipulations (Deutscher Bundestag, 2021d, p. 1960; Sigmund, 2020). After meeting the Chancellor, zu Guttenberg maintained contact with Merkel's economic advisor **Hendrik Röller** (Andreoli, 2020; Becker/Buschmann/Naber et al., 2020; Deutscher Bundestag, 2020k, 2021d, pp. 528 ff.). Eventually, Röller himself held a meeting with Wirecard managers, which was organized and accompanied by the former State Secretary at the Federal Chancellery and Commissioner for the Federal Intelligence Services **Klaus-Dieter Fritsche** (Deutscher Bundestag, 2020h, p. 4, 2021d, p. 1594). Like Guttenberg, Fritsche worked as a lobbyist for Wirecard after his career as a politician, using the "revolving door" to exert influence on high-ranking political leaders (Becker/Buschmann/Gebauer et al., 2020; Deutscher Bundestag, 2021j; Lange, 2020). Following Guttenberg's pattern, also the former mayor of Hamburg, **Ole von Beust**, supported Wirecard's interest through his consulting firm (Deutscher Bundestag, 2020f; 2021d; 2021k, p. 1599). Working for Beust's consulting company, alongside his activities as a Member of Parliament, the SPD representative **Joschka Langenbrinck**, was facing public criticism as well (Deutscher Bundestag, 2021d, pp. 534 ff.; Fröhlich, 2020).

Beyond these examples, i.a., the Secretary-General of the German SPD Lars Klingbeil and FDP politician Florian Toncar refer to prevailing contacts between the **Bavarian government** and Wirecard (Iser, 2021; Niesmann, 2020). Among others, the former head of the Bavarian state police, Waldemar Kindler, had initiated a meeting between the head of the Bavarian state chancellery, Florian Herrmann, and Wirecard's former and then CFO at the end of 2019 (Deutscher Bundestag, 2021d, pp. 556 f.; Gammel et al., 2020b; Hesse, 2020). However, this was not the first meeting Herrmann held with a CFO of Wirecard. In 2014, he welcomed the then CFO for a meeting set up by the former Minister President of Schleswig-Holstein, Peter Harry Carstensen (Bayerischer Landtag, 2020b, p. 3). Incidentally, Carstensen was involved in other meetings that Wirecard used to promote itself as a state-licensed payment processor of gambling services (Deutscher Bundestag, 2021d, pp. 746 f.; Eckstein et al., 2021). More recently, at the beginning of the Corona pandemic, a member of the Bavarian cabinet, Hubert Aiwanger, relied on Wirecard's (free-of-charge) support to digitize firms' applications for emergency aid (Bayerischer Landtag, 2020a). It turned out that Wirecard may have used its involvement in the payment process to launder money (Hesse, 2020; Deutscher Bundestag, 2021d). Political connections between Wirecard and Bavarian state ministries date back somewhat further even. For example, in 2016, a Wirecard manager traveled to Poland with a business delegation (Bayerischer Landtag, 2020c, p. 3), while in 2017, managers accompanied the then Minister of European Affairs to São Paulo (Bayerischer Landtag, 2021, p. 6).

Lastly, also foreign secret services and government agencies, i.e., those of Russia and Austria, appear to have held their protective hand over Wirecard (Deutscher Bundestag, 2020h, 2021d, pp. 1653 f.; Holtermann/Schnell, 2020; Maier, 2021c). Among others, the members of the committee of inquiry, Fabio de Masi and Daniel Bayaz, as well as the former head of the intelligence service Jens Zimmermann and former intelligence services coordinator Bernd Schmidbauer, consider the claim of the German intelligence service that it was not aware of that fact to be implausible (Deutscher Bundestag, 2021g; Maier, 2021c).

2.3 Empirical Evidence on the Regulatory Outcome

To sum up, there is a growing impression that it may be wrong to hastily consider the Public Interest Theory to explain much of what is going on in the regulatory practice. It is, in contrast, likely that private interests also play a role in the regulatory process. The actual resulting regulatory outcome then depends on the extent to which each theory can explain reality. Previous studies that have investigated the relationship between bank regulation and economic performance and stability can convey a useful first impression of the cost-benefit ratio of regulation.

2.3.1 Empirical Evidence on the Regulation-Productivity Nexus

First, empirical evidence on the regulation-productivity nexus is presented. Generally, a positive relationship between regulation and productivity might imply that productivity-specific benefits of regulation, i.e., the reduction of inefficiencies, are higher than the associated bank-specific costs. In contrast, a negative relationship might indicate that bank regulatory costs are higher than the benefits generated in terms of productivity, if they exist at all.

Using data from 715 banks in 95 countries, Pasiouras (2008) employed both data envelopment analysis and Tobit regression to investigate the effect of several Basel-induced regulatory and supervisory measures on the technical efficiency of banks, revealing that banks improved their technical productivity by more than 30% on average. Complementing this study on technical efficiency, Pasiouras et al. (2009) used a sample of banks from 74 countries over the period from 2000 to 2004 to analyze the regulatory effects on cost and profit efficiency, pointing toward a positive impact of Basel II-related regulations on market discipline and supervisory power on both cost and profit efficiency. However, while bank activity restrictions appear to have had a positive effect on profit efficiency, the effect on cost efficiency appears to have been negative, while stricter capital requirements were found to have had a positive impact on cost but a negative one on profit efficiency. Also based on a multi-country study, i.e., using the results of a survey on bank regulation in 142 countries, and also specific to Basel II, Barth et

al. (2008), however, suggested that the introduction of the Basel regulatory framework did not have beneficial effects for bank efficiency. Similar results were provided by Delis et al. (2011), who studied the relationship between the Basel II guidelines and constraints on total factor productivity growth using 1999 to 2006 data on banks from 22 transition economies. Their approach of combining the Malmquist index with bootstraps regressions also did not indicate a significant link between productivity growth and Basel II, whereas bank activity restrictions appear to have had a positive impact. More conclusive results were provided by Barth et al. (2013), who used a DEA model to study the impact of bank regulatory aspects on efficiency. Based on a sample of banks from 72 countries between 1999 and 2007, he suggested that more substantial activity restrictions lead to more inefficiencies.

2.3.2 Empirical Evidence on the Regulation-Profitability Nexus

Empirical evidence on the regulation-profitability nexus could indicate potential overall benefits provided to the banks through regulation. In particular, a positive impact of regulation on profitability might imply that the total benefits of regulation are higher than related bank-specific costs. At the same time, a negative relationship might indicate that banks' regulatory costs are higher than any benefits generated in terms of profitability. Thus, in contrast to the regulation-productivity nexus, the impact of regulation on profitability depends not only on whether regulation induces changes in productivity but also on whether it causes changes in the market power of banks, among others.

Nippani and Green (2002) studied the effects of the Riegle-Neal Interstate Banking and Branching Efficiency Act (IBBEA) of 1994 and found that the legislation was accompanied by an increase in univariate ROA, while the result was not significant in multivariate regressions. Zou et al. (2011) followed up on the same research topic, with their results also pointing toward an increase in ROA after the enactment of the IBBEA but an increase in net interest margins as well. Using data from 55 countries and more than 2,300 banks, Barth et al. (2003) examined the relationship between selected criteria of bank supervision and bank profitability, finding no significant effect of the supervisory structure on profitability. Also Barth et al. (2004), based on their own data on bank regulation and supervision in 107 countries, mainly from 1999, investigated the link between several regulatory and supervisory practices and performance, among others. Their findings suggest that bank performance, as measured by overhead costs scaled by total assets and the net interest margin, is generally higher when countries tend to have comparatively low levels of regulatory intervention.

2.3.3 Empirical Evidence on the Regulation-Stability and the Regulation-Risk Nexus

Finally, also evidence of the relationship between regulation and stability is presented. While regulation may affect both bank productivity and profitability, it should undoubtedly impact bank risk-taking and thus the banking system's stability. Generally, a negative relationship between regulation and bank risk-taking and a positive effect of regulation on stability could be economically and socially desirable, i.e., by providing additional benefits to the general public through mitigating market failures.

In an earlier study, Barth et al. (2001) investigated the nexus between regulation and financial sector stability by looking at the impact of bank activity restrictions on interest margins and overhead costs in more than 60 countries, with their results indicating that regulatory restrictions tend to harm financial stability. Barth et al. (2002) used data from 70 countries to investigate the relationship between bank performance, bank supervisory structure, bank activity restrictions, legal and macroeconomic conditions, and the structure of the banking market. Their evidence suggests that bank capital ratios tend to be lower in countries with multiple supervisors, while liquidity risk appears to be higher. The results also indicate that in countries where the central bank acts as a bank supervisor, the relative amount of non-performing loans tends to be higher. Also Barth et al. (2004) investigated the relationship between regulatory and supervisory practices and stability, with the results of their analysis indicating that stability, proxied by the ratio of nonperforming loans to total assets, is, as it appeared to be the case for the performance indicators, generally positively affected by a comparatively low level of regulatory intervention. The results of these two studies might be in line with the evidence provided by the multi-country study of Barth et al. (2008), which contested the view that the introduction of the Basel regulatory framework has positively affected stability. Similarly, Pasiouras et al. (2006), having examined the effect of bank regulation and supervision, among others, on bank-specific ratings using data from 71 countries and 857 banks, found that capital requirements appeared to have a negative impact on the soundness of banks as measured by ratings of Fitch. More recently, but pointing in a similar direction, Delis et al. (2017), having investigated the effect of formal enforcement actions imposed on U.S. banks targeting the safety and soundness of the financial system on bank capital, risk, and performance over the 2000 to 2010 period, suggested a negative relationship with risk-weighted assets and the ratio of nonperforming loans to total loans. However, the effect seems to have been less pronounced in the aftermath of the crisis, while no significant impact of the actions on regulatory capital was found.

Pointing toward a rather positive contribution of regulation on bank risk instead, the simultaneous equations model and three-stage least squares estimation used by Aggarwal and

Jacques (2001) revealed that subsequent to the imposition of the prompt corrective action provision of the Federal Deposit Insurance Corporation Improvement Act U.S. banks improved their capital ratios and significantly reduced their credit risk level. More generally but also supporting the view of a positive contribution of regulation on bank risk-taking, Buch and DeLong (2008), having used data on cross-border bank mergers to investigate the impact of a country's supervisory structure on changes in bank risk-taking, found evidence suggesting that strong supervision appears to reduce a country's overall banking risk. Less clear-cut and specific to the Basel core principles, Demirgüç-Kunt et al. (2008), based on a sample of 203 banks from 39 countries, provided evidence suggesting that only compliance with those Basel core principles related to information provision significantly increases banks' soundness as measured by both Moody's financial strength ratings and Z-scores. Showing a different picture again, Magalhaes and Tribó (2010), based on a sample of 278 large commercial banks from 39 countries over the 1998 to 2006 period, suggested that the stringency level of capital restrictions has an inverted U-shaped relationship with priced risk terms of loan contracts. Furthermore, an increase in the level of official supervisory power was found to contribute positively to banks' lending riskiness, in the most general sense in line with the results presented by Buch and DeLong (2008). However, the relationship between regulation and bank risk-taking may be influenced by various factors, among which is the bank's corporate governance structure, as Laeven and Levine (2009) noted.

3 EVOLUTION OF BANKING REGULATION AND SUPERVISION IN EUROPE AND THE UNITED STATES OVER THE LAST THREE DECADES

Despite examples such as the Wirecard case – which should encourage academics to challenge the Public Interest Theory’s rationale for regulation – and the somewhat ambiguous results of the studies on the relationship between bank regulation and economic performance and stability presented above, regulatory reforms in recent decades have rarely seriously called into question the existence of market failures as the explanation for bank regulation. As a matter of course, recently introduced amendments are simply assumed to address market failures. While the existence of market failures cannot be denied, much of the empirical literature indicates that either regulation is not very effective in intervening in the market or that it is not the main objective of regulation to promote bank efficiency, stability, or the maximization of social welfare as such. Thus, the design of banking market intervention may not be optimal in terms of regulatory efficiency.

To shed more light on this issue, careful consideration must be given to the regulatory and supervisory environments of the geographic areas to be investigated in this thesis. Therefore, with the public theory in hand, the following section provides an overview of the evolution of the banking supervisory structure and related changes in banking regulation in both the EU and the U.S. over the past (three) decades.

3.1 The Evolutionary Process of Banking Regulation and Supervision in Europe

Over the past three decades, the regulatory environment in the European banking sector(s) has undergone major changes. A transition from national financial supervision systems to a more comprehensive, cross-euro-area approach occurred. Beginning with the period from about 1990 toward the European Economic and Monetary Union, the supervisory and regulatory environment up to the financial crisis of 2007–2008 is examined. This is followed by the post-crisis period. Finally, the period from 2014 onward is investigated, i.a., covering the establishment of the European Banking Union.

3.1.1 Toward the European Economic and Monetary Union

Delors Report and Maastricht Treaty

Though as early as 1970, the **Werner Plan**²¹ envisaged the creation of a European economic and monetary union by 1980 (Commission of the European Communities, 1970, p. 14), its realization eventually failed. Only after a renewed attempt to create the union did the European Council finally agree on a three-stage implementation process, as suggested by the **Delors Report**²² in April 1989 (Commission of the European Communities, 1989, p. 8; Committee for the Study of Economic and Monetary Union, 1989).

The **first stage** toward an economic and monetary union was scheduled to begin on July 1, 1990. In this stage, the full accomplishment of the single European market and stronger collaboration and coordination of economic and monetary policies were on the agenda. Besides, the stage required all participating countries to join the Exchange Rate Mechanism of the European Monetary System, but also to negotiate and ratify a treaty that would serve as the legal basis for the union. (Committee for the Study of Economic and Monetary Union, 1989, pp. 28 ff.).

The latter requirement was achieved by the signing of the **Treaty on European Union** at Maastricht on February 7, 1992²³. Among others, the treaty laid down the prerequisites, timetable, and procedures for introducing the single currency. For instance, convergence criteria were specified, intended to ensure the participation of countries meeting certain macroeconomic conditions only, and the decision was taken to introduce the euro before the turn of the millennium even. Thus, emphasis was placed on a (rapid) **process of convergence** among the member countries, i.e., in terms of price stability, sound public finances, and exchange rate relations, as well as long-term interest rates. (Commission of the European Communities, 1992, pp. 20, 85)

Moreover, the **second stage** of the union was to be launched on January 1, 1994 (Commission of the European Communities, 1992, p. 17). During this stage, one purpose was to prepare the implementation of the European System of Central Banks (ESCB) – a new and fully independent system of institutions consisting of a European Central Bank and the national central banks

²¹ An expert group headed by Pierre Werner began on March 20, 1970, to seek ways to realize an economic and monetary union in stages. Their initial report, submitted to the European Parliament on October 8, 1970, was entitled “Report to the Council and the Commission on the realization by stages of economic and monetary union in the Community”, or “Werner Report”.

²² The Delors Plan was named after Jacques Delors, then President of the Commission of the European Communities. He chaired the Committee for the Study of Economic and Monetary Union, which proposed this final report. Officially, the Delors Report was entitled “Report on economic and monetary union in the European Community”.

²³ The Maastricht Treaty on European Union was signed by the Foreign Ministers and Finance and Economic Affairs Ministers of the Twelve. Under the provisions of this treaty, the European Union was founded, and its three-pillar structure was introduced. The pillar system comprises the European Community – an extension of the former European Economic Community – on the one hand, as well as the pillars of common foreign and security policy and cooperation in the fields of justice and home affairs on the other hand.

responsible for an EU-wide monetary policy²⁴ (Commission of the European Communities, 1992, pp. 6, 14 f., 69 ff.). Therefore, provision was made not only for coexistence but also for close cooperation between the ECB and the relevant national monetary authorities (Commission of the European Communities, 1992, pp. 69 ff.). Also, the treaty provided for the establishment of the European Monetary Institute, a temporary institution preceding the European Central Bank, i.a., designed to create a basic framework for the functioning of the ESCB, including preliminary work for the transition to the single currency (Commission of the European Communities, 1992, pp. 18 ff., 79 ff.). Council regulations No 1103/97 (Council of the European Union, 1997a) and No 974/98 (European Council, 1998), e.g., further paved the way for the introduction of the new currency.

The process was designated to enter the **third stage** on January 1, 1999. The primary subject matter of this stage was the introduction of the euro. Subsequently, exchange rates had to be irrevocably fixed, and the responsibility for conducting monetary policy had to be inevitably²⁵ transferred from the national central banks to the ESCB, though, i.e., the ECB²⁶. (Commission of the European Communities, 1992, pp. 19 ff.; European Commission, 1995, pp. 10, 24 ff.)

The decision as to which countries should become founding members of the Union and thus actually adopt the euro was generally based on the degree of fulfillment of the **convergence criteria** laid down in the Maastricht Treaty on European Union. During the evaluation of these criteria, it was observed with increasing concern that public budget deficits were drifting apart, thus jeopardizing economic stability in the soon-to-be euro area (European Monetary Institute, 1996, pp. 22 ff.). Aimed at tackling the problem, the so-called **Stability and Growth Pact** was adopted, along with the Treaty of Amsterdam²⁷ of 1997, which specified fiscal requirements to be fulfilled by the future member states (European Council, 1997; Council of the European Union, 1997b, 1997c). The requirements comprise, in particular, a government deficit limit of 3% of GDP in the current fiscal year and an overall debt ceiling of 60% of GDP (European Union, 2006, pp. 218, 293). The European Commission was entrusted with monitoring compliance with the criteria as well as imposing sanctions where necessary (European Union, 2006,

²⁴ The ESCB's responsibility for conducting EU-wide monetary policy primarily encompasses the objective of maintaining price stability within the euro area (Commission of the European Communities, 1992, p. 14).

²⁵ The two central steering mechanisms of national monetary policy – exchange rates and interest rates – were no longer in the hands of the national central banks.

²⁶ While the monetary policy in the euro area countries had been unified since the full realization of the Economic and Monetary Union, fiscal policies remained largely decentralized. However, the Stability Growth Pact of 1997 obliged the member countries to exercise budgetary discipline, i.e., to limit both government deficits and debt (European Council, 1997; Council of the European Union 1997b, 1997c), thereby building on the convergence criteria specified in the Treaty on European Union.

²⁷ Its official name is the "Treaty of Amsterdam amending the Treaty on European Union, the Treaties establishing the European Communities and certain related acts". Entering into force on May 1, 1999, the treaty fundamentally amended the Maastricht Treaty on European Union of 1992.

pp. 84 ff.). However, the final decision-making power on whether to impose sanctions was laid within the competence of the Council (European Union, 2006, pp. 85 f.). In the end, eleven countries were admitted to join the Union at the beginning of the third stage (Council of the European Union, 1998), although six of them did not meet the criterion of a government deficit limit of 60% of GDP (European Monetary Institute, 1998, p. 25). Table 1 highlights the main steps of the roadmap toward the European Economic and Monetary Union (EMU).

Table 1: Roadmap Toward the European Economic and Monetary Union (1989–1999)

Year	Measure	Subject Matter
1989	Delors Report	road to an EMU in three stages
1990	start of stage one	i.a. internal market, cooperation and coordination, economic convergence
1992	Treaty on European Union signed	i.a. convergence criteria, single currency
1994	start of stage two	European Monetary Institute established
1997	Stability and Growth Pact adopted	primary objective: economic stability of the future EMU
1998	ESCB established	primary objective: price stability
1999	start of stage three	launch of the euro in eleven member states (book money) (2002: euro as cash money)

Source: Own representation.

Financial Services Action Plan

Following the commitment to greater integration of the EU single market by the Treaty on European Union and the reforms already implemented, the EU institutions placed increasing emphasis on forming a framework for harmonizing regulations in the single financial services market (e.g., European Council, 1998, p. 9). Hence, in 1999, the Commission of the European Communities presented the so-called **Financial Services Action Plan**²⁸ (FSAP), which aimed to ensure a timely realization of an EU single financial services market through a comprehensive set of measures²⁹ (Commission of the European Communities, 1999). Only just a year afterward, the Lisbon European Council³⁰ called for a time frame for implementing the plan by 2005 (European Council, 2000). However, to meet this cut-off date, it had to be ensured that

²⁸ Officially, the Commission Communication of May 11, 1999 was entitled “Implementing the framework for financial markets: action plan”.

²⁹ The main objectives tackled by the proposed measures comprised the creation of a single EU wholesale market, open and secure retail markets, and state-of-the-art prudential rules and supervision.

³⁰ The Lisbon European Council of 2000 adopted the so-called Lisbon Strategy, which aimed to increase the EU’s competitiveness by taking measures to improve the integration of financial markets and to create a favorable environment for innovation, to build an appropriate IT and communications infrastructure, to improve the coordination of macroeconomic policies, to tackle the problems of unemployment and poverty, and to complete the internal market in other sectors.

EU legislation could be modified much more rapidly than was previously possible (European Council, 2000, p. 18). That is why the so-called Lamfalussy Process was developed (Committee of Wise Men, 2001).

Lamfalussy Process

The **Lamfalussy Process** is a four-level regulatory approach aimed at facilitating and accelerating the lengthy EU legislative process, which initially concerned only the European securities markets. It is named after Baron Alexandre Lamfalussy³¹, the chairman of the relevant EU advisory committee, known as the Committee of Wise Men, which commenced its work in 2000. (Committee of Wise Men, 2001)

Levels 1 and 2, advocated by the committee in its proposal for regulatory reform, approach two distinct legislative layers (Committee of Wise Men, 2001, pp. 6, 19 ff.). The first one covers the agreement on framework principles by the European Parliament and the Council of Ministers under a co-decision procedure based on proposals by the Commission. The technical implementation of the regulatory framework is left to the second level. In principle, the Commission lays down the detailed implementing directives and provisions. However, to provide the Commission with assistance, the report recommended establishing two new committees – the EU Securities Regulators Committee and the EU Securities Committee (Committee of Wise Men, 2001, pp. 28 ff.). While the former shall advise on, among others, technical issues arising at the second level, the latter is intended to, ultimately, advise on the Commission's legislative proposals. The EU Securities Regulators Committee would then, at level 3, also be concerned with enhancing the collaboration among national supervisors and facilitating the consistent transposition of provisions into national laws (Committee of Wise Men, 2001, pp. 37ff.). As part of the fourth level, the EU Commission would monitor the effective enforcement of EU securities legislation in the member states (Committee of Wise Men, 2001, pp. 40 f.).

After the European Council had approved the committee's prepared final report in March 2001 (European Council, 2001a, 2001b), the European Commission began to apply the proposed solutions to the securities sector by setting up the two advisory committees – henceforth called the **Committee of European Securities Regulators** (CESR) and the **European Securities Committee** (ESC) (Commission of the European Communities, 2001a, 2001b). In response to a call from the Council of the European Union to extend the Lamfalussy process to the entire financial services sector (Council of the European Union, 2002), the Commission of the European Communities eventually followed this request by adopting a package of several measures.

³¹ Baron Alexandre Lamfalussy is former general manager of the Bank for International Settlements and President of the European Monetary Institute.

These measures included decisions to establish four new advisory committees for both the banking and the insurance and occupational pensions sector, analogous to the committees already established for the securities industry.

First, Commission Decision 2004/5/EC (Commission of the European Communities, 2003c) established the **Committee of European Banking Supervisors** (CEBS). As the equivalent of the CESR, this committee's tasks include advising the European Commission and promoting supervisory cooperation and convergence of practices in the field of banking (Commission of the European Communities, 2003c, p. 29). The second banking industry committee, the **European Banking Committee** (EBC), was established by Commission Decision 2004/10/EC (Commission of the European Communities, 2003e) and can be considered the equivalent of the ESC in the securities industry. Therefore, like the ESC, the EBC has only level 2 competencies (Commission of the European Communities, 2003e, p. 36). For the insurance and occupational pensions industry, Commission Decisions 2004/6/EC and 2004/9/EC (Commission of the European Communities, 2003d, 2003f) established the **Committee of European Insurance and Occupational Pensions Supervisors** (CEIOPS) and the **European Insurance and Operational Pensions Committee** (EIOPC), respectively. While CEIOPS – analogous to the banking and securities sectors – has second- and third-level competencies in the area of insurance and occupational pensions (Commission of the European Communities, 2003d, p. 30), EIOPC has only advisory functions at level 2 (Commission of the European Communities, 2003f, pp. 34 f.).

In addition to these four decisions establishing new committees, Commission Decisions 2004/7/EC and 2004/8/EC (Commission of the European Communities, 2003a, 2003b) introduced legislative amendments for the CESR and the ESC. In especially, the amendments involved the incorporation of undertakings for collective investment in transferable securities (UCITS) in the competencies of the securities committees. As a matter of course, this implied a redistribution of functions from the UCITS Contact Committee to the ESC and the CESR. Eventually, Directive 2005/1/EC (European Parliament/Council of the European Union, 2005) legally adopted the organizational change in the advisory bodies' structure in the financial services industry. Table 2 gives an overview of the new institutional framework.

Table 2: Organizational Structure of EU Advisory Committees in the Financial Services Sector after the Adoption of Directive 2005/1/EC

EU Financial Services Committees	<i>Securities, incl. UCITS</i>	<i>Banking</i>	<i>Insurance and Occupational Pensions</i>
<i>Regulatory Committees (Level 2)</i>	European Securities Committee (ESC)	European Banking Committee (EBC)	European Insurance and Occupational Pensions Committee (EIOPC)
<i>Committee of Supervisors (Level 3)</i>	Committee of European Securities Regulators (CESR)	Committee of European Banking Supervisors (CEBS)	Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS)

Source: Own representation.

Markets in Financial Instruments Directive 2004

By the end of 2004, the Financial Services Action Plan was largely completed (European Commission, 2004a). An important factor contributing to the achievement of the plan’s objectives was the **Markets in Financial Instruments Directive** (MiFID) 2004/39/EC (European Commission, 2004b; European Parliament/Council of the European Union, 2004). This directive essentially created an internal market for investment services and activities, allowing investors to buy or sell securities more easily and securely at a fair price. Following on seamlessly from the FSAP, a white paper on financial services set out a strategy for further convergence toward the objective of a single market in financial services, comprising the period 2005 to 2010 (Commission of the European Communities, 2005).

In essence, this means that the integration of financial markets in the EU proceeded fairly smoothly, whereas financial regulation and direct supervision remained primarily at the country level. In fact, although central advisory committees were established and the EU institutions gradually harmonized standards for financial regulation, the power to adopt and interpret these standards remained with the national supervisors.

Basel II

However, not only EU institutions launched several processes regarding the harmonization of financial services regulation and supervision. Also on the international level, political efforts were directed at accelerating the financial market integration process, which had implications for regulation and supervision in the EU as well. First and foremost, the **Basel Committee on Banking Supervision** (BCBS)³² sought to enhance the quality of banking supervision around

³² The BCBS is an international standard setter in the field of banking regulation, composed of representatives of banking supervisory authorities and central banks, created in 1974 by the central bank Governors of the Group of Ten countries (Bank of International Settlements, 2022, n.d.).

the world by working to improve its developed capital adequacy standards and policy approaches of the 1988 Basel Accord³³ (BCBS, 1999). These efforts resulted in the release of a revised framework on the “International Convergence of Capital Measurements and Capital Standards” (BCBS, 2004) – known as **Basel II**.

Basel II’s initial version was issued in 2004, while it became effective for all financial institutions in the EU member states in 2007 through the **Capital Requirements Directive** (CRD), comprising Directives 2006/48/EC and 2006/49/EC (European Commission, 2006; European Parliament/Council of the European Union, 2006a, 2006b). Like Basel I, the framework of the second accord aimed to strengthen the soundness and stability of the international banking system by sustaining capital adequacy and creating a level playing field (BCBS, 1988, 2004).

Unlike Basel I, though, Basel II was built upon three pillars rather than just one (figure 2). Pillar 1 generally reflects the minimum capital requirements of Basel I, meaning that the principle that banks’ total capital must be equivalent to at least 8% of risk-weighted assets also held true for Basel II.³⁴ However, the revised framework differed in that it focused more on the risk sensitivity of the capital adequacy requirements. Specifically, capital requirements for operational risk were included in addition to those already in place for credit and market risk, and the approaches used to measure credit risk were significantly modified. By relating to the **supervisory review process**, the newly established pillar 2, i.a., demanded banks to establish an internal capital assessment process and required supervisors to review and assess banks’ strategies for monitoring and complying with the standards as well as to intervene if considered necessary. The third pillar, **market discipline and disclosure**, was created to complement the other two pillars by calling for more frequent and comprehensive disclosure of information through external financial reporting. Overall, this means that the qualitative requirements for bank supervision were considerably strengthened. (BCBS, 2004)

³³ See BCBS (1988) for the original version of the first Basel Capital Accord – Basel I.

³⁴ Both the minimum required ratio of common equity Tier I to risk-weighted assets and the Tier I capital ratio remained unchanged as well, still amounting to 2% and 4%, respectively.

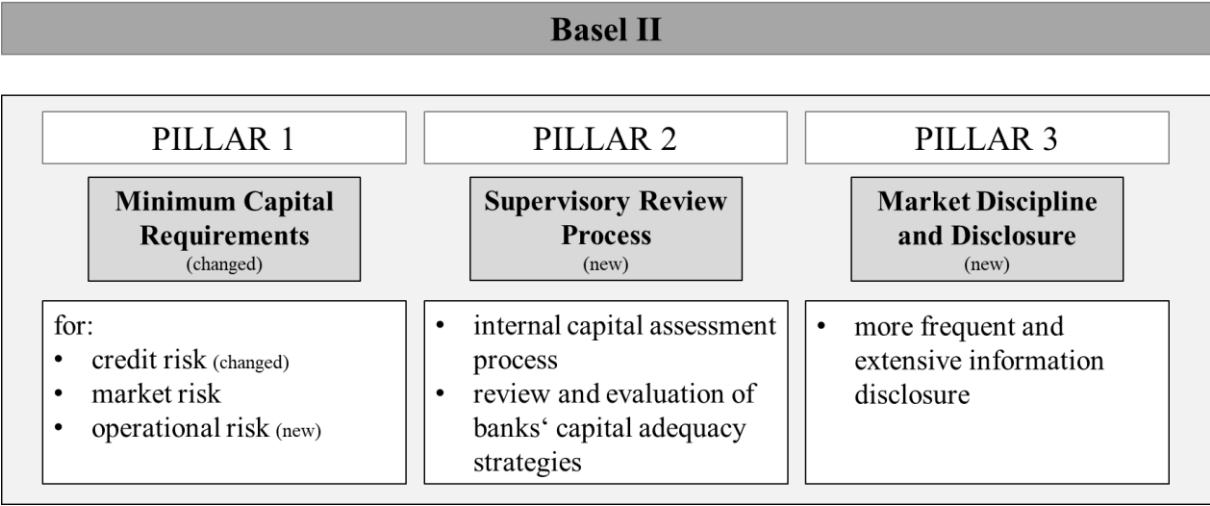


Figure 2: The Three Pillars of Basel II

Source: Own representation.

3.1.2 Post-crisis Period

However, the Basel II framework failed to prevent the onset of the global financial crisis of 2007–2008, which occurred so soon after its implementation. It was deemed imperative to review and revise not only the requirements of the second accord again (e.g., BCBS, 2009c) but also the EU regulatory regime for banks in general. To this end, the then president of the European Commission, José Manuel Barroso, set up a high-level expert group chaired by Jacques de Larosière³⁵ back in 2008 (European Commission, 2008). The group met the request to develop recommendations by February 2009 on how to reform the European financial regulatory and supervisory system, intended to tackle the shortcomings alleged at that time in order to prevent a recurrence of such a crisis in the future (de Larosière, 2009; European Commission, 2008). Particularly in light of the interdependencies among the euro area countries, the group deemed it necessary to cooperate more closely on supervisory matters (de Larosière, 2009). By taking into consideration the work of the expert group around de Larosière and essentially endorsing the proposed measures, the Commission of the European Communities initiated extensive reforms (Commission of the European Communities, 2009a, 2009b, 2009c). As a result, new supervisory institutions – and with them new regulations – were created at the EU level. In the following, the evolution of both the regulatory environment and the financial supervisory architecture in the post-crisis period is demonstrated.

³⁵ Jaques de Larosière is a former IMF managing director and governor of the French central bank.

First Regulatory Responses to the Crisis

Among the several regulatory proposals put forward by the Commission as a first response to the crisis was the revision of the **Capital Requirements Directive** for banks (CRD II) (Commission of the European Communities, 2008). The European Parliament and the Council adopted the respective Directive, which, i.a., included amendments to the capital requirements, rules on securitization, and the coordination of the supervision of multijurisdictional banks, in September 2009 (European Parliament/Council of the European Union, 2009a). Also, for example, the amendment to the **Directive on Deposit Guarantee Schemes** (European Parliament/Council of the European Union, 2009b) and the first regulation on credit rating agencies (European Parliament/Council of the European Union, 2009c) were adopted rapidly after the crisis. While the former raised the minimum level of deposit insurance and generally enhanced the harmonization of protection schemes in the EU to tackle the problem of depositor confidence, the latter established a set of prudential rules for credit rating agencies aimed at addressing recognized shortcomings in the rating process. Furthermore, the European Commission's proposal for the second revision of the **Capital Requirements Directive** (CRD III) (Commission of the European Communities, 2009d) was adopted in November 2010 (European Parliament/Council of the European Union, 2010a). The revised directive addressed, among others, re-securitization exposures and remuneration policies (European Parliament/Council of the European Union, 2010a).

A New Supervisory Architecture – the European System of Financial Supervisors

As a first step toward achieving the objectives of the expert group chaired by Jacques de Larosière, the Commission of the European Communities presented a strategic plan involving the implementation of two pillars as part of a new, more integrated financial supervisory framework (Commission of the European Communities, 2009a, 2009b). Specifically, this meant the creation of a European Systemic Risk Council (ESRC), responsible for macro-prudential oversight, on the one hand, and a micro-prudential supervisory body – the European System of Financial Supervisors (ESFS) – on the other (Commission of the European Communities, 2009a, 2009b). While the de Larosière group was quite rigorous in granting decision-making powers to these central EU bodies, the ultimately implemented regulation did not go as far as that (Dullien/Herr, 2010, pp. 8 f.). In particular, the powers of the European authorities were successively reduced from the version of the de Larosière Group through the proposals of the Commission and the Council to the final version of the European Parliament, which is presented in more detail in figure 3.

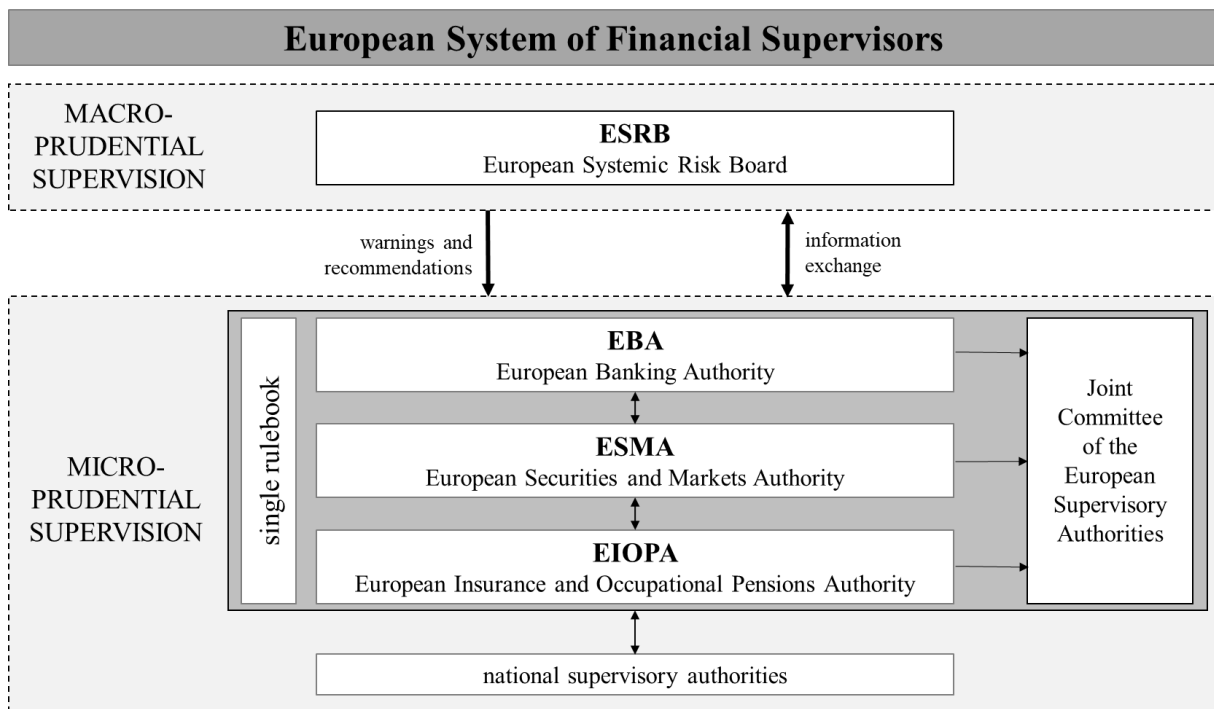


Figure 3: The European System of Financial Supervisors

Source: Own representation.

The ultimately resulting financial supervisory architecture was established in 2010 (European Parliament/Council of the European Union, 2010b, p. 5) and became operational in 2011 (European Parliament/Council of the European Union, 2010c, p. 47, 2010d, p. 83, 2010e, p. 119). As can be seen in figure 3, the **European System of Financial Supervisors (ESFS)** did not form a separate pillar, as was suggested in the de Larosière report, but created the new framework itself, thus encompassing the two proposed pillars. Accordingly, the ESFS distinguishes between a macro-prudential supervisory body – the so-called **European Systemic Risk Board (ESRB)** – and a micro-prudential supervisory pillar (European Parliament/Council of the European Union, 2010b). The latter comprises three micro-prudential European supervisory authorities, namely the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA), and the European Insurance and Occupational Pensions Authority (EIOPA), as well as the Joint Committee of the European Supervisory Authorities and the national competent authorities (NCAs) (European Parliament/Council of the European Union, 2010b, pp. 3 f.).³⁶ Despite the distinction between macro- and micro-prudential supervision, emphasis was placed on ensuring close cooperation and intensive exchange of information between and within the two pillars to take account of

³⁶ EIOPA was established by EU Regulation No 1094/2010, ESMA by EU Regulation No 1095/2010, and EBA by EU Regulation No 1093/2010 of the European Parliament and the Council.

interdependencies and exploit synergies (European Parliament/Council of the European Union, 2010b, pp. 6 ff.).

European Supervisory Authorities

The three newly established European authorities thereby replaced the regulatory committees of the third level of the Lamfalussy Process, assuming not only their advisory and coordination functions but additional competencies and powers as well (European Parliament/Council of the European Union, 2010c, pp. 13 f., 2010d, pp. 57 f., 2010e, pp. 86 f.). Specifically, this means that the new authorities, like the level 3 committees, merely work toward greater harmonization and more uniform implementation of rules concerning financial markets at the EU level (European Parliament/Council of the European Union, 2010c, pp. 21 ff., 2010d, pp. 59 ff., 2010e, pp. 93 ff.). Therefore, they may also develop technical regulatory and implementing standards and issue recommendations or guidelines (European Parliament/Council of the European Union, 2010c, pp. 22 ff., 2010d, pp. 59 ff., 2010e, pp. 95 ff.). In this way, the authorities contribute to creating a single rulebook, as recommended by the European Council (European Council, 2009). On this matter, they shall cooperate closely and regularly with the national supervisory authorities, which ultimately enforce the laws in the respective member state (European Parliament/Council of the European Union, 2010c, pp. 21 ff., 2010d, pp. 59 ff., 2010e, pp. 95 ff.). Additionally, however, the three European authorities shall play a part in the area of financial innovation and consumer protection, for example, by promoting simplicity, transparency, and fairness in the market for financial products and services, i.a., with the help of market analyses and monitoring (European Parliament/Council of the European Union, 2010c, pp. 23 f., 2010d, p. 60, 2010e, p. 96). Also, they may, for example, even participate and have a say in colleges of supervisors and, under certain conditions, impose binding decisions on national authorities and financial institutions (European Parliament/Council of the European Union, 2010c, pp. 29 f., 2010d, pp. 65 f., 2010e, pp. 101 f.). While any ongoing supervision generally remained at the national level, the ESMA took on exclusive responsibility for supervising credit rating agencies in June 2011 (European Parliament/Council of the European Union, 2011).³⁷

³⁷ See European Parliament/Council of the European Union (2010c, 2010d, 2010e) for further tasks and powers of the three supervisory authorities.

Joint Committee of the European Supervisory Authorities

In order to ensure close and regular collaboration between the three supervisory authorities, the Joint Committee of the European Supervisory Authorities was established. This forum, composed of staff from the ESAs, aims to improve the consistency of the three authorities' supervisory practices (e.g., European Parliament/Council of the European Union, 2010c, p. 40).

European Systemic Risk Board

The planned European Systemic Risk Council was already established in 2010 as the European Systemic Risk Board (ESRB) (European Parliament/Council of the European Union, 2010b). This board represents the key difference from the previous system, as there was previously no single macroprudential supervisory body. As the authority responsible for overseeing the stability of the entire EU financial system, the ESRB has been entrusted with the task of identifying systemic risks at an early stage and mitigating these risks. Therefore, the board may collect and analyze the necessary information and classify the identified systemic risks in order of priority. In the case of significant risks, it may then issue warnings and recommendations for action, subject to an “act or explain” mechanism. (European Parliament/Council of the European Union, 2010b, pp. 3, 5)

As the de Larosière group proposed, the ECB was conferred with the task of providing operational backup to the ESRB (Council of the European Union, 2010a, p. 163; de Larosière, 2009, p. 44). Therefore, members of the board, i.a., comprise representatives of the ECB, with, e.g., the ECB's president also chairing the ESRB and representing it externally (European Parliament/Council of the European Union, 2010b, pp. 6 ff.).

3.1.3 Toward Full Harmonization of European Banking

Toward a European Banking Union

Having taken action on a supervisory approach based on enhanced collaboration and common rules, the EU intended to approach further its objective of an integrated financial market by working “towards a genuine Economic and Monetary Union” (van Rompuy, 2012), including a banking union (European Commission, 2012a). One of the core goals of the banking union project was to break the financial linkages between sovereigns and banks, i.e., the **sovereign-bank nexus** (Euro Summit, 2012). Therefore, instead of greater coordination only, it was proposed to transfer supervisory competencies from national authorities to central EU institutions and to organize both bank resolution and deposit protection at the EU level (van Rompuy, 2012). Furthermore, to ensure uniform practices for financial institutions across the EU, van Rompuy (2012) envisaged the banking union to rest on the foundation of a **single rulebook**.

The project’s evolution from this initial conception to the status quo (figure 4) is considered in the following.

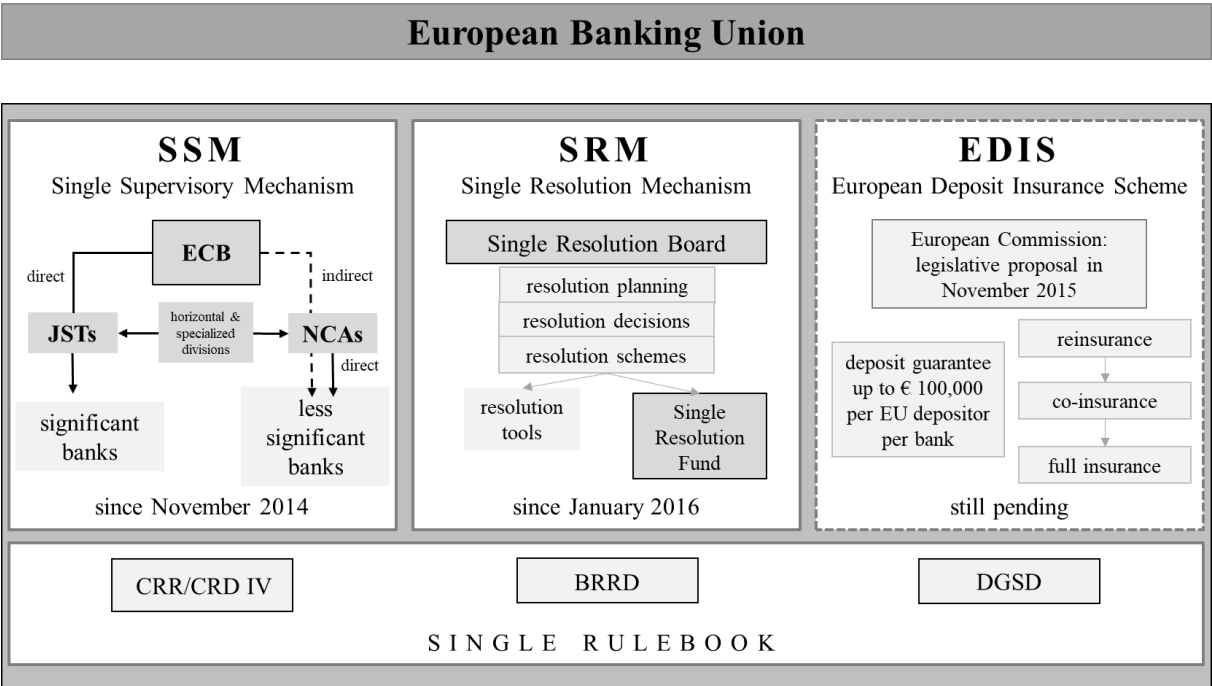


Figure 4: The European Banking Union

Source: Own representation.

Single Supervisory Mechanism

The June 2012 euro area Summit statement essentially paved the way for the creation of this integrated financial framework, although it initially focused on the setting up of a common banking supervisory mechanism (Euro Summit, 2012) – the first building block of the envisaged banking union. Based on Article 127(6) TEU, the prevailing idea was to assign to the ECB certain powers related to the prudential supervision of banks in the euro area (e.g., Euro Summit, 2012; van Rompuy, 2012, p. 4). Accordingly, the European Commission presented legislative proposals specifying certain tasks to be transferred from the NCAs to the ECB (European Commission, 2012c) and adapting the framework within which the EBA operates to these changed supervisory conditions (European Commission, 2012d). Additionally, not only provided the Commission a roadmap for completing the banking union (European Commission, 2012b) but also the Presidents of the European Council, the European Commission, the ECB, and the Eurogroup outlined steps for the achievement of a genuine Economic and Monetary Union as part of the so-called “four presidents’ report” (van Rompuy et al., 2012).

After the Council finally adopted a regulation conferring certain supervisory tasks on the ECB,³⁸ the regulation entered into force on November 3, 2013 (Council of the European Union, 2013a). In preparation for assuming its new role one year later, the ECB, in cooperation with the national authorities, initiated a comprehensive assessment of those credit institutions that would be placed under its direct supervision (ECB, 2013). Then, in November 2014, the **Single Supervisory Mechanism**, composed of the ECB and the national competent authorities, commenced its operations, with the **Capital Requirements Regulation (CRR)** and the **Capital Requirements Directive IV (CRD IV)** as the single rulebook to be applied.³⁹

The precise distribution of tasks within the SSM is, however, set out in the SSM Framework Regulation (ECB, 2014c). Accordingly, the ECB is the final supervisory authority within the SSM, responsible for its proper functioning while receiving assistance from the NCAs (Council of the European Union, 2013a, p. 75). As the prudential supervisor, the ECB's powers are fairly broad. For instance, it is authorized to impose higher capital requirements on any credit institution, justified on the grounds of averting financial risks, to conduct supervisory reviews and investigations (on-site), penalize institutions for breaches of regulations as well as grant approval for banking licenses and to withdraw them (Council of the European Union, 2013a, pp. 80 ff.). Furthermore, the ECB is responsible for assessing banks' planned acquisitions or disposals of qualifying holdings (Council of the European Union, 2013a, p. 81). In order to be able to justify the implementation of these supervisory measures and plan them in a more targeted manner, the ECB has also been entrusted with the **Supervisory Review and Evaluation Process (SREP)**, the central component of which is a risk assessment system designed to help assess banks' risk situations (German Central Bank, 2013, p. 30).

Although the ECB bears ultimate responsibility for all banks, institutions not deemed significant generally remain subject to the direct supervision of the NCAs (Council of the European Union, 2013a, pp. 75 ff.). The ECB assumes direct prudential supervision only of significant banks (Council of the European Union, 2013a, pp. 75 ff.). To ensure continuous oversight of banks classified as significant,⁴⁰ the ECB has been mandated to form a so-called **Joint Supervisory Team (JST)** for each significant bank. Each JST shall thereby consist of employees from

³⁸ It should be noted that although the regulation requires the ECB to carry out its tasks in each euro area country, only those non-euro EU countries that wish to participate can also enter into close cooperation with the ECB (Council of the European Union, 2013a, pp. 73, 77 ff.).

³⁹ The CRR (EU Regulation No 575/2011) and the CRD IV (Directive 2013/36/EU) are addressed further below.

⁴⁰ The SSM framework regulation (ECB, 2014c) defines various conditions for the definition of a significant bank, at least one of which must be met. The criteria relate to the bank's size (total assets exceeding 30 billion dollars), its economic relevance (total assets of at least 20% of home country GDP but at least five billion dollars), and its need for direct government support (applied for or received assistance from either the European Stability Mechanism or the European Financial Stability Facility). Additionally, institutions operating across borders may be declared significant by the ECB. Overall, however, at least three institutions per member country fall under the direct

both the ECB and the respective national supervisory authority, headed by an ECB coordinator, responsible for the practical implementation of the supervision (ECB, 2014c, p. 6). Sub-coordinators from the national authorities shall assist the JST coordinator in fulfilling his or her tasks, which, i.e., relate to supervisory examinations such as preparing and organizing the Supervisory Review and Evaluation Process (ECB, 2014c, pp. 6 f.). For supervisory issues requiring special expertise, the JST and the national authorities may seek additional support from the ECB's horizontal and specialized expertise functions (ECB, 2014b, p. 18). Overall thus, the SSM is based on strong cooperation and an intensive exchange of information between the national competent authorities and the ECB, thereby contributing to a common supervisory culture in the EU.

While the ECB has operational power in banking supervisory matters, the strategic direction, i.e., the development of binding technical standards and guidelines, falls primarily under the exclusive competence of the EBA. In order to ensure a coherent approach to banking supervision without duplication, the ECB is required to collaborate closely with the EBA and comply with its defined rulebook. (Council of the European Union, 2013a, pp. 73 ff.)

Single Resolution Mechanism

After the creation of the SSM as the first pillar of the planned Banking Union was finalized, the December 2012 EU summit called for proposals for the second building block to be prepared by June 2013 (European Council, 2012, p. 3). Accordingly, the already harmonized prudential supervision was intended to be complemented by a common resolution framework, including a uniform liability regime for costs incurred. The primary aim was to minimize costs for taxpayers and the real economy resulting from the resolution of failed banks and preserve financial stability (European Council, 2012, p. 4). On July 10, 2013, the European Commission put forward a legislative proposal for a **Single Resolution Mechanism** and a Single Bank Resolution Fund (European Commission, 2013), which entered into force in August 2014 (European Parliament/Council of the European Union, 2014c, p. 89). According to the regulation, the Single Resolution Mechanism comprises the newly established Single Resolution Board, having become operational in 2015, as well as representatives of the ECB, the European Commission, and the national competent authorities (European Parliament/Council of the European Union, 2014c, pp. 21, 65 f., 89).

supervision of the ECB. Furthermore, the ECB may decide at any time to classify a bank as significant so as to ensure that higher prudential standards are then applied. This means that the number of banks classified as significant is not static. Currently, 110 banks are subject to direct ECB supervision, accounting for approximately 80% of total banking assets in the euro area (as of July 1, 2022), while about 3,000 institutions are subject to national supervision (ECB, 2019, 2022c).

Prior to the creation of the Single Resolution Mechanism, the EU had already adopted the **European Bank Recovery and Resolution Directive (BRRD)** (European Parliament/Council of the European Union, 2014b), which sets out the commonly applicable rules for the recovery and resolution of banks as of 2015. The BRRD also delegates powers to the SRM, which is supposed to implement the directive's requirements (European Parliament/Council of the European Union, 2014b, pp. 293 ff., 2014c, p. 25). Among others, the regulation provides the resolution authorities with scope for more rapid intervention concerning distressed banks (European Parliament/Council of the European Union, 2014b, pp. 244 ff.).

As the central resolution authority, the **Single Resolution Board** is responsible for the proper functioning of the Single Resolution Mechanism. To fulfill this duty, it must work closely not only with the Council, the Commission, and the ECB but also with the national resolution authorities. Among others, the Board is in charge of preparing and adopting resolution plans for banks under the supervision of the ECB and for further cross-border groups since 2016. Besides, it ultimately decides whether or not to initiate a resolution after being informed by the ECB of a bank's financial distress or failure. Although the decision on whether a bank is economically viable lies, in principle, within the competence of the ECB, the Single Resolution Board may carry out the assessment itself if the ECB does not decide within three days of the board's request to do so (European Parliament/Council of the European Union, 2014c, p. 41). Following the resolution decision, the board shall adopt a resolution scheme, including its intended use of the resolution tools and potentially the **Single Resolution Fund**. If both the Council and the Commission have no objections to the elaborated scheme, the resolution of the failing bank is to be initiated within 24 hours. (European Parliament/Council of the European Union, 2014c). In order to protect public funds during the resolution process, the SRM regulation stipulates that the respective bank's losses must first be borne by the shareholders and creditors (European Parliament/Council of the European Union, 2014c, p. 39). Besides, it specifies that the Single Resolution Fund is to be financed by contributions from the banks themselves (European Parliament/Council of the European Union, 2014c, pp. 39, 77). Accordingly, the contributions to be made by individual institutions are calculated based on the amount of their liabilities⁴¹ in relation to the liabilities of all credit institutions licensed in the participating countries as well as on individual risk characteristics (European Parliament/Council of the European Union, 2014b, pp. 326 f., 2014c, pp. 76 ff.). The fund's targeted level of at least 1% of the sum of all institutions' covered deposits shall thereby be reached within eight years, i.e., by December 31, 2024 (European Parliament/Council of the European Union, 2014b, p. 325, 2014c, p. 77). The

⁴¹ In this context, with "liabilities", it is referred to liabilities excluding own funds less covered deposits.

accumulated financial resources may then only be used as a source of funding under certain conditions, for example, if the contributions from shareholders and creditors are insufficient to finance the resolution (European Parliament/Council of the European Union, 2014c, p. 54). Only as a very last resort can public financing be considered (European Parliament/Council of the European Union, 2014b, p. 287).

To prevent this from happening even in the event that the financial resources of the Single Resolution Fund are not sufficient to properly wind up a bank in difficulty, the Eurogroup and Ecofin Ministers agreed to create a **common backstop** for the Fund. In December 2013, they adopted the statement on the backstop (Eurogroup/Council of the European Union, 2013), in which they set a maximum duration of ten years to make it fully operational. This last resort instrument was aimed at securing the stability of the financial systems in the Banking Union (Eurogroup/Council of the European Union, 2013). For the purpose of protecting the interests of the taxpayers, fiscal neutrality shall be guaranteed by making the banking sector liable for the repayment of any payouts from the common backstop in the medium-term (Eurogroup/Council of the European Union, 2013). The plan to develop such a backstop was reiterated in a 2015 statement of the Council (Council of the European Union, 2015) and also in the 2016 Council Conclusions on a “Roadmap to complete the Banking Union” (Council of the European Union, 2016a). However, efforts were reinforced only after the European Commission presented a package of envisaged initiatives on December 6, 2017, in its Communication on “Further steps towards completing the Economic and Monetary Union” (European Commission, 2017b, pp. 4 ff.). In fact, as part of this package, it proposed the establishment of a **European Monetary Fund**, designed to succeed and replace the European Stability Mechanism (ESM)⁴² (European Commission, 2017b, pp. 4 ff., 2017d, pp. 26 ff.). Although essentially performing the same duties and responsibilities as the ESM, the European Monetary Fund would, i.a., additionally provide a common backstop to the Single Resolution Fund in the form of credit lines or guarantees (European Commission, 2017a, p. 1). At the 28 and 29 June 2018 Euro Summit, it was finally agreed to use the ESM as a common backstop (Euro Summit, 2018a), while the 4 December 2018 Eurogroup specified its terms of reference (Eurogroup, 2018). These were endorsed at the 14 December Summit, which also tasked the Eurogroup to work on

⁴² The ESM is an institution providing financial assistance to euro area member states in difficulty, aiming to stabilize the European financial system and prevent a credit crunch. It was set up in 2012 as a successor to the European Financial Stability Facility and the European Financial Stabilisation Mechanism, which were intended only as an interim solution to deal with the effects of the crisis. (European Stability Mechanism, 2012; Council of the European Union, 2010b)

finalizing the necessary ESM Treaty amendments by June 2019 (Euro Summit, 2018b). In November 2020, the Eurogroup agreed on the revised Treaty and committed to implementing the common backstop by the beginning of 2022, two years earlier than planned (Eurogroup, 2020).

European Deposit Insurance Scheme

While both the SSM and the SRM have already been created, one pillar of the planned Banking Union is still outstanding – a common deposit insurance system. The introduction of such a scheme was first officially called for in the **Five Presidents' Report**⁴³ (Juncker, 2015) as one measure to achieve their vision of completing the Economic and Monetary Union by 2025 at the latest.⁴⁴ Taking up on this plan, the European Commission has submitted a **legislative proposal** to amend the SRM regulation with the aim of finally establishing this third building block as well (European Commission, 2015b). Hence, the general intention is to agree upon a common **European Deposit Insurance Scheme** (EDIS) so as to provide equal protection for depositors' savings at all banks in the participating countries, thereby fostering consumer confidence and financial stability (European Commission, 2015b, p. 3; Juncker, 2015, p. 11). This is based on the consideration that, by spreading risk more broadly, a uniform deposit insurance scheme reduces the vulnerability of national schemes to large country-specific shocks and counteracts spillovers between banks and their respective sovereigns (European Commission, 2015b, p. 6; Juncker, 2015, p. 11). However, the project is still pending.

Currently, the **Deposit Guarantee Schemes Directive** 2014/49/EU (DGSD) (European Parliament/Council of the European Union, 2014a) requires all member states to guarantee deposit protection for each EU depositor individually up to an amount of **100,000 euros** per bank through national deposit guarantee schemes. While Directive 94/19/EC (European Parliament/Council of the European Union, 1994) formed the starting point for the implementation of uniform rules for national deposit guarantee schemes, the degree of harmonization achieved was still considered too low to allay customers' fears. Only after the amendment of this directive in 2009 in response to the financial crisis (European Parliament/Council of the European Union, 2009c, p. 5) was the minimum level of coverage gradually raised to the current amount of 100,000 euros per depositor, which has been binding on participating countries since December

⁴³ The five presidents who drafted the report included then European Commission President Jean-Claude Juncker, then President of the Euro Summit, Donald Tusk, then President of the Eurogroup, Jeroen Dijsselbloem, then President of the ECB, Mario Draghi, and then President of the European Parliament, Martin Schulz.

⁴⁴ Earlier drafts by the European Commission already included a proposal to create an agency that would be in charge of a new European Deposit Guarantee and Resolution Fund. However, as Germany vehemently opposed these proposals, the idea of creating a common deposit guarantee scheme was abandoned for the time being and only resurfaced in 2015. (Barker, 2012)

31, 2010. Also, the 2009 amendment shortened the time limit for compensating depositors (European Parliament/Council of the European Union, 2009c, p. 6), gradually shortened even further by the 2014 directive (European Parliament/Council of the European Union, 2014a, pp. 162 ff.). Further progress has been made on depositor information and funding arrangements (European Parliament/Council of the European Union, 2014a, pp. 150, 164 ff., 170).

While this meant a step forward compared with the original 1994 directive, great potential was still seen for harmonizing various other aspects of deposit protection across all participating countries. In particular, prevailing differences in repayment terms, financial target levels, the use of funds, and the calculation of risk-adjusted contributions due to remaining discretionary powers were regarded as obstacles to further harmonization (European Commission, 2015b, p. 20). Consequently, the Commission's 2015 proposal to amend the SRM regulation provided for uniform rules on these aspects, among others (European Commission, 2015b, pp. 36 ff.).

The proposed concept was intended to be introduced gradually, in three successive stages, from a **reinsurance** to a **co-insurance** and, finally, a full European Deposit Insurance Scheme (European Commission, 2015b, p. 27).⁴⁵ The time schedule had envisaged that the scheme's relative contribution, and thus its risk-sharing, will be successively increased starting in 2017, reaching the targeted level of **100% in 2024** (European Commission, 2015b, pp. 34 f.). To build up the necessary financial resources, a **European Deposit Insurance Fund** was meant to be established under EDIS, financed by risk-adjusted contributions from banks (European Commission, 2015b, pp. 45 ff.). The responsibility for administering the scheme was intended to be taken by the Single Resolution Board, in close cooperation with the national deposit guarantee schemes (European Commission, 2015b, p. 27).

Although the European Commission stuck to its vision of establishing the European Deposit Insurance Scheme as proposed, the project was **controversial** in both the Parliament and the Council. Differing views on the system's final design, the timetable for implementation as well as the preconditions to be met by the participating countries hampered its smooth implementation (Council of the European Union, 2016b, pp. 5 ff., 33; European Commission, 2017c, p. 10; European Parliament, 2016, p. 57 ff.). Notably Germany (still) had objections to the Commission's proposal. The country especially expressed **moral hazard risks** and **legacy issues** as a matter of concern. Therefore, on the one hand, Germany referred to the problem that a common scheme could lead to incentive problems that might tempt banks or governments to exploit the greater diversification of risks achieved by pooling resources across so many countries (BMW, i,

⁴⁵ This would mean that in the first phase, i.e., reinsurance, funding and loss coverage would only be provided in the event of a liquidity shortfall of the national schemes, and the funds would have to be repaid, while in the co-insurance phase, losses would be shared between EDIS and the national schemes in addition to liquidity assurance.

2016, p. 53; Deutscher Bundestag, 2015, 2016; SVR, 2016, p. 276). On the other hand, it pointed to the risks already existing in the banking sectors of the individual countries for which liability would be transferred to the European level if the common scheme were introduced (Deutscher Bundestag, 2015, 2016; SVR, 2015, p. 31). In light of these facts, Germany rejected a rapid introduction of EDIS and called for risk reduction in the banking sector of each country individually before discussing a transfer of these risks to all countries (Deutscher Bundestag, 2015, pp. 2 f., 2016, p. 4, 2018, p. 1).

By having agreed on a roadmap to complete the Banking Union first and on an **Action Plan to tackle non-performing loans** (NPLs) in Europe about a year later, the Council indeed placed risk mitigation measures on the agenda while postponing the decision on the design of EDIS (Council of the European Union, 2016a, 2017). In line with this, the Commission put forward a comprehensive set of actions to take on the high level of non-performing loans in the EU as part of its October 2017 Communication on completing the Banking Union (European Commission, 2017c, pp. 17 f.). Among others, such measures included the further development of secondary markets for NPLs, strengthening the powers to recover the value of collateralized loans, and improving banks' risk provisioning (Council of the European Union, 2017; European Commission, 2017c, pp. 17 f.). Further steps intended to be taken to mitigate risks in the EU banking sectors involved reforms of the national insolvency regimes as well as the introduction of both a Leverage Ratio and a Net Stable Funding Ratio as part of the revision of Basel II (Council of the European Union, 2016a, 2017; European Commission, 2017c, pp. 8 f., 15 ff.). Additionally, the objective of reducing legacy risks and precluding future risks jeopardized the weakening of the prevailing links between banks and their governments, i.a., aimed at by a proposal of developing a market for sovereign bond-backed securities (Council of the European Union, 2016a; European Commission, 2017c, p. 18).

The June 2018 Euro Summit reaffirmed the planned sequencing of action concerning EDIS, i.e., negotiations on EDIS only after legacy issues have been substantially reduced (Euro Summit, 2018a). In order to assess what has been achieved so far regarding the Council's Action Plan to tackle NPLs in Europe, the European Commission (2018a, 2018b, 2018c) presented three progress reports in 2018 and one in 2019. These reports documented the continuous decline in NPL ratios in EU banks' loan portfolios over time but also took notice of the still high levels prevailing in some member countries, among which are Greece, Cyprus, Portugal, and Italy. To prevent a renewed rise in the number and the amount of non-performing loans following the COVID-19 pandemic, in December 2020, the European Commission adopted an action plan (European Commission, 2020a). Thus, while addressing the risk problem remains high on

the agenda (see also Eurogroup, 2020; European Commission, 2021a), the High-Level Working Group established by the Eurogroup was charged with the task of further advancing on EDIS by considering subsequent suitable steps and preparing a final work plan (Eurogroup, 2018; Euro Summit, 2021). In December 2019, this High-Level Working Group suggested to implement a “hybrid model” of EDIS featuring a reinsurance system that preserves the national schemes (High-Level Working Group, 2019), while joint declarations by all three EU institutions for the years 2021 and 2022 reaffirmed the commitment to promote the establishment of a full-fledged EDIS (European Commission, 2020b, 2021b). However, the Eurogroup statement on the future of the Banking Union of June 16, 2022, which again only included the intentional focus on strengthening national deposit guarantee schemes (Eurogroup, 2022), does not indicate that a common scheme will be established anytime soon.

Banking Regulation: Innovations under Basel III

Having presented the development of the financial supervisory architecture in the post-crisis period in detail, the following section is devoted to the evolution of the EU regulatory framework in addition to the initial regulatory measures taken at the EU level. In fact, also at the international level, there was a consensus that revising the regulatory requirements was indispensable, as the prevailing Basel II banking standards were not able to maintain banking sector stability during the crisis (e.g., G20, 2008). Heads of state and government of the Group of Twenty (G20)⁴⁶ member states have been instrumental in initiating the process of implementing adequate changes to existing regulations (G20, 2008, 2009a, 2009b, 2009c). In particular, the 2008 G20 Washington Summit on Financial Markets and the World Economy launched an action plan to implement principles for reform aimed primarily at stabilizing the financial system and reducing the likelihood of a renewed financial crisis (G20, 2008). With regard to strengthening prudential banking regulation, the 2009 G20 London Summit transferred a significant share of the responsibility for formulating improved standards to the Basel Committee of Banking Supervision (G20, 2009a). As a first step, the Committee approached this task by approving enhancements to the Basel II framework in July 2009 (BCBS, 2009b). This was followed in December by the publication of a consultative document containing initial proposals for a comprehensive revision of the second Basel Accord (BCBS, 2009a), in line with the banking reform plans presented at the 2009 G20 Pittsburgh Summit (G20, 2009b). Taking into account public

⁴⁶ The Group of Twenty is an informal forum for international cooperation that was formed in 1999, comprising the European Union plus 19 states representing the leading industrialized and emerging economies. The G20 serves primarily to coordinate international economic and financial measures, but it also deals with issues related to climate policy and migration, among others.

debates and economic impact assessments⁴⁷ of the proposed reform program, the Group of Governors and Heads of Supervision⁴⁸ announced the quantitative details of its intended tightening of capital requirements in September 2010, thereby endorsing the agreement it reached on 26 July of the same year (BCBS, 2010d, 2010e). In December 2010, the Committee finally revealed the new, detailed package of measures, called **Basel III** (BCBS, 2010b, 2010c), following its endorsement at the G20 Summit in November 2010 (G20, 2010, p. 7).

This preliminary final proposal formed the basis for the Basel III regulatory framework. The essential part of the suggested package of measures is the expanded definition of regulatory capital. The objective was to raise both the **amount and the quality of capital**. This was to be achieved, among others, by requiring banks to hold a higher minimum percentage of both Tier I capital and common equity Tier I, i.e., 6% and 4.5% of risk-weighted assets instead of 4% and 2%, respectively, as well as through additional deductions and the derecognition of certain capital instruments. (BCBS, 2010b, pp. 2 f., 12 ff., 21 ff., 27 ff.)

Additionally, banks have to maintain a **capital conservation buffer** of 2.5% of core capital since 2019. This buffer is to be held outside stress phases and can be used as losses are experienced. Although it is foreseen that restrictions on capital distribution, e.g., on the payment of dividends or bonuses, are imposed in the event of a drawdown of the buffer, the normal functioning of credit institutions is to be maintained. Hence, the cushion's loss-absorbing capacity is aimed at contributing to an improved stress resilience of banks and thus to financial market stability. (BCBS, 2010b, pp. 6 f., 54 f.)

Subsequent to the introduction of the capital conservation buffer, a **countercyclical capital buffer** of up to 2.5% also became applicable, meant to be built up in economically favorable situations to mitigate the procyclical effects of risk-sensitive capital adequacy requirements (BCBS, 2010b, pp. 57 ff.). Furthermore, the BCBS proposed both a **Liquidity Coverage Ratio** (LCR) and a **Net Stable Funding Ratio** (NSFR) aimed at mitigating liquidity risk (BCBS, 2010b, p. 9). In order to curb the build-up of excessive leverage in banks and to supplement the capital requirements, the Committee had also envisaged the introduction of a **Leverage Ratio**, which sets a bank's core equity capital in relation to its total risk-weighted assets (BCBS, 2010b, pp. 60 ff.).

While the G20 states agreed on January 1, 2013 as the target date for the entry into force of the first phase of Basel III (G20, 2010, p. 7), the EU negotiations between the Council, the Commission, and the Parliament were not concluded until March 2013, meaning that the EU was

⁴⁷ See, for example, BCBS (2010a) and FSB/BCBS (2010).

⁴⁸ The Group of Governors and Heads of Supervision is the oversight body of the BCBS.

unable to meet the planned deadline (Council of the European Union, 2013b, 2013c). The result of this protracted dialogue was the so-called **CRD IV package**, comprising two pieces of law, namely the CRR and the actual CRD IV, which transposed the Basel reforms into EU law.⁴⁹ By specifying the new capital, liquidity, and leverage standards, as well as other relevant regulations from the Basel III provisions, the CRR (European Parliament/Council of the European Union, 2013b) was the centerpiece of the reform. As the Capital Requirements Regulation is directly applicable in EU member states and provides only limited scope for national options and discretions, it has contributed to increasing harmonization of supervisory regulations within the EU.⁵⁰ In contrast, the Basel III requirements contained in the CRD IV (European Parliament/Council of the European Union, 2013a) had to be transposed into national law and thus offered opportunities for differentiation. While the new capital requirements contained within these two legal acts in principle started to be applied in 2014, a gradual transition to 2019 had been envisaged to ensure smooth implementation (European Parliament/Council of the European Union, 2013a, pp. 419 ff. 2013b, pp. 268 ff.).

In December 2017, the BCBS adopted the final package of reforms to complement the first phase of the Basel III framework. While the initial stage basically comprised the capital, liquidity, and leverage ratio requirements, this latest round of reforms adjusted, among others, the calculation methods for the credit and operational risks to be backed with equity capital. Additionally, a new output floor was introduced to ensure that the capital requirements derived from banks' internal risk models reach at least a certain level of the capital requirements calculated using standardized approaches. The amended regulatory setting was subjected to a transition period from 2022 to 2027 before it should be fully implemented. (BCBS, 2017) However, due to the COVID-19 pandemic, it was decided to postpone its implementation by one year (BCBS, 2020).

While the Basel regulations are intended to improve the stress resilience of financial systems and create a more level playing field, the cost of compliance with the more complex requirements is also rising. Particularly the example of Germany shows that small and medium-sized

⁴⁹ Going beyond the Basel III agreement, the November 2011 G20 Summit endorsed a loss absorbency requirement for systemically important financial institutions, which was added to the CRD IV package. Specifically, a ratio of between 1% and 3.5% of common equity to the total risk exposure amount applies to them, depending on the respective bank's impact of default (European Parliament/Council of the European Union, 2013a, pp. 405 ff.). Also not referenced in the Basel Framework, but included in the CRD IV, is the so-called Systemic Risk Buffer. This capital buffer requirement of at least 1% of common equity Tier I on the risk-weighted exposure can be made applicable autonomously to some or all banks in each member state to cushion non-cyclical systemic and macro-prudential risks at the national level (European Parliament/Council of the European Union, 2013a, pp. 407 ff.).

⁵⁰ The EBA supplements the CRR in building up a single set of rules by developing adequate binding technical standards, i.e., regulatory technical standards and implementing technical standards (European Parliament/Council of the European Union, 2013a, 2013b).

credit institutions are disproportionately affected by the (fixed) costs of (the more stringent and complex) regulation (Hackethal/Inderst, 2015).

Harmonizing the Reporting System: FINREP 2.0

In 2011 already, the ECB initiated a project involving the creation of a new, harmonized dataset on granular credit information across all member states called Analytical Credit Datasets (AnaCredit) (ECB, 2015). While in 2014, the decision was taken to actually implement AnaCredit (ECB, 2014a), the ECB's Governing Council set the final regulation in May 2016 (ECB, 2016). Accordingly, as of September 2018, banks must report detailed information on all loans granted to legal entities exceeding 25,000 euros (ECB, 2016). Establishing such extensive credit registers aims to supplement the central banks in performing their duties, like macro-prudential supervision, monetary policymaking, or risk management (ECB, 2016, pp. 1 f.).

3.2 The Evolutionary Process of Banking Regulation and Supervision in the United States

Also for the United States, the evolutionary process of banking supervision structure and related changes in banking regulation are outlined in the following. Although the focus should again be on the last three decades, it is central to also briefly look at (much) earlier developments as these have strongly shaped today's "patchwork" banking system. Therefore, firstly, an overview is given on decisive regulatory changes affecting the banking business and structure during the period between the Civil War and the end of the 1970s, which was mainly characterized by efforts to enhance the regulatory framework. What follows is an examination of the rapid period of deregulation in the late 1980s. Subsequently, initial reactions to the crisis and the Dodd-Frank Act are investigated before, in a final step, recent regulatory changes are considered.

3.2.1 From Free Banking Toward a Tightening of Regulation: A Brief Overview

The Consequence of Bank and Branch Restrictions in the United States: The Evolution of a Complex (“Patchwork”) System of Regulatory and Supervisory Authorities

In the United States, due to permanent changes in banking legislation, periods of tightening regulation alternated with periods of (partial) deregulation. During the Civil War, the **National Currency Act** of 1863 and the **National Bank Act** of 1864⁵¹ marked the first major steps in restricting virtually free banking since around 1837⁵². In particular, the acts contributed to creating a system of national banks – assumed to facilitate warfare financing⁵³ – by allowing banks to obtain federal licenses (U.S. Congress, 1863, 1864).⁵⁴ The permission to issue national bank charters as well as to supervise and examine all nationally licensed banks was granted to the **Office of the Comptroller of the Currency (OCC)**, which was established as an independent department within the Treasury as part of the 1863 Act (U.S. Congress, 1863). Although the choice was left to the banks of whether to become federally or state-chartered, the number of federally licensed banks strongly increased in the period after the adoption of the Act (U.S. Department of the Treasury, 1931, p. 3; White, 2014, p. 11). This is partly because national charters were granted not only to newly-created banks but also to state-chartered banks that simply converted to national banks (Scott, 1977, p. 9). The conversion trend was greatly fueled by Congress’ imposition of a 10% prohibitive tax on state banknotes in 1865, providing a strong incentive to switch to a national charter (White, 2014, pp. 11 ff.).⁵⁵ However, over time, the majority of state banks became subject to less strict minimum capital and reserve requirements and less severe portfolio restrictions than national banks such that the attractiveness and, therefore, the number of state charters increased again (OCC, 1895; White, 1982).⁵⁶

⁵¹ The 1864 Act was initially known as the National Currency Act, officially entitled “An Act to provide a national currency secured by a pledge of United States bonds, and to provide for the circulation and redemption thereof”, but it was renamed “The National Bank Act” in 1874 (U.S. Congress, 1863, 1920).

⁵² The Free Banking Era started around 1837, when Michigan passed a law to that effect. New York and other states followed shortly thereafter. Pursuant to such legislation, entry restrictions were kept to a minimum and banking supervision did not receive much attention. (Dwyer Jr, 1996)

⁵³ The formation of a national banking system, complemented by the establishment of a single national currency and the creation of a stable secondary market for government bonds, as well as the imposition of taxes, was intended to raise funds necessary to finance the war (Hammond, 1961).

⁵⁴ The only banks previously chartered by the federal government were the Bank of the United States, created in 1791, and the Second Bank of the United States, created in 1816, both of which were incorporated as central banks. Their charters ended in 1811 and 1836, respectively, however. See Holdsworth/Dewey (1911) for a more in-depth insight into the historical development of these two institutions.

⁵⁵ See Huntington/Mawhinney (1910, pp. 647 f.) for the wording of the law and Selgin (2000) for a controversial discussion of the role of the tax in suppressing state bills.

⁵⁶ See the following section for a brief consideration of the argument that regulatory competition among different agencies might trigger regulatory “races to the bottom”.

As a consequence, a **dual banking system** emerged in the United States, meaning that, still today, banks can obtain their license from either the federal government or the state in which they are located (Sykes, 2019). The historical development of U.S. bank regulation may thus have contributed to the complex and fragmented regulatory and supervisory system existing today, comprising multiple supervisors and partially overlapping regulators, where the responsibility is derived from the charter type, the issuer of the charter, and sometimes also the choice of the bank (U.S. Government Accountability Office, 2016). Although state and federal agencies partly coordinate their work with one another, the duplication of effort constitutes a major issue (U.S. Government Accountability Office, 2016, p. 40 f.). Moreover, the duplication of dedicated regulatory agencies at state and federal levels became the focus of criticism due to the contention that this fragmented system of authorities fuels infightings between state and federal and between the federal regulators, leading to regulatory “races of laxity”.⁵⁷

The establishment of the government-independent **Federal Reserve System**⁵⁸, commonly known as the “Fed”, as part of the Federal Reserve Act in 1913 (U.S. Congress, 1914),⁵⁹ laid the foundation for today’s regulatory and supervisory regime. Triggered by recurrent bank runs, culminating in the Panic of 1907, and consequent bank liquidity problems, the Fed – as the central banking system of the United States – was first of all intended to act as the lender of last resort for banks short of liquidity to prevent the re-occurrence of such panic reactions threatening the stability of the financial system (Bordo/Wheelock, 2013).⁶⁰ Among others, this should be achieved by establishing the discount window the Fed was authorized to grant to its member

⁵⁷ See, for example, Scott (1977) on regulatory competition in the U.S. banking system arising due to the fact that banks can choose between national and state charters. See also Butler and Macey (1987) for a critical examination of the structure of the U.S. banking system, particularly with respect to the problem of moral hazard. By emphasizing the competitive advantages of multiple regulatory agencies, Benston et al. (1988) take a contrary view, although they also recognize the need to reform the system.

⁵⁸ The Federal Reserve System should comprise no more than twelve regional Federal Reserve Banks, one for each of the twelve designated districts, and the Federal Reserve Board, consisting of seven members appointed by the President (U.S. Congress, 1914). Incidentally, under the Banking Act of 1935, the Federal Reserve Board was renamed the Board of Governors of the Federal Reserve System, and the members were henceforth called governors (U.S. Congress, 1935, p. 23).

⁵⁹ At a much earlier stage already, the National Monetary Commission, established by the Aldrich-Vreeland Act of 1908, had investigated the history of banking legislation and institutions in the U.S. and other (developed) countries to derive appropriate proposals for improving the money and banking system, many of which can be found in the Federal Reserve Act of 1913 (Dewald, 1972; U.S. Congress, 1908). However, certain components of the Aldrich plan, such as the concept of a single central bank under the control of bankers, met with fierce opposition and were presented at an inopportune time, so the plan was discarded (Johnson, 1978, p. 19). Only after a long quest for a compromise was the law passed (Johnson, 1978, pp. 19 f.).

⁶⁰ According to the wording of the Act, the purpose of the Federal Reserve is “to furnish an elastic currency, to furnish the means of rediscounting commercial paper, to establish a more effective supervision of banking in the United States, and for other purposes” (U.S. Congress, 1914, p. 1). Thus, among other things, the Act was intended to address the problem of inelastic money supply, which was thought to have fueled panics due to its – by definition – inability to respond to demand effects that sometimes fluctuated quite sharply (Bordo/Wheelock, 2013, pp. 63 f.).

banks (Bordo/Wheelock, 2013, pp. 83 ff.).⁶¹ Thus, the Federal Reserve was allowed to lend money at the discount rate to those institutions experiencing short-term liquidity shortfalls (Board of Governors of the Federal Reserve System, 2016b, pp. 42 ff.). Furthermore, the Fed was given the power to regulate the monetary system, i.e., to conduct monetary policy through open market operations and discount rate adjustments (U.S. Congress, 1914).⁶² Providing certain banking services, like issuing notes, offering clearing services, processing checks, and transferring funds and securities to member institutions and the federal government, was also determined to be among its tasks (U.S. Congress, 1914).

According to the act, national banks with a federal charter had to become members of the Federal Reserve System, while state-chartered banks were allowed to choose whether to apply for membership (U.S. Congress, 1914). Only a minority of the state-chartered banks filed an application to the Federal Reserve, which was charged with approving it (Johnson, 1978, pp. 52 f.; U.S. Congress, 1914, pp. 9 f.). Those state-chartered banks having been granted the membership became partially subject to the regulation and supervision of the Federal Reserve, whereas national banks – despite their Fed membership – continued to be primarily regulated and supervised by the OCC (U.S. Congress, 1914).⁶³

On top of the supervision ascertained by these two federal regulatory authorities, regulation by **state regulatory agencies**, i.e., by the respective state's department of financial institutions, did and still does apply to all state-chartered banks (CSBC, 2017). For instance, the Florida Office of Financial Regulation is currently the responsible authority for the supervision of state-chartered banks in Florida (FLOFR, n.d.).⁶⁴

Shortly after the establishment of the Federal Reserve System, the **McFadden Act** of 1927 amended the Federal Reserve Act by permitting national banks to geographically expand to the extent as the rules mandate for the state banks in the respective domicile state, among others (U.S. Congress, 1927). However, while this meant the elimination of the respective inequalities

⁶¹ In hindsight, however, the discount window lending facility was not seen as an effective tool for preventing bank panics or mitigating their effects (Bordo/Wheelock, 2013, pp. 83 ff.).

⁶² In the 1930s, the Fed arrived at the opinion that setting the level of the member banks' reserve requirements could provide an additional monetary policy tool (Federal Reserve Board, 1933).

⁶³ It must be noted, however, that the distribution of regulatory and supervisory powers was not finally clarified until 1917 (Logan, 1922, pp. 115 f.).

⁶⁴ In addition to state banking regulators, state insurance commissioners or departments began to assume responsibility for regulating bank insurance activities in the latter half of the 19th century. General authority was, however, not transferred to them until the McCarran Ferguson Act of 1945. (Randall, 1999, pp. 630 ff.)

between state and federal member banks, intrastate branching continued to be impeded in those states with laws containing relevant restrictions (White, 1982, p. 38).⁶⁵

Reforms of the 1930s

More tremendous obstacles to the banking sector were created by the introduction of various regulatory restrictions and institutions under the Banking Act of 1933, commonly referred to as the **Glass-Steagall Act**, and the follow-on Banking Act of 1935 (U.S. Congress, 1933b, 1935; see figure 5).

More particularly, when it became clear in the wake of the Great Depression of 1932 that the Federal Reserve System was not effective in preventing bank runs and failures, the Banking Act of 1933 – finally passed after extensive debates – provided the legal framework for the establishment of a nation-wide insurance system for bank deposits – the **Federal Deposit Insurance Corporation**⁶⁶ (FDIC) (FDIC, 1984, pp. 33 ff.; U.S. Congress, 1933b, pp. 7 ff.).⁶⁷ Initially, it was envisaged to protect (temporarily) no more than 2,500 U.S. dollars per depositor; however, following several extensions, protection was increased to 5,000 U.S. dollars, and the entire insurance program was made permanent by the Banking Act of 1935 (Golembe, 1960, p. 193).⁶⁸ The system was to be financed by premiums to be paid by the insured banks, which were to be administered by the FDIC (U.S. Congress, 1933b, pp. 19 f.). While since 1934 all member banks of the Fed had been subject to compulsory insurance, all state-chartered institutions that had not joined the Federal Reserve System were free to decide whether they wanted to be insured, provided the approval of the FDIC (U.S. Congress, 1933b, p. 19). In addition to providing deposit insurance, the FDIC was to act as the receiver for failed (federally insured) financial institutions (U.S. Congress, 1933b, p. 12). Intending to enhance the safety and soundness of the financial system and promote consumer protection, the Act also granted examination and supervision authorities to the FDIC, thereby expanding these powers at the federal level (FDIC, 2020c; U.S. Congress, 1935, pp. 20 ff.). Specifically, the agency became the primary federal regulator of state-chartered, insured nonmembers of the Fed (U.S. Congress, 1933b).

⁶⁵ The fact that licensing authority for interstate banking was at the state level forced banks to rely primarily on and serve local communities, contributing to the fragmentation of the banking industry in the United States (Osterberg/Thomson, 1999, p. 10).

⁶⁶ The FDIC was to be governed by a three-member Board of Directors, two members of which were to be appointed by the President for six-year terms, while the third member was to be the Comptroller of the Currency (U.S. Congress, 1933b, p. 8).

⁶⁷ Under the National Housing Act of 1934, an equivalent to the FDIC was established for savings and loan institutions, namely the Federal Savings and Loan Insurance Corporation (U.S. Congress, 1934b, pp. 12 ff.).

⁶⁸ Implicitly, the FDIC, by use of its discretionary power, which it received at that time, too, often provided coverage to also the uninsured parts of deposits (Golembe, 1960, pp. 193 f.). In 1950, the FDIC's insurance limit was raised to 10,000 U.S. dollars per depositor, as specified in the Federal Deposit Insurance Act (U.S. Congress, 1950).

Besides the FDIC, the Federal Open Market Committee was also formed by the Banking Act of 1933 (U.S. Congress 1933b, p. 7). The committee was set up as part of the Federal Reserve System and entrusted with overseeing the open-market operations of the Federal Reserve Banks (U.S. Congress 1933b, p. 7). Figure 5 provides an overview of the banking regulatory structure prevailing since the enactment of the Banking Acts.

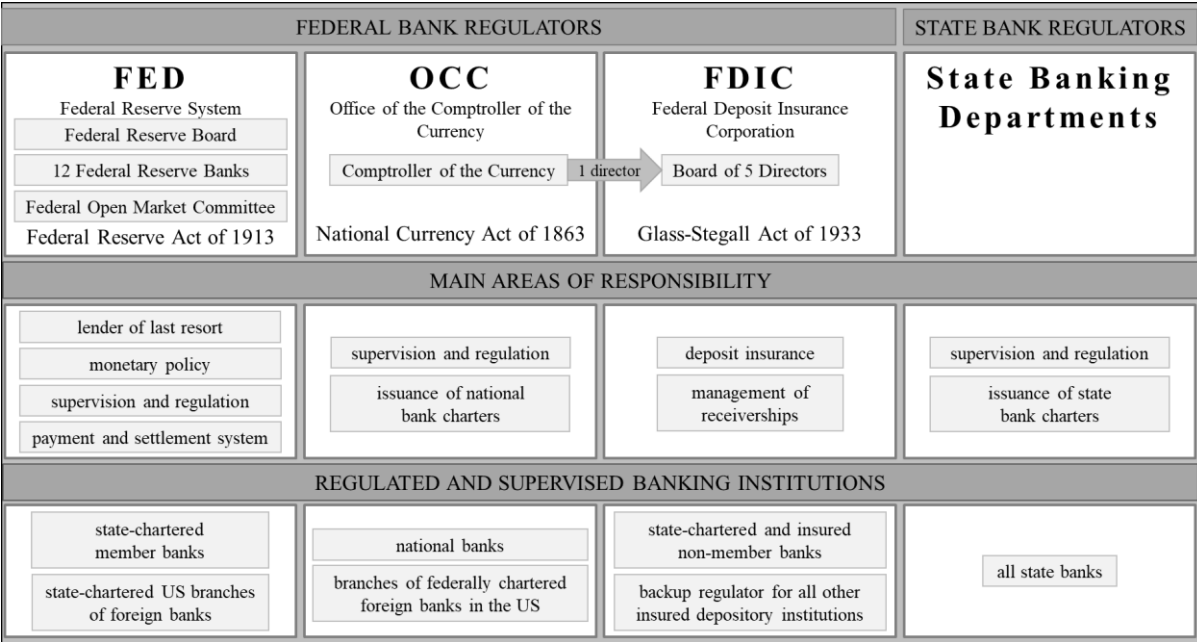


Figure 5: Primary Banking Regulators in the United States since the Enactment of the Glass-Steagall Act of 1933

Source: Own representation.

Another key component of the Banking Acts of 1933 and 1935 was the provision for the effective **legal separation of investment and commercial banking**, also in response to the Great Depression of 1932, and aimed at, among others, increasing the safety of deposits (Benston/Harland, 1990; U.S. Congress, 1933b, 1935). Accordingly, restrictions on trading and underwriting activities were imposed on Federal Reserve member banks,⁶⁹ and prohibitions for these banks to affiliate with investment banking firms were introduced (U.S. Congress, 1933b, 1935).⁷⁰

⁶⁹ Trading in and underwriting of some government bonds were largely exempt from the prohibition (U.S. Congress, 1933b).

⁷⁰ In especially, sections 16, 20, 21, and 32 of the Banking Act of 1933 implemented this effective legal separation. While section 16 dealt with the general prohibition of securities trading and underwriting by banks, section 20 prohibited the association of banks with firms principally engaged in securities dealing; section 21 generally prohibited securities trading firms from accepting demand deposits, and section 32 generally prohibited any collaboration between securities firms and banks. It must be noted, however, that these provisions did not apply to state-chartered non-Fed members and S&Ls. (U.S. Congress, 1933b)

Another provision of the Banking Acts was the enforcement of several restrictions on deposit interest payments through what became known as **Regulation Q** (Gilbert, 1986). In particular, insured banks⁷¹ were prohibited from paying interest on demand deposits, and the Federal Reserve and the FDIC were empowered to set interest-rate ceilings on time and savings deposits (U.S. Congress, 1933b, p. 22, 1935, p. 21). Fierce competition for deposit funds was perceived as a determining cause of mass bank failures in the early 1930s, as banks compensated for low-interest margins by speculatively investing in risky assets (U.S. Congress, 1966c, pp. 651 ff.).⁷² At the time of the passage of the Banking Acts, the U.S. Congress implemented several new federal supervisory agencies with jurisdiction over specific institutions and markets (see figure 6). More particularly, the **Federal Home Loan Bank Board** (FHLBB) was established by the Federal Home Loan Bank Act of 1932, i.a., tasked with supervising the newly created Federal Home Loan Banks (FHLBs), and – since the passage of the Home Owners’ Loan Act of 1933 – also federally chartered thrifts (U.S. Congress, 1932, 1933a, pp. 5 ff.). Formed by the Securities Exchange Act of 1934, the **Securities and Exchange Commission**⁷³ (SEC) was given the primary responsibility for regulating U.S. securities markets, notably to increase public confidence in these markets, which had previously been ineffectively regulated (SEC, n.d.; U.S. Congress, 1934a). In this position, the SEC was authorized to lay down regulatory requirements to be complied with by banks and banking organizations in conducting activities in certain areas related to securities, and supervise these institutions (U.S. Congress, 1934a). Among others, the SEC was required to enforce the disclosure of certain financial information about securities and their issuers (U.S. Congress, 1934a, pp. 13 ff.). Also since 1934, and as a consequence of the Federal Credit Union Act, the **Bureau of Federal Credit Unions** was qualified to act as the federal agency responsible for the supervision and chartering of federal credit unions (U.S. Congress, 1934c). Its main objective was to improve credit availability, particularly for citizens with meager resources (U.S. Congress, 1934c, p. 1216). A further regulatory agency established during this period, i.e., in 1936 by the Commodity Exchange Act, was the **Commodity Exchange Commission** (U.S. Congress, 1936). Replacing the Grain Futures Commission, the new agency was tasked with administering the regulation of agricultural commodity futures markets with the aim of, for example, combatting the frequent manipulation of commodity prices (U.S. Congress, 1936, p. 182). Additional (and successor) institutions involved

⁷¹ Originally, the provision applied only to member banks (U.S. Congress, 1933b, p. 22), but the Banking Act of 1935 extended its coverage to include all FDIC-insured banks, excluding mutual savings banks and savings and loan associations (U.S. Congress, 1935, pp. 21, 34 f.).

⁷² See Benston (1964) and Cox (1967) for discussions of the U.S. Congress’ reasons for imposing restrictions on interest payments on deposits.

⁷³ The SEC is to be headed by five commissioners appointed by the President (U.S. Congress, 1934a, p. 5).

in bank supervision in the United States were established over time and are considered in the further course of the thesis.

Main Supervisory Areas of Federal Financial Regulators	
Particular Institutions	Particular Financial Markets
<ul style="list-style-type: none"> • OCC (national banks) • FDIC (state non-member banks) FRB/Fed (state member banks) • BFCU (federal credit unions) • FHLBB (FHLBs, thrifts) 	<ul style="list-style-type: none"> • SEC (securities) • Commodity Exchange Commission (agricultural commodity futures)
MICRO-PRUDENTIAL	

Figure 6: Federal Financial Regulators in the United States since the Enactment of the Commodity Exchange Act of 1936

Source: Own representation.

The Rise of Bank Holding Companies

Over time – in particular since about the 1950s – U.S. commercial banks sought to circumvent the prohibition on combining commercial and investment banking by establishing bank holding companies (BHCs) (U.S. Congress, 1969b, pp. 5 ff.).⁷⁴ The creation of a BHC, i.e., a company that owns a controlling interest in at least one bank (holding company),⁷⁵ allowed for engaging in activities outside the geographic⁷⁶ and product constraints of banks through affiliates (Robertson, 1968, p. 100; U.S. Congress, 1969b, pp. 49 ff.). For this reason, the **Bank Holding Company Act** (BHCA) of 1956 eventually limited the options regarding the product portfolio of BHCs by allowing them and their affiliates only to engage in activities “so closely related to the business of banking [...] as to be a proper incident thereto” (U.S. Congress, 1956, p. 5), interpreted by the Board as requiring a “‘direct and significant connection’ between the activities of the proposed subsidiary and those of the subsidiary banks of the holding company” (Hayes, 1971, p. 25). This meant that BHCs were forced to divest their ownership of nonbank

⁷⁴ Although BHCs were established in the early 20th century and spread rapidly throughout the country in the 1950s, the number of BHCs did not really begin to grow until the mid-1960s (Robertson, 1968, p. 85; U.S. Congress, 1969b, p. 5).

⁷⁵ To be precise, the current definition under 12 U.S. Code § 1841 reads as follows: “[B]ank holding company means any company which has control over any bank or over any company that is or becomes a bank holding company” (Office of the Law Revision Counsel, 2021, p. 1207).

⁷⁶ BHCs could also be used as a means to circumvent state laws prohibiting branching by using subsidiaries instead of branches for geographic expansion (Robertson, 1968, p. 100).

subsidiaries as a matter of principle to comply with the legal requirements (Hayes, 1971, p. 25; U.S. Congress, 1956, pp. 3 ff.). Furthermore, BHCs were required to seek approval from the Federal Reserve for any planned bank acquisition in the company's home state (U.S. Congress, 1956, p. 2).⁷⁷ The original purpose of imposing these restrictions was to counteract the concentration of power in the commercial banking sector that was triggered by the (geographic) expansion of large BHCs and to prevent BHCs from gaining an unjustified advantage by using the deposits of their bank subsidiaries to grant loans to their nonbank subsidiaries (U.S. Congress, 1966a, p. 337).

While the 1956 legislation took into account multi-bank holding companies and their (non)bank acquisitions, it deliberately excluded single-bank holding companies from regulation, thereby continuing to grant them the option to acquire nonbanks (U.S. Congress, 1966a, p. 142).⁷⁸ In other words, the Act did not serve as a sufficient disincentive for banks to engage in nonbank activities through a one-BHC, and this was increasingly exploited (Edwards, 1968; U.S. Congress, 1969a, pp. 91 f.). In order to close this loophole, the **1970 Douglas Amendments to the BHCA** extended the BHC definition to also include one-BHCs (U.S. Congress, 1969a, pp. 91 f., 1971, p. 1760). However, the amendments also broadened the scope of legitimate nonbank activities by permitting BHCs to engage in all activities "closely related to *banking*"⁷⁹ (generally) rather than only those closely related to "*the business of banking*" (Hayes, 1971, p. 25; U.S. Congress, 1970a, p. 1765).⁸⁰ Finally, it is worth noting that regulatory gaps remained in place, being exploited primarily in the form of acquisitions of institutions that *either* accepted demand deposits *or* made commercial loans (Lobell, 1984). Such acquisitions were feasible because, under the amendment's definition, banks are institutions engaged in both lines of business,⁸¹ and holding companies with only nonbank subsidiaries are not covered by the *Bank Holding Company Act* (Felsenfeld, 1985, p. 100; U.S. Congress, 1970a, p. 1762).

⁷⁷ Although the amendment generally prohibited BHCs from out-of-state acquisitions, it authorized states to decide otherwise (U.S. Congress, 1956, p. 3).

⁷⁸ The BHCA defined a BHC as an entity "which directly or indirectly owns, controls, or holds with power to vote, 25 per centum or more of the voting shares of each of two or more banks or of a company which is or becomes a bank holding company by virtue of this Act, or (2) which controls in any manner the election of a majority of the directors of each of two or more banks, or (3) for the benefit of whose shareholders or members 25 per centum or more of the voting shares of each of two or more banks or a bank holding company is held by trustees; [...]" (U.S. Congress, 1956, p. 1). Thus, this definition includes multi-bank holding companies only, i.e., companies that own at least two banks.

⁷⁹ Activities "closely related to banking" were interpreted to comprise, roughly, all activities that were functionally related to the business of banking (Hayes, 1971, p. 25).

⁸⁰ Subsequently, as well, i.e., in the 1980s, regulators and courts became increasingly lax in interpreting the Glass-Steagall Act and continued to expand the scope of permissible banking activities (Crawford, 2011, p. 129).

⁸¹ In especially, Congress redefined the term "bank" to include those institutions "which (1) accept[...] deposits that the depositor has a legal right to withdraw on demand, and (2) engage[...] in the business of making commercial loans" (U.S. Congress, 1970a, p. 1762), thereby excluding from the definition those institutions to which only one of the two conditions applied. The Competitive Equality Amendments of 1987 intervened again by including

In addition to defining the rules for BHCs, the passage of the BHCA and its Douglas Amendments clarified the role and competencies of federal agencies with respect to the regulation of BHCs. In particular, the Federal Reserve's regulatory control scope was extended to comprise bank holding companies (U.S. Congress, 1956). Among others, the Federal Reserve was given broad discretionary power in approving consolidations involving BHCs (see above) (U.S. Congress, 1956, pp. 2 ff.).

Also the **Bank Merger Acts of 1960 and 1966**⁸² introduced antitrust standards by assigning to the respective primary federal regulator (of the surviving bank) and the Department of Justice (DOJ) the task of controlling any form of consolidation involving FDIC-insured institutions (U.S. Congress, 1960, 1966b). More specifically, the 1960 Act charged the primary federal regulator with reviewing the intended consolidation, i.a., by relying on the Department of Justice's assessment of its potential competitive effects (U.S. Congress, 1960). The 1966 amendments took further steps toward empowering the DOJ to challenge such bank consolidations by requiring the primary regulator to notify the department after approval and providing the DOJ the (time-limited) ability to take action under the antitrust laws (Guy, 1966, pp. 82 f.; U.S. Congress, 1966b, pp. 8 ff.).

Addressing the International Expansion of Banking

In an effort to curb mounting competition from foreign banks due to the ongoing internationalization of banking and an inconsistent regulatory framework applying to foreign institutions, Congress enacted the **International Bank Act of 1978** (Aharony et al., 1985, pp. 494 ff.; U.S. Congress, 1978b, pp. 608 f.). More particularly, by subjecting foreign banks' branching activities to the scope permitted by the relevant law that would also apply to the equivalent domestic bank – that is, either the law of the now-to-be-designated home state in case of a state charter or the federal law if the newly granted option to obtain a federal charter is chosen – the Act placed them on an equal footing with domestic banks in establishing branches and agencies (U.S. Congress, 1978b). However, the passage of the Act not only meant that foreign banks were subject to the same restrictions as domestic banks, such as the prohibition on acquiring offices outside their declared home state, or the requirement to hold reserves for certain liabilities, but they also received the same benefits of the applicable regulations, such as the eligibility for deposit insurance through the FDIC (U.S. Congress, 1978b).

all insured institutions in the definition of a bank, but existing so-called “nonbank banks” – those institutions meeting only one aspect of the definition – were generally grandfathered (U.S. General Accounting Office, 1986; p. 99; U.S. Congress, 1987, pp. 554 ff.).

⁸² The Bank Merger Act of 1960 was an amendment to the Federal Deposit Insurance Act, which was further amended by the Bank Merger Act of 1966.

Also in the 1970s, the regulatory agencies for both the credit union market and the futures and options markets were revised and made independent. More particularly, replacing the Bureau of Federal Credit Unions, the **National Credit Union Administration** (NCUA) was formed in 1970 to become the exclusively responsible supervisor for credit unions (U.S. Congress, 1970b; see figure 7, p. 68), while, according to the Commodities Futures Trading Commission Act of 1974, the **Commodity Futures Trading Commission** (CFTC) succeeded the Commodity Exchange Commission, taking over the task of regulating the U.S. commodity futures and options markets, but with expanded powers⁸³ (U.S. Congress, 1974; see figure 7, p. 68).

Furthermore, in 1979, the **Federal Financial Institutions Examination Council**⁸⁴ (FFIEC) was established through the Financial Institutions Regulatory and Interest Rate Control Act (FIRIRCA) of 1978 (U.S. Congress, 1978a, p. 3694; see figure 7, p. 68). It was set up to develop harmonized reporting systems and prudential standards for financial institutions supervised at the national level (U.S. Congress, 1978a, p. 3695). In order to foster this goal, the FFIEC was to, among others, provide training in the field of examination, offer supervisory recommendations, and consult with representatives of state supervisory agencies (U.S. Congress, 1978a, pp. 3695 f.). On these grounds, the FFIEC recommended, among others, the adoption of a Uniform Financial Institutions Rating System (UFIRS), which became known as CAMEL, to harmonize regulatory monitoring (FDIC, 1997b, pp. 37472 f.; Federal Reserve Bank of New York, 1979). The acronym “CAMEL” is composed of the components “Capital adequacy” (C), “Asset quality” (A), “Management quality” (M), “Earnings ability” (E), and “Liquidity” (L), which are to be assessed as part of the surveys of financial institutions, conducted by the federal supervisory agencies (Federal Reserve Bank of New York, 1979). An S, indicating “Sensitivity to Market Risk”, was added in 1997, culminating in today’s **CAMELS** (Federal Reserve Bank of New York, 1979; FFIEC, 1996). In this context, the FFIEC also contributed to establishing an approach to **capital adequacy**, including a uniform legal definition of capital (FFIEC, 1979, p. 12, 1980, p. 8 f., 1981, p. 3).⁸⁵

⁸³ For instance, the Act conferred to the CFTC exclusive jurisdiction over futures trading in *all* commodities, not just agricultural commodities (U.S. Congress, 1974, p. 1395).

⁸⁴ The FFIEC was to be composed of the Comptroller of the Currency, one of the governors of the Federal Reserve System, and the chairmen of the Board of Directors of the FDIC, the FHLBB, and the NCUA Board (U.S. Congress, 1978a, p. 3694).

⁸⁵ In 1981, the Federal regulators began taking forward the implementation of the FFIEC’s recommendations by adopting capital definitions and setting the first formal capital adequacy standards that would effectively remain relevant also after a bank’s establishment (Board of Governors of the Federal Reserve System, 1982, pp. 33 f.; FFIEC, 1981, p., 3; Wall, 1989, pp. 18 ff.).

3.2.2 The 80s and 90s: (De-)Regulation in a Dynamically Developing Financial Industry

Market-Opening and a Level-Playing Field: A Period of Rapid Deregulation

Although the restrictions on deposit interest payments enacted by Regulation Q in 1933 were thought to present an urgent need for government intervention, they did not come into effect until the 1960s, when market rates rose (Cook, 1978, pp. 14 f.). It then became clear, however, that the measures imposed were not particularly effective, as banks sought to circumvent the caps through non-price competition, especially by offering depositors services other than interest (Broadus, 1978, pp. 5, 11). Also stimulated by the incentive to bypass the restrictions, i.a., Negotiable Order of Withdrawal (NOW) accounts were created as alternatives to demand deposit accounts, with the difference, however, that interest could be paid on them (Kaufman, 1981, p. 231).⁸⁶ During the transition period from 1981 to 1986, the regulation was phased out by the **Depository Institutions Deregulation and Monetary Control Act (DIDMCA)** of 1980 (U.S. Congress, 1980, pp. 142 f.). This meant that, with the exception of the prohibition on paying interest on demand deposits, all deposit rate ceilings were to be abolished (Gilbert, 1986, p. 33). The phase-out was fuelled by high and volatile market interest rates that made capped demand deposits increasingly unattractive and thus induced a substantial withdrawal of deposits, i.e., their disintermediation (Gilbert, 1986, p. 30). Hence, the caps, envisaged initially as bank deposit subsidies, began to pose a major problem (Mertens, 2008). Removing the caps and allowing the provision of NOW accounts and equivalents nationwide (U.S. Congress, 1980, p. 146) should contribute to restoring a more level playing field among the depository institutions and to greater competition (Miller, 1978, pp. 4 ff.).

These objectives were also pursued by requiring the Federal Reserve to set (competitive) fees for the services it provided and to make these services – as well as the discount window lending facility – available to also nonmember banks, savings and loans, mutual savings banks, and credit unions, rather than only to member banks. (Kuprianov, 1985, pp. 27 f.; U.S. Congress, 1980, pp. 136, 140 f.). The DIDMCA of 1980 further provided for an extension of the Federal Reserve cash-asset reserve requirements to also nonmember banks and thrifts (U.S. Congress, 1980, pp. 133 ff.), again ensuring a more level playing field for all insured depository institutions (Butler/Macey, 1987, pp. 695 f.). Moreover, by providing an obstacle to regulatory arbitrage, this provision was aimed at counteracting the decrease in the number of Federal Reserve members and preserving the Federal Reserve's ability to conduct monetary policy properly

⁸⁶ NOW accounts were developed by the Consumers Savings Bank of Worcester, Massachusetts (Kaplan, 1972, pp. 484 ff.). In 1974, the states of Massachusetts and New Hampshire were the first to authorize all depository institutions, other than credit unions, to offer NOW accounts; the other New England States followed in 1976 (Board of Governors of the Federal Reserve System, 1977, pp. 30 ff.).

(Goodfriend/Hargraves, 1983; Miller, 1978). In addition to phasing out Regulation Q and expanding reserve requirements, the DIDMCA also raised the federal deposit insurance cap from 40,000 to 100,000 U.S. dollars per account (U.S. Congress, 1980, p. 148).⁸⁷

Responses to the Thrift and Banking Crises: Further Deregulation

The **Garn-St. Germain Depository Institutions Act** of 1982 was largely a response to the wave of insolvencies affecting the thrift sector in the early 1980s that was fuelled by the high(er) interest rate environment and the resulting disintermediation problems mentioned above (Garcia et al., 1983, pp. 4 f.; Sheng, 1996, pp. 100, 106).⁸⁸ Among others, it strengthened the powers of the federal thrifts regarding refinancing and lending opportunities in an effort to reduce their losses by improving their earnings opportunities (Garcia et al., 1983, pp. 7 ff.; U.S. Congress, 1982, pp. 1496 ff.). It allowed them, for example, to offer a newly-created money market deposit account and adjustable-rate mortgages (U.S. Congress, 1982, pp. 1501, 1545 ff.). The act further expanded the regulators' authority to bail out ailing institutions (U.S. Congress, 1982, pp. 1469 ff.). Of particular note was the Net Worth Certificates Act, which brought about greater regulatory forbearance toward troubled thrifts (U.S. Congress, 1982, pp. 1489 ff.).⁸⁹ However, the initial deregulatory measures did not prevent but only postponed the surge in thrift insolvencies, which – after a period of rapid growth – came about in the mid-1980s, when large commercial banks also found themselves in crisis (FDIC, 1997a, pp. 137 ff., 168 ff.).

Responses to the Thrift and Banking Crises: Re-Regulation

Subsequent bills aimed to improve the regulatory framework by addressing the problem of distressed institutions. For instance, the **International Lending Supervision Act of 1983**⁹⁰ required regulatory agencies to control whether banks maintained adequate capital levels (U.S. Congress, 1983, pp. 1280 f.). However, more particularly, the **Competitive Equality Banking**

⁸⁷ After the deposit insurance limit was raised to 10,000 U.S. dollars in 1950, the limit was raised steadily – to 15,000 U.S. dollars in 1966, to 20,000 U.S. dollars in 1969, and to 40,000 U.S. dollars in 1974 (FDIC, 1998a, pp. 68 f.). See White (1998) for a critical view of the evolution of deposit insurance over time, and see U.S. Congress (1979, pp. 29927 f.) for a 1979 congressional debate on the renewed increase of that limit.

⁸⁸ It must be noted that thrifts are particularly prone to interest rate risk because they rely primarily on short-term deposits while making longer-term mortgages or other fixed-rate loans (Sheng, 1996, p. 100). In addition to rising and more volatile interest rates, however, weaknesses in supervision and insurance and sharp economic downturns in the sectors of energy, agriculture, and real estate, also contributed to the emergence of the crisis (Bartholomew, 1993, pp. 5 ff.; FDIC, 1997a, pp. 138 ff., 259 ff., 1998b, p. 47).

⁸⁹ In especially, the purchase of net worth certificates authorized the respective insurer, either the FSLIC or the FDIC, to provide distressed thrifts – in exchange for promissory notes – with emergency capital that was intended to restore the institutions' compliance with regulatory net worth requirements again (U.S. Congress, 1982, pp. 1489 ff.). See U.S. Government Accountability Office (1984) for a report on the Net Worth Certificate Assistance Program.

⁹⁰ See Lichtenstein (1985) for a discussion of the International Lending Supervision Act of 1983.

Act (CEBA) of 1987 was aimed primarily at tackling some fundamental problems in the banking and thrift industries.⁹¹ Therefore, it introduced measures to recapitalize the Federal Savings and Loan Insurance Corporation⁹² (FSLIC) and tightened regulatory requirements on the thrift industry, among others (U.S. Congress, 1987, pp. 585 ff., 604 ff.).

Also containing more stringent prudential regulation, the **Financial Institutions Reform, Recovery, and Enforcement Act**⁹³ (FIRREA) of 1989 aimed to reform the regulation of the thrift sector and strengthen the regulatory and enforcement powers of regulators (U.S. Congress, 1989, p. 187). As part of the Act's requirements, the FSLIC was dissolved, and its assets and liabilities were generally transferred to the FSLIC Resolution Fund and replaced by the Savings Association Insurance Fund (U.S. Congress, 1989, pp. 219, 252, 354). The administration of the Savings Association Insurance Fund for thrifts and the also newly created Bank Insurance Fund (BIF) for banks was placed under the responsibility of the FDIC, and also certain examination, supervisory, and enforcement powers of the FDIC were extended to include insured thrifts (U.S. Congress, 1989, e.g., pp. 217 ff., 269 ff., 450 ff.). Furthermore, the resolution of insolvent thrifts and the liquidation of their assets were pushed forward by the newly established Resolution Trust Corporation (RTC) (U.S. Congress, 1989, pp. 369 ff.). The funds needed by the RTC to fulfill its tasks were since to be made available by the Resolution Funding Corporation (U.S. Congress, 1989, pp. 394 ff.). As a further point of the Act, capital requirements for thrifts were amended, i.e., enhanced, to align them with those of the national banks (U.S. Congress, 1989, pp. 303 ff., Gail/Norton, 1990, p. 1167).

Also, FIRREA generally transferred the regulatory authority over thrifts from the FHLBB, which was to be abolished, to the (newly created) **Office of Thrift Supervision (OTS)**⁹⁴ (figure 7), a bureau of the Treasury (U.S. Congress, 1989, pp. 278, 354). Until its abolition (and the transfer of tasks to the Office of the Comptroller of the Currency) in July 2011 (U.S. Congress, 2010, pp. 1521 ff.; see below), the OTS chartered, supervised, and regulated both federally and state-chartered thrift institutions – including savings banks as well as savings and loan associations – and holding companies owning thrifts⁹⁵ (U.S. Congress, 1989, pp. 192, 280 ff., 318 ff.). While it assumed full responsibility for federal thrifts in this regard, responsibility for state-chartered thrifts was to be shared with state supervisory and regulatory agencies (U.S.

⁹¹ See Huber (1988) for a discussion of the Competitive Equality Banking Act.

⁹² See footnote 67.

⁹³ It should be noted here that FIRREA contains no fewer than 371 pages of regulation.

⁹⁴ The OTS is to be headed by a director who should also be a member of the FDIC and who is to be appointed by the President for a five-year term (U.S. Congress, 1989, p. 278).

⁹⁵ Under FIRREA, and after the adoption of the policy by the Federal Reserve Board, BHCs were authorized to acquire all types of thrifts generally, but subject to the approval of the Board (Board of Governors of the Federal Reserve System, 1989, p. 37237; U.S. Congress, 1989, pp. 409 ff.).

Congress, 1989, pp. 192, 280). Compared with the powers granted to the Federal Home Loan Bank Board, the OTS' competencies were expanded with respect to, among others, conservatorship and receivership as well as supervisory enforcement powers (U.S. Congress, 1989, e.g., pp. 267, 289 ff., 267, 482 f.).

Main Supervisory Areas of Federal Financial Regulators and Organizations		
Particular Institutions	Particular Financial Markets	Coordination
<ul style="list-style-type: none"> OCC (national banks) FDIC (state non-member banks) FRB/Fed (BHCs, state-chartered member banks) 	<ul style="list-style-type: none"> SEC (securities) CFTC (commodity futures and options) 	<ul style="list-style-type: none"> FFIEC
<ul style="list-style-type: none"> OTS (thrifts) ← NCUA (federal credit unions) FHLBB (FHLBs, thrifts) --- 		
MICRO-PRUDENTIAL		MACRO-PRUDENTIAL

Figure 7: Federal Financial Regulators in the United States since the Enactment of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989, as compared to 1936

Source: Own representation.

Finally, also the **Federal Deposit Insurance Corporation Improvement Act (FDICIA)** of 1991 is worth mentioning as essentially a response to the savings and loan crisis of the 1980s, initiated by the Treasury (Docking, 2012, p. 20; U.S. Congress, 1991b, p. 6866). One of the primary purposes was to limit as much as possible the burden on taxpayers stemming from the resolution of insolvent institutions, which – due to considerable regulatory forbearance – took on heavy proportions during the S&L crisis (Barth, 1991; Bartholomew, 1991; Pike/Thomson, 1992). Therefore, the (supervisory) powers of the regulators were enhanced, while the afforded scope for regulatory intervention was reduced, the deposit insurance system was reformed, and the Bank Insurance Fund was recapitalized (U.S. Congress, 1991a, e.g., pp. 2238 f., 2240 ff., 2253 ff., 2273 ff., 2345 ff.). However, the Treasury's intended repeal of the Glass-Steagall provisions separating commercial and investment banking, a renewed attempt to expand bank powers, and the general reform of the regulatory structure failed (FDIC, 1997a, p. 103; U.S. Congress, 1991b, pp. 6866 ff.; U.S. Department of the Treasury, 1991).

To be more concrete on the implemented measures, after the enactment of FDICIA, insured institutions were subjected to more stringent reporting requirements and full-scale annual examinations, with derogations applying to certain smaller banks only (U.S. Congress, 1991a, pp. 2240 f., 2250 ff.). Bank oversight was further strengthened by prescribing the performance of annual independent audits (U.S. Congress, 1991a, pp. 2243 ff.). Also as part of the FDICIA, the **Foreign Bank Supervision Enhancement Act** expanded the Federal Reserve's responsibilities for foreign bank oversight (U.S. Congress, 1991a, pp. 2286 ff.).

While supervisory powers were enhanced, the scope for regulatory forbearance was limited by forcing regulators to take “**prompt corrective action**” (PCA) if an institution's capital fell to a predetermined level (Jones/King, 1995, pp. 491 f.; U.S. Congress, 1991a, pp. 2253 ff.).⁹⁶ Therefore, five **capital compliance categories** – ranging from “well-capitalized” to “critically undercapitalized” – were established to apply to all insured depository institutions (U.S. Congress, 1991a, p. 2253). The criteria relevant to an institution's classification were specified to comprise a leverage limit, i.e., the ratio of tangible equity to total assets and at least one other (risk-based) capital measure (U.S. Congress, 1991a, pp. 2254 f.). It was largely left to the regulators, though, to specify the latter and to determine the numerical values for defining the respective zones, the result of which was that nearly all of the institutions were deemed “well-capitalized” (Benston/Kaufman, 1997, pp. 146 ff.; U.S. Congress, 1991a, p. 2255).⁹⁷

Possible PCA measures to address identified capital deficiencies, which were also for the most part at the discretion of the regulator, included the imposition of growth limits, restrictions on dividend or management fee distributions, and the requirement for the respective institution to submit a capital restoration plan (U.S. Congress, 1991a, pp. 2255 ff.).⁹⁸ Besides, critically undercapitalized institutions could be placed in receivership or conservatorship if their capitalization did not improve within 90 days (U.S. Congress, 1991a, p. 2261). But also under certain other conditions, regulators were authorized to take steps to close a bank (U.S. Congress, 1991a, pp. 2270 ff.).

In taking such steps, the FDIC was required by the FDICIA to maximize recoveries from receiverships and to wind down a failed bank in the **least costly manner** for the insurance fund (U.S. Congress, 1991a, pp. 2273 ff.).⁹⁹ Permission was granted to the FDIC, though, to deviate from the least-cost resolution provision by invoking a so-called “**systemic risk exemption**”

⁹⁶ See FSOC (2011) for a discussion of the performance of the PCA measures.

⁹⁷ However, the tangible capital ratio's lower limit was set at 2% by the FDICIA, thus constituting the threshold value for classifying a bank as “critically undercapitalized” (U.S. Congress, 1991a, p. 2255).

⁹⁸ For a summary of the “prompt corrective action” provision, see Spong (2000, pp. 63 ff.).

⁹⁹ Prior to the FDICIA, the Federal Deposit Insurance Act required that any FDIC resolution be less costly than a deposit payoff (Sprague, 1986, pp. 24 ff.)

(Kaufman, 2002, pp. 427 f.). This exemption allowed for the possibility to resolve troubled banks in another than the least-cost manner if the failure was determined to “have serious adverse effects on broader economic conditions or financial stability” (U.S. Congress, 1991a, p. 2275). However, clear rules have been put in place for its use (U.S. Congress, 1991a, pp. 2275 f.).¹⁰⁰ If despite the least-cost resolution procedures, the resolution of a failed bank or thrift led to material cost burdens for the FDIC, another PCA provision has provided for an ex-post review with the intention of creating appropriate incentives for the regulators (Benston/Kaufman, 1997, p. 150; U.S. Congress, 1991a, p. 2263).

Aside from the provisions for strong and early regulatory intervention and least-cost resolution, but also designed to save taxpayers’ money, the FDICIA imposed limits on the amount of discount window lending eligible for troubled banks (Mishkin, 1996, p. 17; U.S. Congress, 1991a, p. 2279). Furthermore, to prevent bank risk-taking induced by regulatory forbearance and to cover for any deposit insurance losses, the **recapitalization of the Bank Insurance Fund** was advanced by authorizing the FDIC to borrow 30 billion U.S. dollars from the Treasury instead of the previous five billion U.S. dollars (Mishkin, 1996, p. 9; U.S. Congress, 1991a, p. 2236).¹⁰¹ Also as part of the FDICIA, the **Truth in Savings Act** set uniform rules for banks and thrifts regarding the disclosure of their deposits’ terms and conditions (U.S. Congress, 1991a, pp. 2234 ff.). Additional consumer provisions included the creation of incentives for banks to grant credit in socially deprived areas and the requirement for the FDIC to improve the affordability of houses (U.S. Congress, 1991a, e.g., pp. 2252, 2311 ff., 2317 ff.).

Finally, measures on the structure of deposit insurance provided for a shift to a more privately funded system, intended to reduce incentives for moral hazard (Kaufman/Wallison, 2001, pp. 12 ff., 18). Among others, the FDICIA no longer permitted the protection of uninsured depositors at failing institutions and put in place some restrictions on deposit insurance coverage (U.S. Congress, 1991a, pp. 2275, 2363 ff.). Furthermore, the Act introduced **risk-based premiums** by requiring the FDIC to implement an assessment system for insured institutions based

¹⁰⁰ Use of the exemption required, among other things, a written recommendation by a qualified majority of both the FDIC Board of Directors and the Board of Governors of the Federal Reserve to the Secretary of the Treasury, who, in consultation with the President, had to approve the existence of such an exemption (U.S. Congress, 1991a, p. 2275).

¹⁰¹ For the BIF, the FDICIA designated a benchmark of 1.25% of insured deposits to be recapitalized by the FDIC by 2006 (U.S. Congress, 1991a, p. 2347).

on their risk to the particular insurance fund, according to which the premiums are to be determined (U.S. Congress, 1991a, pp. 2345 f.).¹⁰² For instance, the FDICIA stipulated that insurance premiums of aggregate insured deposits must be increased if reserves fall below 1.25% of insured deposits and that even higher premiums must be charged if the ratio is not restored after one year (U.S. Congress, 1991a, pp. 2345 ff.).

Modernization of the Banking Industry: A New Phase of Deregulation

As financial markets gradually recovered from the crisis, the legislative focus shifted once again to deregulation. More specifically, the **Riegle Community Development and Regulatory Improvement Act** of 1994 aimed to simplify and streamline the regulation process, easing the regulatory constraints introduced in times of crisis (U.S. Congress, 1994b, pp. 2160, 2214 ff.). Among others, (more) small banks were relieved by raising the asset threshold, which led to a reduction in the required frequency of examinations for those of them that are financially sound and paved the way for a simplification of reporting obligations and certain notification requirements (U.S. Congress, 1994b, pp. 2216 ff.).¹⁰³ As part of the regulatory improvement process, the Act also strengthened the cooperation in examining institutions with more than one supervisor (U.S. Congress, 1994b, pp. 2215 ff.). Moreover, to promote community development in disadvantaged areas, it provided for the establishment of a Community Development Financial Institutions Fund (U.S. Congress, 1994b, pp. 2163, 2166).

Also in 1994, the **Riegle-Neal Interstate Banking and Branching Efficiency Act** eventually abolished large parts of the McFadden Act of 1927 after, in the 1970s and 1980s, individual states had already begun to slightly relax some of the vast amounts of limitations on bank branching (Aguirregabiria et al., 2016, pp. 4 ff.; Strahan, 2003, pp. 111 ff.).¹⁰⁴ In particular, since 1995, adequately capitalized and managed BHCs were generally permitted to undertake interstate bank acquisitions, and since 1997, interstate branching for adequately capitalized and managed banks was generally permitted (U.S. Congress, 1994a, pp. 2339, 2343 ff.).¹⁰⁵ Even

¹⁰² Although there had been efforts to implement risk-based premiums in the past, the search for an appropriate system had hindered implementation (FDIC, 1983, appendix A, 1985, p. XVI, 1986, p. XVI). See FDIC (2020a) for an outline of the history of risk-based premiums at the FDIC.

¹⁰³ Also the Economic Growth and Regulatory Paperwork Reduction Act of 1996 aimed essentially at reducing red tape by relaxing or eliminating reporting requirements and several other provisions (U.S. Congress, 1996, pp. 394 ff.).

¹⁰⁴ Earlier proposals to allow nationwide banking and branching failed to be implemented (Mulloy/Lasker, 1995, pp. 262 ff.)

¹⁰⁵ While institutions were not subject to growth restrictions when growing organically, they had to take into account limitations when growing by acquiring non-failing banks (U.S. Congress, 1994b, pp. 2340 f., 2345). For instance, they could obtain 10% of total insured U.S. deposits or 30% of a single state's total insured deposits (U.S. Congress, 1994b, p. 2345). Besides, each domiciliary state's own rules could apply to these shares (U.S. Congress, 1994b, pp. 2340, 2345 f.). See Mulloy/Lasker (1995, pp. 269 ff.) for an outline of the Act's major provisions.

though states were still authorized to enact legislation prohibiting banks from branching across state lines (U.S. Congress, 1994b, pp. 2243 f., 2354 ff.), they have hardly made any use of this provision (Brady/Purpura, 1998, pp. 237 f.). Loosening the restrictions and thereby allowing business expansions across state borders was aimed at improving the banks' ability to diversify (geographically) (Aguirregabiria et al., 2016, pp. 1 f., 6).

Deregulation was further advanced when the Financial Services Modernization Act of 1999, better known as the **Gramm-Leach-Bliley Act**, de facto abolished the separate banking system¹⁰⁶ by permitting banks, securities firms, insurance companies, and other financial service providers to operate in each other's markets and to also merge under a common financial holding company (FHC) (U.S. Congress, 1999).¹⁰⁷ In this way, affiliates of FHCs could once again engage in a broad range of financial activities intended to enhance competition in the financial services industry (U.S. Congress, 1999, pp. 1338, 1341 ff.). The supervisory framework was subsequently adjusted to reflect expected developments in the financial sector (Broome/Markham, 2000, pp. 761 ff.; U.S. Congress, 1999, pp. 1362 ff.). For example, the Board of Governors of the Federal Reserve System was designated as the "umbrella supervisor" of financial holding companies, while the relevant competent primary regulator was to serve as the supervisor of the banking, securities, or insurance affiliation, respectively (U.S. Congress, 1999, i.e., pp. 1362 ff., 1407, 1415). In addition to repealing parts of the Glass-Steagall Act, the Gramm-Leach-Bliley Act also included provisions to protect privacy in financial matters, including prohibitions on the disclosure of private customer information to non-affiliated companies, which were, however, subject to exceptions (U.S. Congress, 1999, pp. 1436 ff.).

3.2.3 Crisis and Post-Crisis Period

Pre-Crisis Period

There were few major regulatory changes in the immediate pre-crisis period, except perhaps for the **Federal Deposit Reform Act** of 2005. As its name suggests, the Act provided for reforms of the FDIC. Among others, it raised the deposit insurance coverage limit for certain individual retirement accounts to 250,000 U.S. dollars and indexed it to inflation (U.S. Congress, 2006, pp. 11 f.). Furthermore, the legislation merged the Savings Association Insurance Fund and the Bank Insurance Fund to form the **Deposit Insurance Fund** (DIF) and introduced the designated reserve ratio (DRR), replacing the formerly fixed ratio by allowing the Board of

¹⁰⁶ In particular, it repealed Sections 20 and 32 of the Glass-Steagall Act (U.S. Congress, 1999, p. 1341).

¹⁰⁷ The liberalization process was accelerated as a consequence of the approval of the merger of Citicorp and Travelers Group, the latter of which included an insurance underwriting unit that had to be divested but for which a minimum divestiture period of two years applied (Broome/Markham, 2000, pp. 756 f.).

Directors to set a reserve ratio in a range of between 1.15% and 1.5% of estimated deposits each year (U.S. Congress, 2006, pp. 9, 14).

Initial Reactions to the Crisis

Subsequent legislation worth mentioning must be considered a reaction to the financial crisis. Aimed at addressing the lack of confidence in suppliers of mortgage funding – such as the government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac – the **Federal Housing Finance Regulatory Reform Act**, as part of the Housing and Economic Recovery Act of 2008, provided for the consolidation of the former Federal Housing Finance Board, the Office of Federal Housing Enterprise Oversight, and the GSE mission office at the Department of Housing and Urban Development into the **Federal Housing Finance Agency (FHFA)**, and expanded its competences (FHFA, 2009, p. 4; U.S. Congress, 2008b, pp. 2659, 2689, 2728 ff., 2794 ff.). Among others, the unified agency was given the power to regulate the FHLBs as well as Fannie Mae and Freddie Mac, the latter two of which it put under conservatorship in 2008 (FHFA, 2019, p. 6; U.S. Congress, 2008b, p. 2659; see figure 8, p. 75).

In another immediate response to the crisis, the **Emergency Economic Stabilization Act** of 2008 (EESA) was signed into law with the goal of enhancing the stability and liquidity of the financial system by tackling the solvency problem (U.S. Department of the Treasury, 2010, p. 3; U.S. Congress, 2008a, p. 3766). The legislation included the **Troubled Asset Relief Program (TARP)**, authorizing the Treasury to purchase or guarantee up to 700 billion U.S. dollars in troubled assets of financial institutions (U.S. Congress, 2008a, pp. 3767 ff., 3780). Through the TARP **Capital Purchase Program**, for example, capital injections were provided to financial institutions that were deemed viable in the long run (U.S. Department of the Treasury, 2010, pp. 3, 7). Another TARP program – the **Supervisory Capital Assessment Program** – was set up as a comprehensive stress test for the 19 largest U.S. bank holding companies to restore public confidence in the banking system (Board of Governors of the Federal Reserve System, 2009). In addition to these two exemplary bank support programs, TARP also launched credit market programs such as the **Term Asset-Backed Securities Loan Facility** (U.S. Department of the Treasury, 2017, pp. 7 f.). Designed to provide liquidity assistance to the asset-backed securities market, its purpose was to stimulate lending to consumers and small businesses (Board of Governors of the Federal Reserve System, 2008).¹⁰⁸ Apart from TARP, the EESA also temporarily increased the amount of deposit insurance coverage per account from 100,000 to 250,000 U.S. dollars by year-end 2009 (U.S. Congress, 2008a, p. 3799).

¹⁰⁸ See the U.S. Department of the Treasury (2017) for an overview of all TARP programs.

In the aftermath of the 2007–2008 financial crisis, and following the introduction of some rapid emergency legislation, President Obama, in June 2009, pushed for a comprehensive overhaul of the financial regulatory system (The White House, 2009). A bill largely reflecting Obama’s proposals passed the House of Representatives in December 2009 (The White House, 2010; U.S. House of Representatives, 2009). In January 2010, however, the President supplemented and extended his initial proposals, i.a., by including the so-called “Volcker Rule”, resulting in an amended bill that passed the Senate in May (The White House, 2010; U.S. Senate, 2010). Finally, in July, the U.S. Congress enacted the legislation called the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, commonly referred to as the **Dodd-Frank Act** (U.S. Congress, 2010).¹⁰⁹ The legislation’s overarching goal was to promote financial stability, an objective closely related to the goals of mitigating (systemic) risk and containing the public costs of bailing out (TBTF) banks (Skeel, 2011, pp. 4 ff.; The White House, 2009, 2010; U.S. Congress, 2010). Besides Dodd-Frank, implementing the **Basel III** international framework has also been on the agenda of U.S. banking agencies in the post-crisis era. In accordance with provisions of the Dodd-Frank Act, many aspects of the third Basel Accord were included in the proposal of a Final Rule in 2013 (Office of the Comptroller of the Currency/Federal Reserve System, 2013).

The subsequent section deals with notable reform measures introduced by the Dodd-Frank Act, roughly divided into three principal categories according to their ostensible primary subject matter. Starting with the consideration of changes to the prudential supervisory architecture, for the most part designed to enhance financial stability, and continuing with consumer and investor protection tools, the chapter closes with the presentation of some major regulatory instruments aimed at mitigating (systemic) risk and containing the TBTF problem.¹¹⁰

¹⁰⁹ The legislation is named after Chris Dodd, then Chair of the Senate Banking Committee, and Barney Frank, then Chairman of the House Financial Services Committee (Skeel, 2011, pp. 3 f.). In its original form, the Dodd-Frank Act comprised no fewer than 849 pages (U.S. Congress, 2010).

¹¹⁰ In addition to regulation instruments designed to mitigate risk and contain the TBTF problem, the Dodd-Frank Act essentially abolished the remaining interstate branching restrictions (U.S. Congress, 2010, p. 1614) and also repealed the remaining component of Regulation Q – the prohibition on banking entities from offering interest-bearing transaction accounts (U.S. Congress, 2010, p. 1640).

The changes to the prudential supervisory framework, i.a., involved the creation of new agencies, the consolidation – and thus the abolition – of agencies, and amendments to some agencies’ areas of competence (see figure 8). These restructurings were meant to improve financial stability and streamline regulatory processes.

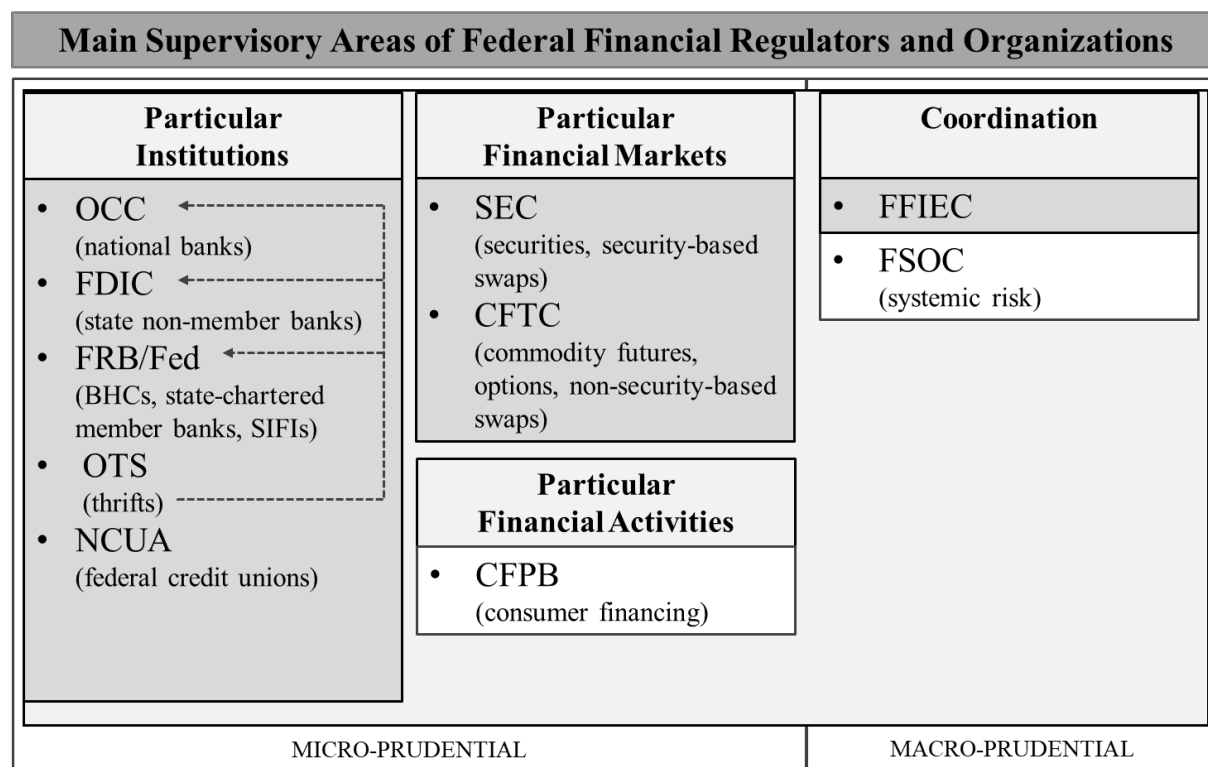


Figure 8: Federal Financial Regulators and Organizations in the United States since the Enactment of the Dodd-Frank Act of 2010, as compared to 1989

Source: Own representation.

To begin with, the Dodd-Frank Act created – roughly analogous to the European Systemic Risk Board – the **Financial Stability Oversight Council**¹¹¹ (FSOC), which was given the task of coordinating and assisting the different regulatory agencies in identifying, monitoring, assessing, and responding to systemic risks (U.S. Congress, 2010, pp. 1392 ff.). The latter in-

¹¹¹ Chaired by the Secretary of the Treasury, the FSOC should be composed of voting members from, among others, the Federal Reserve, the Consumer Financial Protection Bureau (see below), the FDIC, the FHFA, the National Credit Union Administration Board, the CFTC, the SEC, and the Comptroller of the Currency (U.S. Congress, 2010, pp. 1392 f.).

cludes the ability to recommend to the regulators more stringent prudential regulation and supervision for systemically important financial institutions¹¹² (SIFIs) to promote market discipline and mitigate these risks (U.S. Congress, 2010, pp. 1394 ff., 1403, 1408 f.).¹¹³ In its tasks, the FSOC is to receive academic support from the **Office of Financial Research** (OFR), located in the Department of the Treasury, which was made responsible for data collection, research, the development of risk measurement, and monitoring guidance, among others (U.S. Congress, 2010, pp. 1395 ff., 1413, 1415).

The Dodd-Frank Act further involved the creation of the **Federal Insurance Office** (FIO), tasked with overseeing the insurance industry nationwide and advising on insurance matters,¹¹⁴ as well as coordinating the industry's regulation (U.S. Congress, 2010, pp. 1580 ff.). However, no regulatory responsibility as such was transferred to the FIO, so regulation of insurance companies remained the responsibility of the state regulators.

While two new agencies were created, the **Office of Thrift Supervision** was merged with the OCC, the FDIC, and the Federal Reserve, i.e., its Board of Governors (FRB),¹¹⁵ and thus ceased to exist (U.S. Congress, 2010, pp. 1521 ff.). In particular, the authority to charter, supervise, and regulate federally chartered thrifts was transferred to the OCC, while the FDIC and the FRB assumed authority over state-chartered thrifts and thrift holding companies, including their subsidiaries, respectively (U.S. Congress, 2010, pp. 1521 f.).¹¹⁶

Apart from establishing new agencies and consolidating agencies, Dodd-Frank further amended some agencies' areas of competence by providing them with new powers or transferring powers between agencies. Among others, the competencies of the **Federal Reserve** regarding SIFIs were enhanced, effectively reducing the powers of the OCC, and contributing to an increasingly complex division of responsibilities (U.S. Congress, 2010, pp. 1423 ff.). More particularly, the Fed was made responsible for applying more stringent rules to the supervision of SIFIs (U.S. Congress, 2010, pp. 1423 ff.). In this capacity, the Fed was required to request these institutions

¹¹² In particular, systemically important financial institutions include large, interconnected nonbank financial institutions and BHCs with assets of at least 50 billion U.S. dollars whose annual gross revenues or whose consolidated assets stem from financial transactions at a share of at least 85 % (U.S. Congress, 2010, pp. 1391 f., 1403, 1423). Also included, however, are financial firms designated by the FSOC as systemically important, regardless of their charter or, incidentally, by the council to which the legislation granted this authority as well (U.S. Congress, 2010, p. 1403).

¹¹³ The FSOC's requests can be rejected by the respective regulatory agency but must be justified in a written report (U.S. Congress, 2010, p. 1409).

¹¹⁴ For example, the FIO may recommend that the FSOC place certain insurers under the supervision of the ECB (U.S. Congress, 2010, p. 1580).

¹¹⁵ The acronym – FRB – was retained for the Board of Governors of the Federal Reserve System after its renaming.

¹¹⁶ Transferring the supervisory activities of the OTS also meant that the Federal Reserve became responsible for supervising several insurers, namely those with depository institutions (Webel, 2017, p. 27)

to periodically submit what is known as a “living will” – a company-specific plan for rapid and orderly resolution in the event of severe financial difficulty or failure (U.S. Congress, 2010, p. 1426). Also, for example, the Federal Reserve has been entrusted with the task of providing for more rapid remediation of the SIFIs by, among others, setting minimum capital and liquidity thresholds (U.S. Congress, 2010, p. 1432). Possible remediation measures made available to the Fed range from restrictions on acquisitions and asset growth to management changes and asset sales (U.S. Congress, 2010, p. 1432).¹¹⁷ In order to hinder large, complex institutions that had received TARP funds from evading the (more stringent) Fed supervision by abandoning their banking subsidiaries and changing their charters, the Dodd-Frank Act adopted the so-called “Hotel California” provision (U.S. Congress, 2010, pp. 1406 ff.).¹¹⁸ Moreover, the legislation authorized the Federal Reserve to restrain the growth of or to downsize financial companies that pose a stability risk (U.S. Congress, 2010, pp. 1632 ff.).

Dodd-Frank also expanded the competencies of the **CFTC**, which became charged with the additional task of regulating and supervising non-security-based swaps (U.S. Congress, 2010, pp. 1641 ff., 1658 ff., 1801 f.). In contrast, regulation of derivatives involving underlying securities would fall under the responsibility of the **SEC** (U.S. Congress, 2010, pp. 1672 ff., 1801 f.). Beforehand, both the Futures Trading Practices Act of 1992 and the Commodity Futures Modernization Act of 2000 had generally exempted over-the-counter (OTC) derivatives trading from regulation (U.S. Congress, 1992, 2000).

Not only was the Securities and Exchange Commission given regulatory authority over the derivatives market, but the Dodd-Frank Act extended its regulatory capacity to also include credit rating agencies and hedge funds (U.S. Congress, 2010, pp. 1570 ff., 1872 ff.). Among others, the SEC was required to direct its efforts toward examining Nationally Recognized Statistical Rating Organizations as well as toward reporting and disclosing relevant information (U.S. Congress, 2010, pp. 1876 ff.). The Office of Credit Ratings was created at the SEC to assist the Commission in its tasks (U.S. Congress, 2010, p. 1877). Besides, to improve the protection of investors, the Dodd-Frank Act created, among others, the Investor Advisory Committee and the Office of Investor Advocate, tasked with advising and assisting the SEC in this regard (U.S. Congress, 2010, pp. 1822 ff., 1830 ff.). Further improvements in consumer and investor protection introduced under Dodd-Frank are considered in the following.

¹¹⁷ Similarities can be seen with the FDICIA’s PCA approach, which had been made applicable to all insured banks and thrifts.

¹¹⁸ The provision was named after the Eagles’ song “Hotel California” because it contains a passage describing the situation where certain SIFIs are allowed to change the charter but not the supervisor: “You may check out any time you like, but you can never leave.” (Broome, 2011, p. 78).

As a new, independent agency within the Federal Reserve System, the **Consumer Financial Protection Bureau** (CFPB) was formed in response to the predatory lending practices that became increasingly common in the run-up to the financial crisis (Kennedy et al., 2012, pp. 1144 f.; U.S. Congress, 2010, p. 1964).¹¹⁹ Its tasks were to include, as the name implies, the enforcement of various laws and regulations to protect consumers in the financial sector, but it was also vested with supervisory and rulemaking powers (U.S. Congress, 2010, pp. 1955 ff.; see figure 8, p. 75).¹²⁰ Prior to the Bureau's creation, different federal agencies shared the relevant tasks and powers, so the transfer of most of their competencies and the delegation of additional powers to the CFPB has contributed to the consolidation and strengthening of consumer protection regulation in the financial sector (U.S. Congress, 2010, pp. 1964 ff., 2035 ff.).

The **Mortgage Reform and Anti-Predatory Lending Act** is one of the Acts being brought under the purview of the CFPB (U.S. Congress, 2010, pp. 2136 ff.). By restricting mortgage lending procedures, the legislation especially addressed the problem of predatory lending (U.S. Congress, 2010, pp. 2138 ff.). For instance, it required lenders to base residential mortgage originations on a customer's ability to repay and to inform their borrowing customers of the terms of the loan agreement (U.S. Congress, 2010, pp. 2139, 2155).

In order to better protect depositors as well, the Dodd-Frank Act introduced changes to the federal **deposit insurance** system. In particular, the Act provided for an increase in the DIF's minimum DRR from the previous 1.15% to 1.35% by 2020 (U.S. Congress, 2006, p. 14, 2010, p. 1539). The actual long-term reserve ratio target, set by the FDIC Board, was raised from 1.25% in 2010 to 2% in 2011 (FDIC, 2009, 2010). Instead of charging fees based only on the risk of each institution's insured deposits, the assessment base for the DIF was redefined to include total liabilities¹²¹ (U.S. Congress, 1950, p. 5, 2010, p. 1538). This amendment shifted part of the burden from small community banks, whose primary funding sources are deposits, to major (investment) banks, especially those with only minimal deposits (Hein et al., 2010, p. 33). Additionally, Dodd-Frank permanently increased deposit insurance for FDIC-insured institutions to 250,000 U.S. dollars per depositor (U.S. Congress, 2010, p. 1540).

¹¹⁹ See U.S. Department of the Treasury (2009, pp. 55 ff.) for the regulatory reform plan proposing the creation of this agency.

¹²⁰ Although the CFPB has been given broad authority, the FSOC can override it in individual cases (U.S. Congress, 2010, pp. 1985 ff.).

¹²¹ In fact, the new valuation was based on average consolidated total assets less average tangible equity (U.S. Congress, 2010, p. 1538).

To **improve access to mainstream financial products and services**, particularly for low- and moderate-income people, the Dodd-Frank Act also introduced measures designed, among others, to discourage the target group from turning to products offered by predatory lenders (Johnson, 2012, pp. 721 f.; U.S. Congress, 2010, pp. 2129 ff.). In particular, it provided for three programs to be implemented on a voluntary basis, namely, the creation of incentives for the target group to open an account at a depository institution; the incentivization of financial institutions to offer micro-loans with attractive interest rates; and the provision of additional financial support for community development including loans offered on this account (U.S. Congress, 2010, pp. 2130 ff.).

Apart from the measures taken to protect borrowers and depositors, the imposition of new requirements for **credit rating agencies** contributed to increased investor protection (U.S. Congress, 2010, pp. 1872 ff.). Aimed at mitigating the risk of conflicts of interest, the regulatory reform provided for more rigorous internal controls, expanded agency accountability, and demanded more transparency (U.S. Congress, 2010, pp. 1872 ff.). For example, the Act's provisions subjected the credit rating agencies to greater disclosure regarding their rating processes and the credit rating itself (U.S. Congress, 2010, pp. 1878 ff.).

Tackling (Systemic) Risks and the TBTF problem

In addition to adjustments to the financial architecture and the introduction of consumer and investor protection tools, Dodd-Frank, with the intention of containing (systemic) risks, introduced stricter rules and requirements, i.e., for SIFIs, and took measures to curb the TBTF (bailout) problem.

First of all, aiming to reduce incentives for high, inappropriate risk-taking geared toward short-term success, the Dodd-Frank Act established new requirements for **executive compensation and corporate governance** (U.S. Congress, 2010, pp. 1899 ff.). These relate to say-on-pay votes¹²² and proxy access for shareholders, disclosures, and the independence of compensation committees, among others (U.S. Congress, 2010, pp. 1899 ff., 1915).

In order to change the incentive structure for financial firms involved in the **asset-backed securitization process**, Dodd-Frank initiated reforms that, among others, required securitizers to retain some “skin in the game” by retaining a portion of the long-term risk of each product (U.S. Congress, 2010, pp. 1890 ff.).¹²³

¹²² See Lee and O’Neill (2010) for an analysis of Dodd-Frank’s “say-on-pay provisions”.

¹²³ See Levitin et al. (2012, pp. 161 ff.) for a discussion of the “skin in the game” requirement.

Risky activities were also addressed in section 619 of the Dodd-Frank Act, commonly referred to as the **Volcker Rule**¹²⁴ (U.S. Congress, 2010, pp. 1620 ff.). In especially, the Rule was intended to mitigate the stability problem of financial markets by combating (speculative) activities that pose (systemic) risks and enhancing the protection of taxpayers' money, among others (U.S. Congress, 2010, p. 1621). To achieve this, the Volcker Rule broadly prohibited banks, their affiliates, and BHCs from **proprietary trading activities** and "certain relationships with hedge funds and private equity funds" (U.S. Congress, 2010, p. 1620). This meant that banking entities faced restrictions on trading for their own account for profit-making and on owning hedge funds and private equity funds, whereas, for example, market-making-related activities continued to be permitted to some extent (U.S. Congress, 2010, pp. 1620 ff.).¹²⁵ In order to clearly distinguish between prohibited and permitted activities, i.e., speculative and market-making or hedging activities, several limitations and requirements were introduced for the latter (U.S. Congress, 2010, pp. 1623 ff.).¹²⁶

As was touched upon already in the section on changes to the prudential supervisory framework, the regulation of shadow banking activities was also placed on the Dodd-Frank Act's agenda to some extent. For example, the Act included provisions mandating stricter **regulation of derivatives** (U.S. Congress, 2010, pp. 1675 ff., 1762 ff.). More particularly, it required most OTC derivatives to be centrally cleared and traded through (regulated) exchanges, with prices having to be disclosed (U.S. Congress, 2010, pp. 1675 ff., 1762 ff.). However, exemptions were put in place for certain market players,¹²⁷ and regulators were given discretion in defining swaps that must be cleared (U.S. Congress, 2010, pp. 1676 ff., 1762 ff.). In contrast, all swaps, without exception, were subject to the Act's reporting requirements (U.S. Congress, 2010, pp. 1679,

¹²⁴ The Volcker Rule was named for Paul Volcker, former Chairman of the Federal Reserve and former Chairman of the Economic Recovery Advisory Board under President Obama (Committee on Banking, Housing, and Urban Affairs, 2010, pp. 2 ff.).

¹²⁵ The details of the Volcker Rule were approved by the regulatory authorities, namely the Board of Governors of the Federal Reserve System, the FDIC, the OCC, the SEC, and – separately – the CFTC in December 2013 (CFTC, 2014; Office of the Comptroller of the Currency, Board of Governors of the Federal Reserve System et al., 2014a). It could be argued that the Volcker Rule – by contributing to a general separation of commercial banking and proprietary trading – has brought about a partial restoration – that is, a modern form – of the strict separation between commercial and investment banking as under the Glass-Steagall Act (Merkley/Levin, 2011, pp. 538 f.).

¹²⁶ See the speech of John Ramsey (2014), then Acting Director of the SEC's Division of Trading and Markets, for comments on the market-making exemption. Apart from market making, it also remained generally permitted to trade U.S. government debt instruments, to undertake certain underwriting transactions, to trade on their clients' behalf, and to engage in trading for risk-mitigating hedging purposes, among others (U.S. Congress, 2010, pp. 1623 ff.). Moreover, in an Interim Final Rule adopted in 2014, regulators amended the original Final Rule to allow banks to continue to hold interests in certain collateralized debt obligations primarily backed by trust-preferred securities issued by small community banks (Office of the Comptroller of the Currency, Board of Governors of the Federal Reserve System et al., 2014b).

¹²⁷ These include transactions involving commercial end users, i.e., non-financial entities that use swaps to hedge or mitigate commercial risk (U.S. Congress, 2010, pp. 1679, 1765).

1685 ff., 1765, 1784 ff.).¹²⁸ Because swap dealers and major market participants were considered comparatively risky to the derivatives market, the Dodd-Frank Act imposed several registration, capital, and margin requirements specifically on them (U.S. Congress, 2010, pp. 1703 ff.).¹²⁹ This first-time introduction of comprehensive regulation for the globally interconnected OTC derivatives market aimed to increase its transparency and mitigate systemic risks (Geithner, 2009). As for the **hedge fund** market, Dodd-Frank introduced a registration requirement with the SEC for advisors to hedge funds above a certain size (U.S. Congress, 2010, pp. 1571, 1576 f.). Apart from the registration requirement, the Dodd-Frank Act subjected hedge fund advisors to enhanced disclosure requirements to facilitate the assessment of systemic risk and protect investors (U.S. Congress, 2010, pp. 1571 ff.).

Aimed at tackling the risks inherent in the banking books, the **Collins Amendment** to the Dodd-Frank Act required agencies to establish **leverage and risk-based capital requirements** for all insured depository institutions¹³⁰, BHCs, and Fed-supervised nonbank financial firms, except for certain small institutions (U.S. Congress, 2010, pp. 1435 ff.).¹³¹ Under the amendment, these must not be lower than the standard requirements in effect before the Act's adoption – which would essentially be the capital level required under Basel I (BCBS, 2012, p. 8; U.S. Congress, 2010, p. 1436).¹³² This is because reservations by the FDIC (see, for example, Bair, 2006; U.S. Government Accountability Office, 2007, pp. 70 ff., 98 f.) and several academics (e.g., Tarullo, 2006) about Basel II¹³³ prevented its (timely) implementation. Thus, at the time of the financial crisis all but the largest, internationally active banking institutions¹³⁴ were still subject to the fixed risk weights of the Basel I Capital Accord (BCBS, 2012, pp. 8 ff.).

In addition, the Dodd-Frank Act included recommendations for the Federal Reserve to establish more stringent rules for capital, liquidity, risk management, and other areas that would apply to certain large financial companies, i.e., to institutions with 50 billion U.S. dollars or more in total assets and those that could pose systemic risks as according to the FSOC (U.S. Congress,

¹²⁸ See SEC (2010) for its proposed rule on reporting requirements for security-based swaps.

¹²⁹ The Commodities Futures Trading Commission and the Securities and Exchange Commission (2012) have clarified what is meant by a swap dealer and a major swap participant.

¹³⁰ FHLBs have been exempted from this requirement (U.S. Congress, 2010, p. 1437).

¹³¹ See Office of the Comptroller of the Currency et al. (2011) for the Final Rule implementing this requirement.

¹³² The U.S. fully implemented the Basel I Capital Accord in 1992, as did the EU (Getter, 2014, p. 2).

¹³³ Objections focused on the (much lower) level of capital requirements, the complexity and (lack of) consistency of the regulatory framework, and the compliance cost burden on small (community) banks (Bair, 2006, 2012, pp. 27 ff.; Tarullo, 2006).

¹³⁴ The regulatory agencies subjected these so-called “core” banks to Basel II’s most advanced approaches for calculating their credit risk while leaving the decision in the hands of other banks to opt in, with the final rule having been set to become effective in April 2008 (BCBS, 2012, p. 8; Office of the Comptroller of the Currency et al., 2006, 2007). However, those banks required to apply the advanced approaches – 17 as of end-2011 – could delay compliance by applying for a waiver (BCBS, 2012, pp. 8, 16; Office of the Comptroller of the Currency, 2007, p. 3).

2010, pp. 1403 ff., 1423 ff.). These included several stress test requirements introduced in November 2011 through the Comprehensive Capital Assessment Review program (Federal Reserve System, 2011; U.S. Congress, 2010, p. 1430).

Finally, Dodd-Frank also imposed changes to the **resolution regime**. Particularly, with the aim of promoting the orderly resolution of (TBTF) banks, the **Orderly Liquidation Authority** (OLA) – a special resolution process – was enacted (U.S. Congress, 2010, pp. 1442 ff.). Modeled on the provisions for depository institutions established under the FDICIA, the OLA provision delegated authority to the FDIC concerning the liquidation of financial firms, including BHCs, nonbank financial institutions, and companies primarily engaged in financial activities¹³⁵ whose failure would pose a systemic risk (U.S. Congress, 2010, pp. 1442 ff.). Among others, the FDIC was authorized to act as receiver of the particular company, provided that the FRB and the FDIC Board form a qualified majority to submit a proposal to the Secretary of the Treasury, who, in consultation with the President, must verify compliance with all criteria (U.S. Congress, 2010, pp. 1450 f.). As the receiver, the FDIC was given broad powers (U.S. Congress, 2010, e.g., pp. 1460 ff.). For example, it was authorized to impose losses not only on shareholders but also on holders of unsecured debt (U.S. Congress, 2010, p. 1463). The intention of the OLA provision was to contribute to the mitigation of risk and to rule out the option that banks be bailed out with taxpayers' money (U.S. Congress, 2010, pp. 1454 f., 1459, 1518). The provision included the creation of the **Orderly Liquidation Fund**, the funds of which would be made available to the FDIC for OLA purposes (U.S. Congress, 2010, p. 1506). Unlike the Deposit Insurance Fund, the fund is not to be pre-paid; instead, surviving large financial institutions are to be charged a fee after a failure only and only if net costs remain (U.S. Congress, 2010, pp. 1509 ff.). This means that the fund was set up as an overdraft facility where the Treasury can lend money to the FDIC – in the form of obligation purchases – up to an amount depending on the ailing institution's consolidated assets if the decision is taken to wind down the institution (U.S. Congress, 2010, pp. 1506 f.).

Staying on the subject of crisis tools, it should be pointed out, too, that the Federal Reserve has been restricted in its function to provide **emergency assistance** to financial institutions – another provision aimed at reducing taxpayers' exposure to losses (U.S. Congress, 2010,

¹³⁵ The Federal Reserve was made responsible to determine which activities constitute financial activities or, more precisely, activities that are “financial in nature or incidental thereto” (U.S. Congress, 2010, pp. 1443 f.).

pp. 2113 ff.).¹³⁶ Also in this regard, the Act subjected the Fed to more stringent public disclosure requirements, such as those related to lending records, and to audits to be conducted by the Government Accountability Office (GAO) (U.S. Congress, 2010, pp. 2115 ff., 2118 ff., 2127 ff.). In contrast to the restrictions on the Federal Reserve, the Dodd-Frank Act authorized the FDIC to set up emergency liquidity programs for BHCs in the form of debt guarantees (U.S. Congress, 2010, pp. 2121 ff.). A general overview of the current banking regulatory structure as compared with the 1933 structure is given in figure 9.

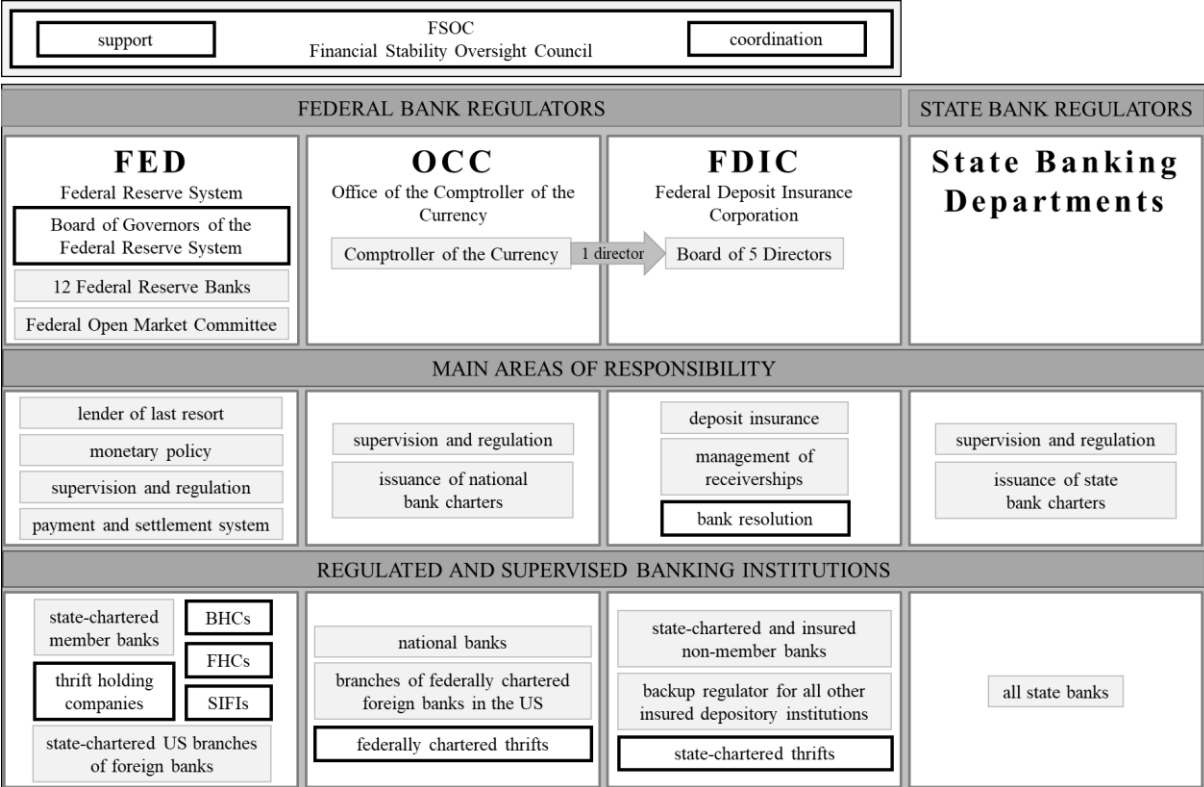


Figure 9: Banking Regulatory Structure in the United States since the Enactment of the Dodd-Frank Act of 2010, as compared to 1933

Source: Own representation.

Implementation of Basel III

Like the EU, the United States could not meet the G20 agreed target date for **Basel III** to take effect, January 1, 2013 (G20, 2010, p. 7). Although the banking agencies submitted proposals to implement the Accord as early as June 2012, it was not enacted until a year later (Office of the Comptroller of the Currency et al., 2012a, 2012b, 2012c; Office of the Comptroller of the Currency/Federal Reserve System, 2013). Notably, most of the requirements were incorporated

¹³⁶ The requirement of the Dodd-Frank Act to implement the provision by establishing policies and procedures was met by the issuance of a rule in 2013, followed by a final rule in 2015 (Board of Governors of the Federal Reserve System, 2014, pp. 615 ff., 2015, pp. 78959 ff.).

in the Basel III Final Rule on capital standards in July 2013, which was aligned with the requirements of the Collins amendment to the Dodd-Frank Act (Office of the Comptroller of the Currency/Federal Reserve System, 2013).¹³⁷ In October 2014, another Final Rule on liquidity standards contributed to the comprehensive adoption of the Basel III capital and liquidity requirements (Office of the Comptroller of the Currency, Federal Reserve System et al., 2014a).¹³⁸

In implementing Basel III in conjunction with the Collins Amendment, the regulatory agencies also seized on the recommendation of the Dodd-Frank Act to more stringently regulate large, internationally active institutions posing risks to the financial system¹³⁹ (e.g., Board of Governors of the Federal Reserve System, 2016a; Federal Reserve System, 2014; Office of the Comptroller of the Currency/Federal Reserve System, 2013; Office of the Comptroller of the Currency, Federal Reserve System et al., 2014a). However, the United States pursued a more tailored approach even, which should further reduce the disproportionate regulatory burden otherwise allegedly imposed on smaller institutions (Office of the Comptroller of the Currency/Federal Reserve System, 2013). Community banks, in particular, contributed to the realization of the **graduated regulatory system** by objecting to the one-size-fits-all approach in advance of the implementation (FDIC, 2013; Office of the Comptroller of the Currency/Federal Reserve System, 2013). In consequence, while the Basel III standardized approach would generally apply to all banking entities – except those subject to the advanced rules – the Final Rules provided for a lighter version to be applied by BHCs with less than 15 billion U.S. dollars in consolidated total assets and exempted small BHCs with less than 500 million U.S. dollars in consolidated total assets entirely from the provisions, thus continuing to subject them to the Basel I standards (Office of the Comptroller of the Currency/Federal Reserve System, 2013; Office of the Comptroller of the Currency, Federal Reserve System et al., 2014a).¹⁴⁰

This approach has been complemented by the adoption of enhanced requirements – above and beyond the Basel III standards – that apply to the largest and most complex institutions. For example, in addition to the 3% standard supplementary leverage ratio applicable to advanced approaches banking organizations, a Final Rule issued in April 2014 imposed for all BHCs with

¹³⁷ While larger banking organizations were to become subject to the new rules at the beginning of 2014, for smaller banking organizations, the rule's phase-in was scheduled to begin in 2015 only (Office of the Comptroller of the Currency/Federal Reserve System, 2013, pp. 62028 f.).

¹³⁸ However, while the 2014 Final Rule introduced the LCR, it lacked the implementation of the NSFR, which was not established until October 2020 as part of a Final Rule (Office of the Comptroller of the Currency et al., 2020).

¹³⁹ These so-called “advanced approaches” banking organizations are defined as institutions with total consolidated assets of 250 billion U.S. dollars or more or with on-balance sheet foreign exposures of ten billion U.S. dollars or more (BCBS, 2012, p. 8; Office of the Comptroller of the Currency/Federal Reserve System, 2013).

¹⁴⁰ See Masera (2013, pp. 389 ff.) for an overview of the regulatory differences among the defined categories of banks.

more than 700 billion U.S. dollars in consolidated total assets, or more than ten trillion U.S. dollars in assets under custody, a leverage buffer amounting to a further 2% for the holding company level, and an extra 3% buffer for their subsidiary bank(s) (Office of the Comptroller of the Currency/Federal Reserve System, 2013; Office of the Comptroller of the Currency, Federal Reserve System et al. 2014b).

3.2.4 Recent Period: Changes to Dodd-Frank

The most recent phase was marked, in particular, by changes to the Dodd-Frank Act aimed, among others, at providing (tailored) regulatory relief to banking organizations. First and foremost, the **Economic Growth, Regulatory Relief and Consumer Protection Act** of 2018 eased the burden on all but the largest banking organizations (U.S. Congress, 2018).¹⁴¹ For example, it implicitly raised the asset threshold at which compliance with the Basel II standards is mandatory from one to three billion U.S. dollars (U.S. Congress, 2018, p. 1312). Furthermore, the examination cycle for banks with assets between one and three billion U.S. dollars was aligned with that of institutions with less than one billion U.S. dollars in total consolidated assets (U.S. Congress, 2018, p. 1316). Regulatory relief was also offered to banks with less than ten billion U.S. dollars in assets, but on the condition that their total trading assets and liabilities represent less than 5% of total consolidated assets (U.S. Congress, 2018, p. 1309). Among others, they were exempted from the Volcker Rule and given the choice to opt for the community bank leverage ratio, ranging from eight to ten percent, with the effect that no other capital and leverage ratios would apply to them (U.S. Congress, 2018, pp. 1306 f., 1309). Federal savings associations with total assets of 20 billion U.S. dollars or less were given the option of being treated as equivalent to a national bank – but without having to convert their charters (U.S. Congress, 2018, pp. 1310 f.). This would enable them to engage in commercial lending, just as commercial banks are (U.S. Congress, 2018, pp. 1310 f.). Finally, the 50 billion U.S. dollars threshold for enhanced supervision and prudential standards was replaced with a 250 billion U.S. dollars threshold, meaning that banking organizations falling into the asset class between 50 and 250 billion U.S. dollars would no longer be automatically subject to the more stringent prudential requirements (U.S. Congress, 2018, p. 1356). However, for banks with assets between 100 and 250 billion U.S. dollars, the application of the enhanced standards was left to the discretion of the Fed (U.S. Congress, 2018, pp. 1356 f.).

¹⁴¹ The provisions of the Act were implemented by a Final Rule in 2019 (OCC, 2019).

3.3 Interim Conclusion: Major Similarities and Differences in Banking Regulation and Supervision between the European Union and the United States

Having completed the reviews of the development processes of banking regulation and supervision in both the European Union and the United States, it is considered appropriate to sort and compile the knowledge base and identify the main similarities and differences between the two systems. When doing this, it should always be borne in mind that the comparison is hampered by the fact that the United States, as a fully federal system, consists of states under a central federal government, whereas the EU is an association of sovereign nation-states. Furthermore, the relative novelty of the EU (regulatory system) must be underlined, which is reflected in the fact that the Banking Union project did not begin until 1990, while in the United States, a system of national banks began to be established as early as the mid-19th century.

Several financial crises occurred during this period that have shaped today's patchwork system of financial regulation and banking supervision in the United States, which currently comprises three primary federal banking supervisory authorities – the FRB, the FDIC, and the OCC. Moreover, regulatory agencies for other financial institutions, specific financial markets, and specific activities have evolved over time, so just at the federal level, jurisdictions overlap, and financial companies may be subject to multiple regulators. Given the ease of switching between federal and (different) state charters in the United States – compared to the high cost of switching charters among EU countries, which essentially prevents banks from relocating – banks might even choose the regulator to some extent. In contrast, the ECB is the designated single primary bank supervisory body at the EU level and, as such, has direct supervisory power over TBTF banks while acting as a secondary supervisor for the smaller banks that fall under the direct supervision of the national competent authorities. This is similar in the United States, where state banking departments have certain supervisory competencies for (smaller) state-chartered banks, while the Fed is responsible for supervising large BHCs, meaning that both central banks are tasked with supervising those banks that pose a threat to the stability of the financial system. In addition, however, the Fed also supervises nonbank SIFIs, a competence the ECB does not have. The fact that both jurisdictions have established a macro-prudential supervisory body tasked with identifying and mitigating systemic risks, namely the European Systemic Risk Board and the Financial Stability Oversight Council, is another commonality between the European Union and the United States.

Though also being given banking supervisory responsibilities at the federal level, the United States' FDIC was primarily equipped with the common authority for both deposit insurance

and bank receivership and resolution management. In the EU, the two functions are (to be) distributed between the SRM's Single Resolution Board, the (future) European Deposit Insurance Scheme, and the national competent authorities. Despite the still existing national fragmentation of the deposit insurance system, the EU regulation requires all member states to individually guarantee deposit protection for each EU depositor up to 100,000 euros, an amount to be compared with the deposit guarantee of up to 250,000 U.S. dollars per depositor in the United States. With EDIS not being at an advanced stage yet, there is also no common deposit insurance fund in the EU. However, the planned fund is meant to be pre-funded by bank contributions, as is the case in the United States. As for the resolution regime, the FDIC's remit is broad and clearly defined, whereas the complex resolution process in the EU involves multiple entities. The European Union and the United States have in common, however, that shareholders and holders of unsecured debt must first bear banks' losses before the resolution fund or taxpayer money can be used. In addition, meanwhile, both the EU and the United States have a common backstop in place.

Having briefly discussed the similarities and differences between the institutional frameworks in the EU and the United States, a comparative overview of some selected regulatory elements of the two banking systems shall be provided. A notable feature of the U.S. banking system is the history of legal separation of investment and commercial banking, which is still manifested today in the restrictions on proprietary trading activities, with no equivalent legislation being in place at the EU level. Besides, it should be pointed out that even though the United States, in contrast to the EU, has only partially adopted the Basel II requirements, both jurisdictions have implemented the third Basel Accord. However, the United States went beyond the Basel III standards even by subjecting its largest and most complex institutions to more stringent leverage ratios and by also stipulating a shorter transition period, among others. On a final note, special mention should be made of the efforts pursued by the United States to create a more tailored regulatory system compared to the insufficient regard in the EU for a change of the one-size-fits-all approach applied to date.

4 CONSOLIDATION AND CONCENTRATION

Having investigated the evolutionary processes of both EU and U.S. banking supervisory structures and the associated changes in banking regulation, it follows an analysis of bank consolidation trends. First of all, related terminology is clarified, after which the consolidation processes in the global banking sector are examined to provide an overall picture. Subsequently, bank consolidation processes across Europe are analyzed, followed by separate investigations of the consolidation processes in the United States and five selected EU countries, namely Germany, France, Spain, the Netherlands, and Italy. Finally, the structural implications on these banking sectors are considered, as this may allow for identifying similarities and differences in the level and intensity of the consolidation processes.

4.1 Terminology

In the literature on banking, the term “consolidation” is used and understood in different ways; sometimes, the definition is entirely vague. Frequently, consolidation is implicitly or even explicitly equated with concentration. In order to avoid linguistic misunderstandings and to define the scope of the analysis, it is first essential to distinguish precisely between the terms “consolidation” and “concentration”.

In general, the term “**concentration**” refers to the “accumulation of objects (income units, production units, etc.) to subjects (individuals, firms, etc.)” (Marfels, 1971, p. 1), meaning that a given object is distributed disproportionately among subjects. In banking, it is common practice to consider the accumulation of total assets to a given group of banks (e.g., Bikker/Haaf, 2002; Beck et al., 2006), although sometimes total deposits or loans are also used as objects (e.g., Berger et al., 2017; Short, 1979). This definition can describe not only the accumulation at a given point in time, i.e., the *level/degree* of concentration, but also the increase over time, i.e., the *process* of a rise in concentration. Hence, a distinction must be made between static and dynamic measurements of concentration (Bruckmann, 2020). Admittedly, though, the level of concentration is clearly the result of a concentration process (Bruckmann, 2020).

In explaining the concept of (static) concentration, it is further helpful to distinguish between absolute and relative measures of concentration. Using the same terms as above, high **absolute concentration** exists when a small number of (leading) subjects account for a high proportion of the total set of objects (Rosenbluth, 1955, p. 57). The **concentration ratio** is a typical example of such a measure of absolute concentration (Bruckmann, 2020). In banking, for instance,

the share of total assets of a certain (small) number of banks¹⁴² in the total assets of the entire banking sector is usually regarded as a proxy for the degree of absolute concentration (e.g., Bikker/Haaf, 2002; Beck et al., 2006). Accordingly, the concentration ratio depends, among others, on the number of banks in the relevant market and the distribution of these banks' total assets. The latter point is reflected, inter alia, in the fact that for a given total number of banks, the measure is lowest when total assets are evenly distributed across all banks, while it may increase as inequality increases. The same is true for the **Herfindahl-Hirschman Index** (HHI), another widely used measure of absolute concentration. In contrast to the concentration ratio, it is calculated from the sum of *all* subjects' squared market shares (Hirschman, 1964). Transferred to banking, this means: The higher a bank's market share, the higher the weighting in the measure. Thus, like the concentration ratio, the HHI is affected both by the number of banks and the distribution of the market shares among the banks.

Unlike absolute concentration measures – which relate a number of subjects to a proportion of the set of objects – **relative concentration measures** consider cumulative proportions of subjects relative to cumulative proportions of objects (Rosenbluth, 1955, p. 60). Thus, the term “relative concentration” focuses on the inequality of the distribution of objects. More precisely, the degree of relative concentration describes the deviation of a given distribution of banks' shares from equal distribution. Graphically, this concept can be represented by plotting the deviation between the **Lorenz curve** and the angle bisector, where a large deviation between the two curves indicates a high degree of relative concentration (Lorenz, 1905).

A potential increase in relative concentration in a relevant market – in banking, this could be a more uneven distribution of total assets across banks – can have several causes. It may result from combinations of banks, organic growth of leading banks, or any other factors that cause existing banks to grow in such a way that total assets are distributed more unevenly than before. In those cases described above, there may be a concurrent increase in absolute concentration. However, a rise in relative concentration can also be caused by market entries of institutions with relatively small balance sheet totals, while absolute concentration, measured by the concentration ratio, would (slightly) decrease in this case (Bruckmann, 2020). Conversely, an increase in absolute concentration – apart from internal or external growth of banks – may occur due to market exits of small banks.

¹⁴² The numbers three and five have become established internationally. In Germany, for instance, the antitrust law, i.e., § 18 of the Act against Restraints of Competition (Gesetz gegen Wettbewerbsbeschränkungen, GWB), incorporates the largest as well as the three and five largest companies in a market to determine market-dominating positions.

While the term “concentration” is usually defined more or less precisely in the literature when it comes to related topics, there is no uniform definition of the term “**consolidation**” in most of the works dealing with bank consolidation. Accordingly, it appears that the term is implicitly assumed to be unquestionable and presumed to be known to the experts. However, the statements to be found in the economic literature explicitly or implicitly reveal that the underlying definitions in the individual papers differ so that it seems that the word meaning is not quite as straightforward as may be initially supposed.

For example, according to the Group of Ten (2001, p. 31), “consolidation of the financial services sector involves the resources of the industry becoming more tightly controlled, either because the number of key firms is smaller or the rivalry between firms is reduced”. Apart from combinations of several financial institutions, the Group of Ten (2001) considers organic growth of the top banks and market exits of some weaker institutions as possible causes of bank consolidation. This definition corresponds to the concept of absolute concentration. In contrast, Boyd and Graham (1991, p. 3) regard consolidation as the “decrease in the number of firms in the industry combined with an increase in their average size”, which is a narrower definition because it excludes organic growth of leading institutions. In most works, however, bank consolidation is merely understood as the defragmentation of national banking markets or, more precisely, as the legal combination of, previously separate, banks or bank business units into (larger) institutions. This latter conception takes the view that consolidation encompasses all forms of combinations of banks and bank business units but excludes simple firm exits and organic growth of top banks. Among others, the European Central Bank – e.g., ECB (2017) – implicitly equates consolidation with M&A activity. While this is consistent not only with common parlance but also with the general explanation of standard dictionaries,¹⁴³ a (statutory) consolidation traditionally and from a legal point of view does not encompass all kinds of combinations but is itself a specific combination (Clarkson et al., 2010, pp. 796 ff.; DePamphilis, 2017, pp. 19 ff.). Technically then, in a consolidation, at least two, previously independent, banks combine to form an entirely new bank, whereas in a merger one bank absorbs at least one other, previously independent, bank, which then ceases, and continues operations as the (sole) surviving entity (Clarkson et al., 2010, pp. 796 ff.; DePamphilis, 2017, pp. 19 ff.). This means that, according to these definitions, there are no areas of overlap between a merger and a consolidation, but actually both are distinct forms of a friendly takeover besides an acquisition.

¹⁴³ For instance, according to the Cambridge Dictionary (2019), the term “consolidation” refers to “the situation in which two or more things, for example companies or organizations, are joined together”.

For the purposes of this thesis, though, the term “consolidation” is used as an umbrella term for all types of combinations between banks and their outlets. While the latter incorporates the consolidation of (own) bank branches and offices, methods for (previously separately operating) banks to combine shall now be addressed more closely in order to define the framework for further analysis. Although there are several methods for banks to combine, this thesis uses the term “consolidation” as a collective term to describe only M&As in a narrow sense, thereby excluding cooperative activities such as strategic alliances. To explain the exclusion, it is useful to clarify diverse concepts of inorganic growth strategies.

Especially the term “**M&A**” is omnipresent in this context. Again, however, term hierarchies are not used uniformly in academia. In particular, there are not only country-specific differences but also, for example, within the Anglo-American literature, the term is not used consistently. In fact, while some authors do not distinguish between the terms “merger” and “acquisition” at all (e.g., Hitt et al., 2001; Brozen, 1982), others define them according to how strongly and quickly the legal autonomy of the companies involved was impaired through, for example, control or ownership transfers (e.g., Buono/Bowditch, 1989/2003, pp. 60 f.; Cartwright/Cooper, 1992, pp. 30 ff.; Mace/Montgomery, 1962, pp. 3 f.). As this thesis will use it, a **merger** is the most common consolidation strategy in which two or more companies combine to form a single entity, either by establishing a new business or by joining together in an existing firm (OECD, 1993, p. 58; Sherman, 2018, p. 3). On the other hand, an **acquisition** is a process in which one bank takes over (the controlling interest of) another bank’s assets (OECD, 1993, p. 10; Sherman, 2018, p. 3). In this process, the buying bank does not have to assume the selling bank’s liabilities, which means that the firms involved can potentially remain separate (OECD, 1993, p. 10; Sherman, 2018, p. 3). In this case, an acquisition would, however, not meet the consolidation definition of this thesis because it would require the previously separate businesses to actually combine (into a single entity). This is also the reason why cooperative activities are excluded from the analysis of bank consolidation. Namely, unlike a merger or an acquisition, in which at least one of the firms involved is usually dissolved, a **strategic alliance** is an equity or non-equity arrangement between two or more companies that remain completely independent of each other (Prange/Mayrhofer, 2015, p. 1; Todeva/Knoke, 2005, p. 125).¹⁴⁴

¹⁴⁴ The parties to the arrangement can thereby share, among other things, the benefits of mutual (continued) contributions in (a) strategic area(s) of activity (Yoshino/Rangan, 1995, p. 5). A particular, well-known form of strategic alliance is the joint venture – an approach by two or more independent companies to pool resources and expertise (temporarily) for a common specific project, often through the creation of a jointly controlled undertaking (OECD, 1993, p. 51; Harrigan, 1986, p. 2).

From these brief definitions, it can be concluded that all three inorganic growth strategies are business combinations in the sense that they have in common the contractual agreement of the companies involved to join forces in one way or another. However, while mergers and acquisitions generally describe the actual consolidation of companies (in a narrow sense), strategic alliances are cooperation arrangements in specific areas only rather than “full” consolidations of the firms. Moreover, given the lack of publicly available information on the various strategic forms of business alliances, this thesis focuses on analyzing M&As when it comes to bank consolidation. Also excluded from the analysis of bank consolidation are all other forms of business combinations, which need not be elaborated further here.

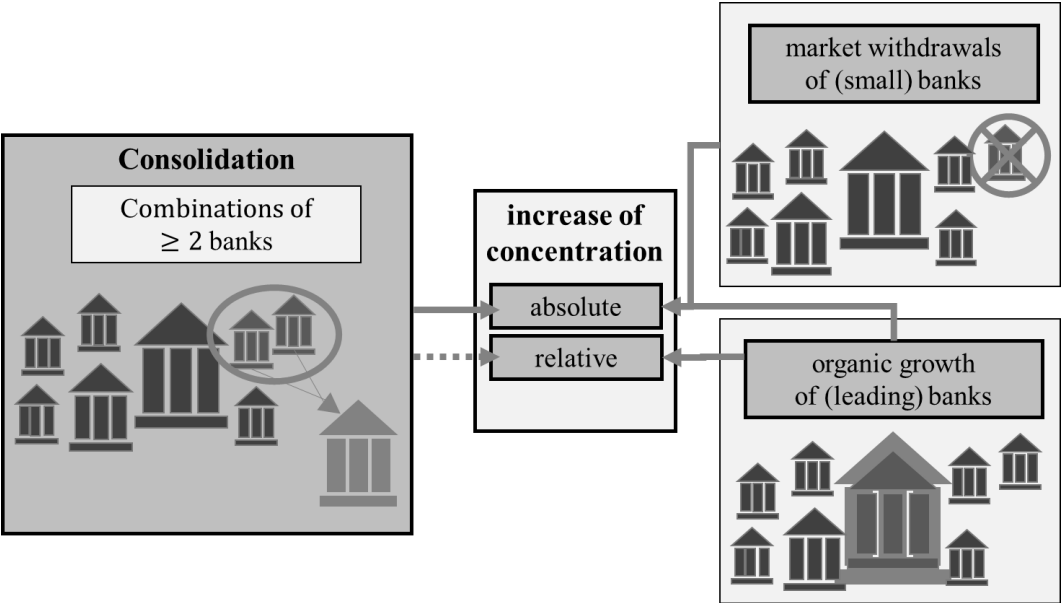


Figure 10: The Concept of Consolidation

Source: Own representation.

Relying on this approach for the definition of consolidation means that consolidation is by no means synonymous with absolute or relative concentration, even though the two conceptualities certainly have much in common (figure 10). To illustrate this, while consolidation, all else being equal, inevitably leads to higher absolute concentration in a relevant market, a rise in both absolute and relative concentration can – other than by consolidation – also be caused by organic growth of the leading institutions. Furthermore, the combination of two smaller than average banks, bank branches, or offices – i.e., their consolidation – would theoretically lead to an increase in absolute concentration¹⁴⁵, while relative concentration could decrease. Eventually,

¹⁴⁵ While absolute concentration would remain unchanged if measured by the concentration ratio, it would increase slightly if determined by the Herfindahl-Hirschman Index because it sums the squares of the market shares of all firms – even the smallest ones – within the relevant market.

market entries and exits also affect both absolute and relative concentration, while consolidation remains unaffected. Conversely, consolidation may occur and the number of banks in the market may still increase, which would be the case if a large number of banks entered the market. These points reflect the fact that while consolidation among (large) banks can be regarded as one way of stimulating a concentration process, the two terms do not express the exact same thing.

Finally, it can be noted that mergers and acquisitions of banks, bank branches, or bank offices undoubtedly result in a reduction in the number of banks and an increase in their (average) size. However, market exits of weaker institutions would also lead to this outcome. Looking at some time-series data on the number of banks and bank branches and data on the average size of banks might provide some insight into actual consolidation trends. Certainly, figures on M&A transactions need to be included in the analysis as well.

4.2 Consolidation Process in the EMU and the United States

Consolidation in the banking sector is not a new phenomenon. Over time, periods of high M&A activity have repeatedly alternated with periods of less intense consolidation (e.g., Pohl/Tortella, 2017; White, 1985). In the United States and the EMU, the most recent consolidation wave, i.e., a period of high M&A activity, occurred at slightly different times. While the number of M&A transactions in the United States started to increase as early as the 1980s (Jones/Critchfield, 2005), the phenomenon did not become apparent in the EMU until the late 1990s (Ayadi/Pujals, 2005). The noticeable rise in M&As in the EMU coincided with the process of creating the EMU, but in particular with the introduction of the single currency (Ayadi/Pujals, 2005, p. 58). In the United States, on the other hand, consolidation had increasingly taken place since the banking sector was massively deregulated, i.e., when restrictions on interstate banking and branching were either weakened or removed altogether¹⁴⁶ (Jones/Critchfield, 2005, pp. 37 f.).

While numerous studies have examined the consolidation phase of the 1990s,¹⁴⁷ the period thereafter, particularly the years following the financial crisis, has been less investigated. In order to contribute to the research on consolidation in more recent years, this thesis will focus

¹⁴⁶ Among others, the Riegle-Neal Banking and Branching Efficiency Act of 1994 greatly contributed to the deregulation of the banking industry regarding the restrictions on interstate banking and branching activities, which may have fueled bank consolidation (Heiney, 2011).

¹⁴⁷ See, for example, Brewer et al. (2000), Calomiris and Karceski (2000), Group of Ten (2001), and Jones and Critchfield (2005) for analyses of the banking consolidation trend in the last decade of the 20th century. An extensive literature review of U.S. and European empirical studies examining the performance impact of bank consolidation is provided by Geretto (2010), among others.

on the analysis of the (ongoing) consolidation process in the EMU and the United States from 2000 to 2021 or shorter, depending on the availability of the data. This time span should be sufficient to identify the transformation process in the banking systems. Germany, France, Italy, Spain, and the Netherlands were selected to represent the EMU. Accounting for more than 80% of total euro area GDP (Eurostat, 2022a), they provide an adequate basis for analysis. Also, bank consolidation in these countries has been uneven, which means that country-specific differences are accounted for as well.

When comparing consolidation trends across different countries, national differences in the classification of banks, definitions in general, measurement, and so forth have to be considered. For example, while in the United States most statistics cover only commercial banks, European statistics often include all monetary financial institutions (MFIs) without subdividing them into groups. While comparing the level of specific data may not be appropriate in such cases, statements can be made about their development trends.

4.2.1 Consolidation in the Banking Sector Worldwide

For comparison purposes, the most recent consolidation processes in the banking sector worldwide is considered first. Figure 11 shows the year-by-year evolution of both the number and the value of global M&A deals in the banking sector worldwide for the period from 2000 to 2020, whereby distinct consolidation phases can be identified. Looking at the value of transactions, a sharp increase can be seen from the local minimum in 2002 to 2007, followed by an at least equally sharp decline until 2011. Since 2013, the value of M&A transactions per year has been relatively stable, fluctuating around an average value of 99 billion U.S. dollars.

Considering the number of transactions, the development in the reporting period appears to be a little less volatile, although a moderate increase starting in 2007 can still be identified. In contrast to the M&A deal value, which already peaked in 2007, the number of transactions reached its local maximum only in 2009. These developments suggest that a short period with a large number of major M&A deals around 2007 was followed by a longer period with much smaller but significantly more M&A transactions. After 2009, however, the number of transactions steadily declined before there was a sharp increase again in 2020, even slightly exceeding the level of 2009.

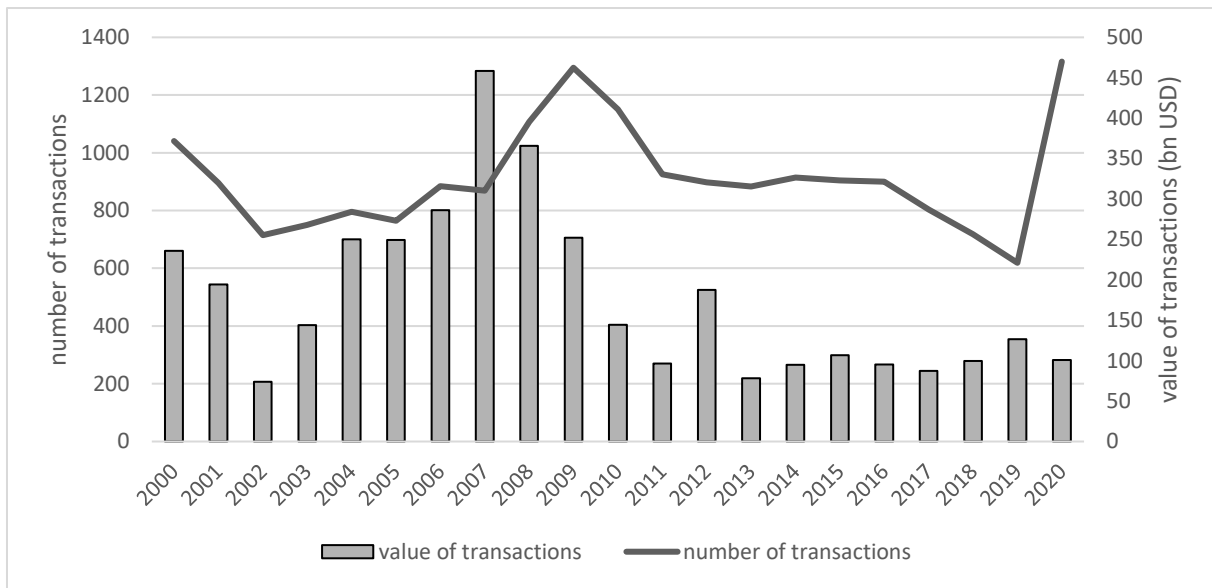


Figure 11: Number and Value of M&A Transactions in Banking Worldwide

Source: IMAA (n.d.-c).

Further insight can be gathered from figure 12, which shows the average value of transactions from 2000 to 2020. As can be seen, the 2007 value stands out here, amounting to more than 500 million U.S. dollars. The 2007 takeover of ABN AMRO by the Dutch RFS Holdings, consisting of the British Royal Bank of Scotland, the Spanish Banco Santander, and the Dutch-Belgian financial group Fortis, surely distorted the statistics, though. With a transaction value of nearly 100 billion U.S. dollars, this deal was not only the banking sector’s largest ever but also, as of October 2022, ranks sixth among all industries’ M&A transactions worldwide (IMAA, n.d.-b). If this megadeal were removed from the examination, the distance between the 2007 value and the otherwise relatively constant, though still high, averages for the period 2004 to 2008 would narrow significantly. Either way, this five-year period seems to have been a phase of global bank consolidation involving mainly larger banks. Apart from the 2007 ABN AMRO BV takeover, these megadeals include JPMorgan Chase’s acquisition of Bank One Corporation in 2004, with a transaction value of almost 60 billion U.S. dollars, and Bank of America’s purchase of Merrill Lynch in 2008, with a value of roughly 50 billion U.S. dollars (IMAA, n.d.-b). These three deals are not only the banking sector’s largest ever, but as of October 2022, they are among the 50 largest M&A transactions worldwide as well (IMAA, n.d.-b), highlighting the size of the transactions when compared over time and across industries. In the subsequent period until 2011, the average value of M&A transactions in the banking sector declined more or less consistently, leveling off at just over 100 million U.S. dollars since 2013. This means that the most recent average values, except for the 2019 value, are well below those in

the early 2000s, suggesting that the latest phase was characterized by predominantly small bank M&As.

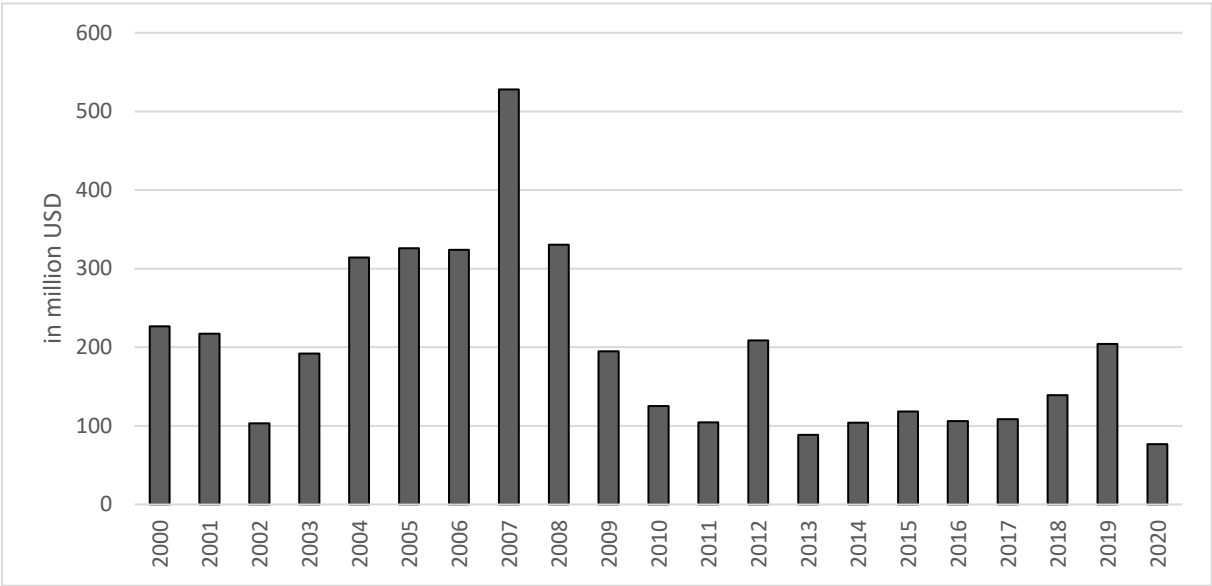


Figure 12: Average Value of M&A Transactions in Banking Worldwide

Source: IMAA (n.d.-c); own calculations.

Overall, the figures may indicate a phase of intense bank consolidation during the crisis period from 2007 to 2010, which started with mergers comparatively large in scale and ended with a large number of M&As on a much smaller scale. Although the period of heavy consolidation of major banks seems to be over for the time being, consolidation in the banking sector is currently still taking place at a lower level, mainly in the form of M&As involving smaller banks. Due to this thesis’ focus on the U.S. and euro area banking sectors, however, a more detailed look at M&A activities in these markets might help to identify possible differences between consolidation trends. Therefore, in the following, a brief comparison of bank consolidation trends in the United States and the EMU is conducted first. Subsequently, consolidation in the U.S. banking sector is analyzed separately before the five selected EMU countries, namely Germany, France, Italy, Spain, and the Netherlands are examined in more detail. In a final step, the economic implications of the consolidation trend are considered. In particular, the extent to which the consolidation trend is reflected in the selected banking markets’ concentration is assessed.

4.2.2 Consolidation in Europe and the United States in Comparison

As the euro area and the United States account for large parts of the global banking sector, there is a good reason why the consolidation processes in these sectors are reflected in banks’ global

M&A activities. In fact, both economic areas (still) saw a large number of M&A transactions conducted after the turn of the millennium, while most notably with the onset of the financial crisis, the number of transactions declined (figure 13). Since 2010, however, the developments in the two economic regions run counter to each other. More specifically, whereas the number of transactions increased again in the United States, the decline in the euro area continued.

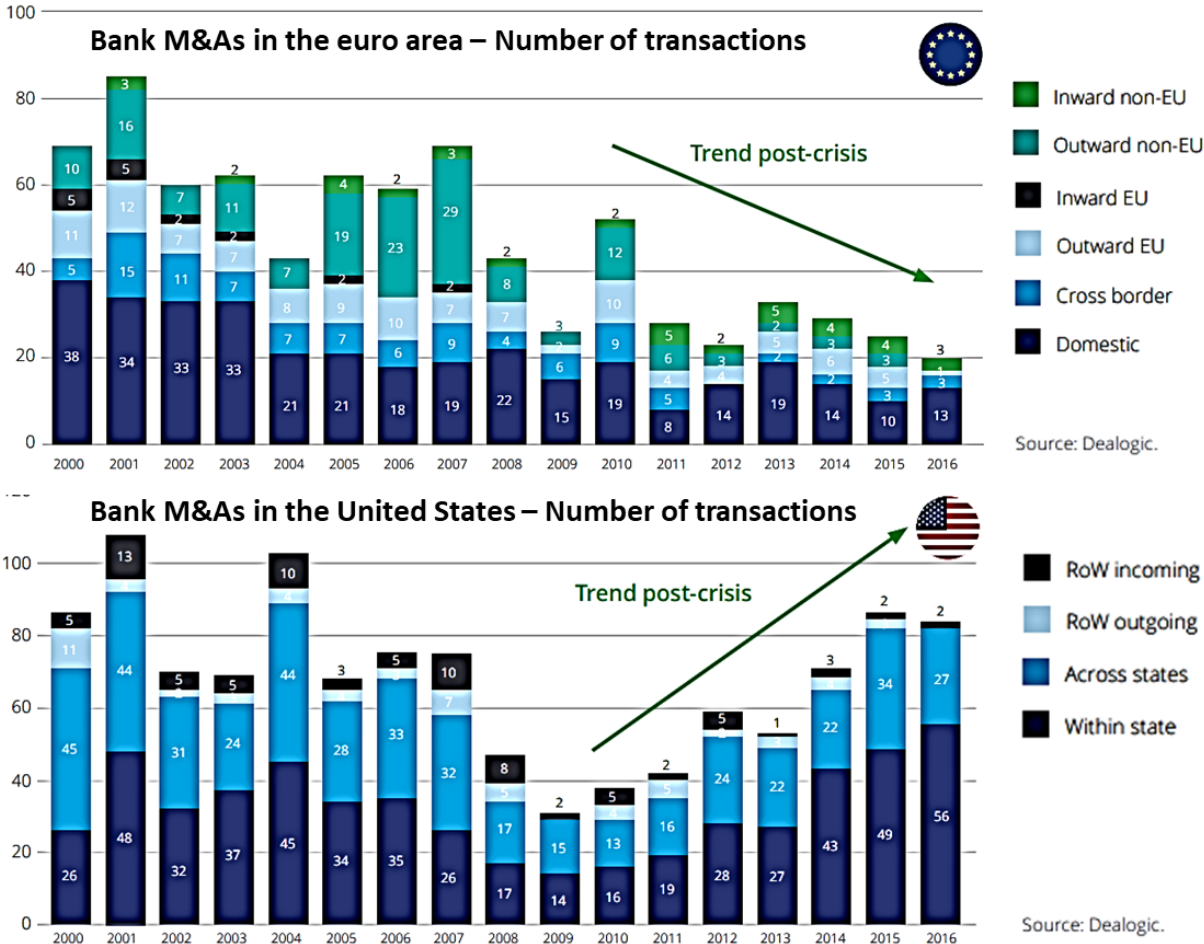


Figure 13: Number of M&A Transactions in Banking in the EMU and the United States
 Source: Heukmes/Guionnet (2018, pp. 124 f.).

Adding up the annual value of transactions in the United States and the euro area (figure 14), the picture is similar to that for banking transactions worldwide. In general, the development of the number of transactions was similar in both economic areas. However, while in the United States, M&A transaction volumes in 2000 and 2001 were clearly higher than in the euro area, the opposite was true in 2007, when the value of consolidations in the EMU reached a local peak. However, it must again be taken into account that 2007 was the year of the acquisition of ABN AMRO, with a transaction volume of almost 100 billion U.S. dollars. In the United States, on the other hand, the value of M&A activities peaked as early as 2004, when JP Morgan Chase

acquired Bank One for 60 billion U.S. dollars. Such megadeals must be borne in mind, as they might distort the picture. In the period following the financial crisis, the value of transactions in the euro area remained relatively low, while in the United States it reached a somewhat higher level in recent years than in the immediate post-crisis period. In every year except 2007 in the euro area, the major part of the value of M&A deals was transacted domestically.

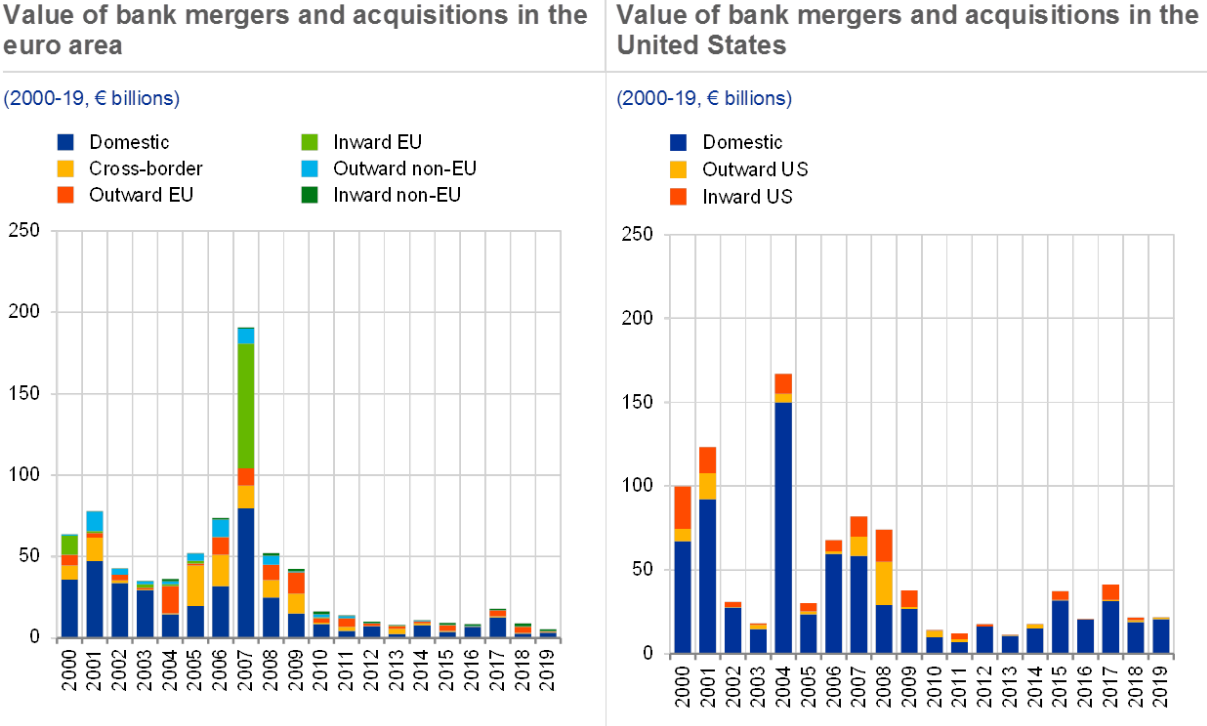


Figure 14: Value of M&A Transactions in Banking in the EMU and the United States

Source: Andreeva et al. (2019).

4.2.3 Consolidation in the United States

After having provided a brief overview of the number and volume of M&A transactions in the United States and the EMU and having set these in relation to bank M&A activities worldwide, the consolidation trend in the United States is analyzed separately and in more detail below. As pointed out above, a major consolidation wave occurred in the United States in the 1980s and 1990s. The offshoots of this wave can be observed around the turn of the millennium when the comparatively high level of consolidation gradually declined until 2003 (figure 15). However, consolidation accelerated again and has since fluctuated around a constant level. Admittedly, when disregarding the assisted failures – which were mandatory rather than voluntary – there was a decline in mergers in the period after the financial crisis.

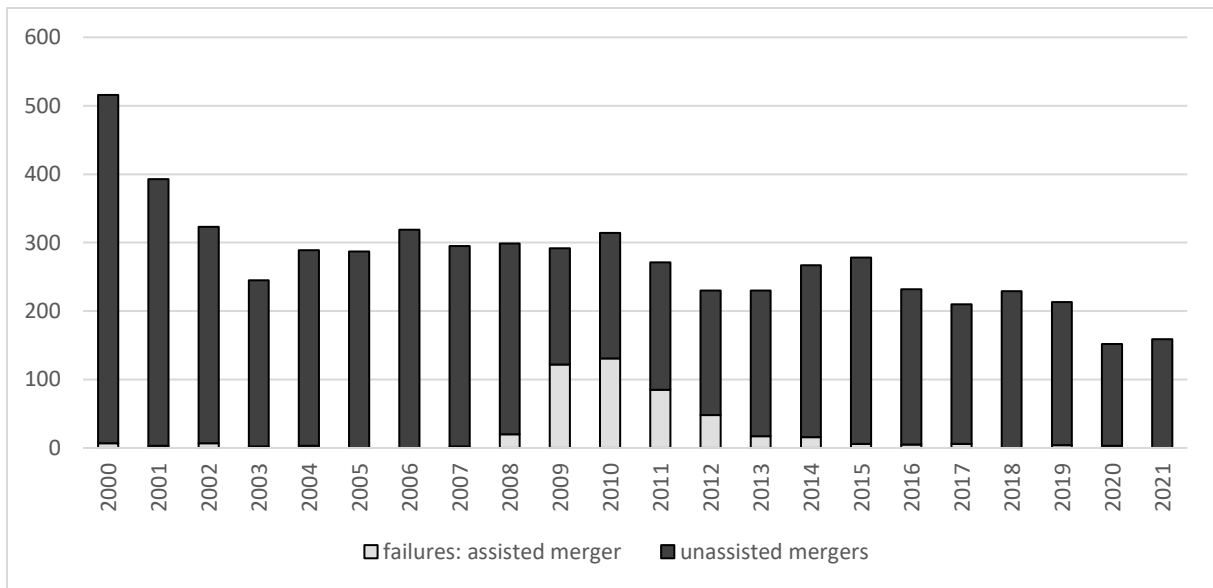


Figure 15: Number of Commercial Bank Mergers in the United States

Source: FDIC Historical Bank Data.

Apart from the assisted mergers, the number of bank exits was negligible in the period considered, with a peak of nine being reached in 2010 (figure 16). While, in general, a similar development path of commercial bank entries and mergers can be seen for the period under review, the gap between the two categories has widened since the onset of the financial crisis, with mergers outnumbering bank entries to a greater extent since then. However, due to the declining number of mergers in 2020 and 2021, the gap has narrowed again but is still evident.

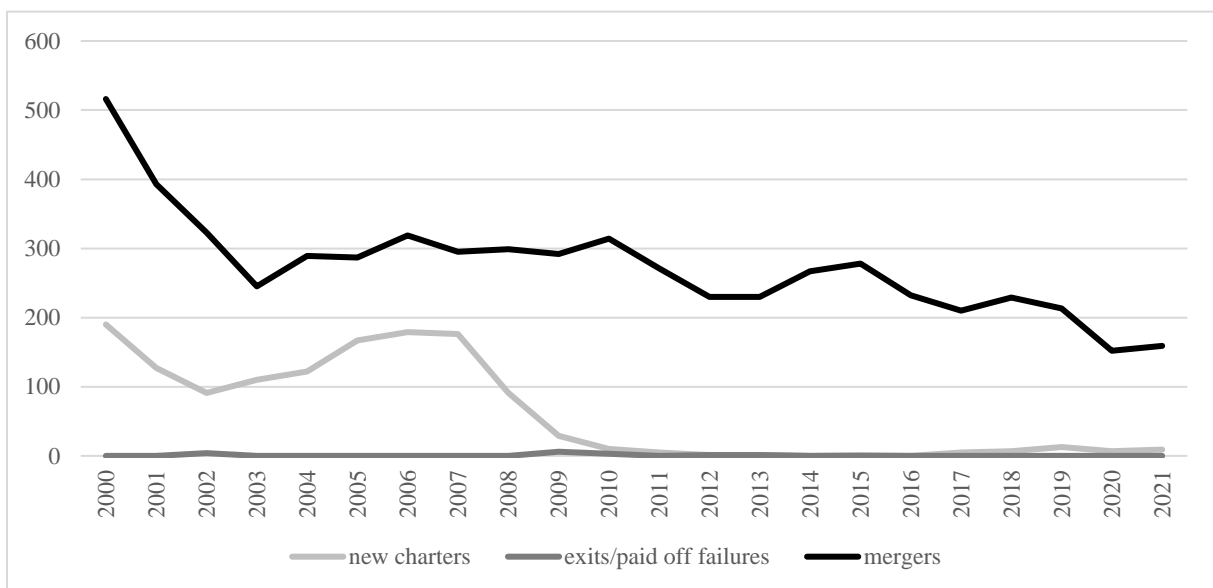


Figure 16: Source of Changes in the Number of U.S. Commercial Banks

Source: FDIC Historical Bank Data; own calculations.

This is why – despite the downward trend in mergers – consolidations had a substantial effect on the structure of the U.S. banking sector. In particular, as the number of banks entering the market was lower than the number of mergers, the total number of U.S. commercial banks declined over the period considered (figure 17). This decline intensified slightly around the outbreak of the financial crisis when the gap between mergers and exits also widened.

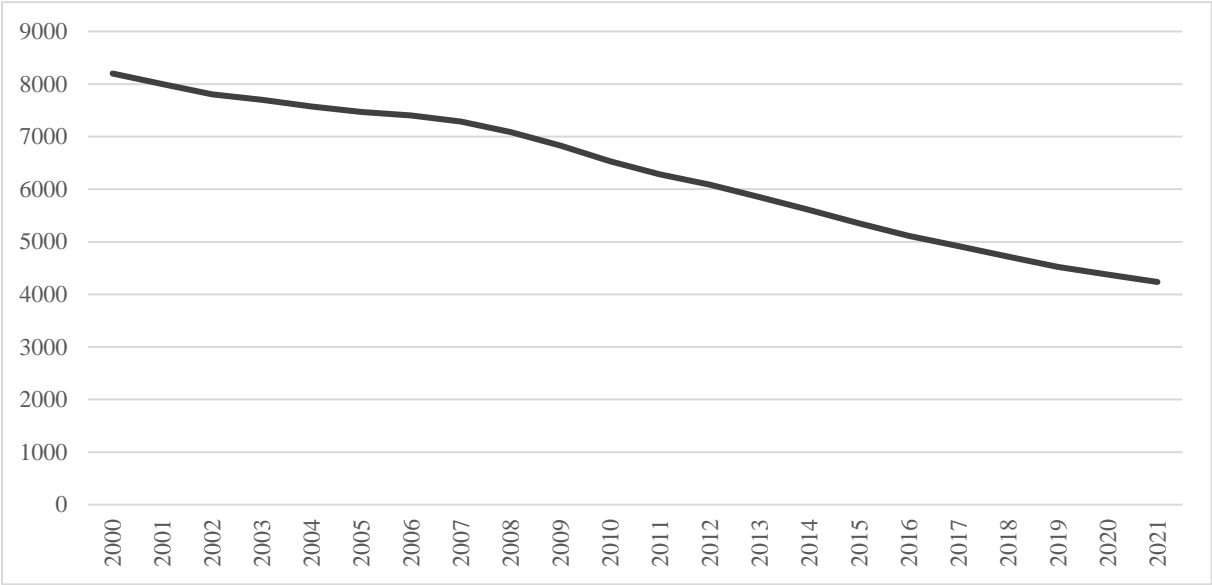


Figure 17: Evolution of the Number of U.S. Commercial Banks

Source: FDIC Historical Bank Data.

The consolidation trend is also reflected in shifts of commercial banks from smaller to larger size classes. In especially, while the number of commercial banks with average total assets of less than 100 million U.S. dollars steadily declined over the period 2000–2020, the number of banks with average total assets of more than 300 million U.S. dollars consistently increased (figure 18). This means that not only has the number of commercial banks decreased over time, but the average bank size has also steadily increased.

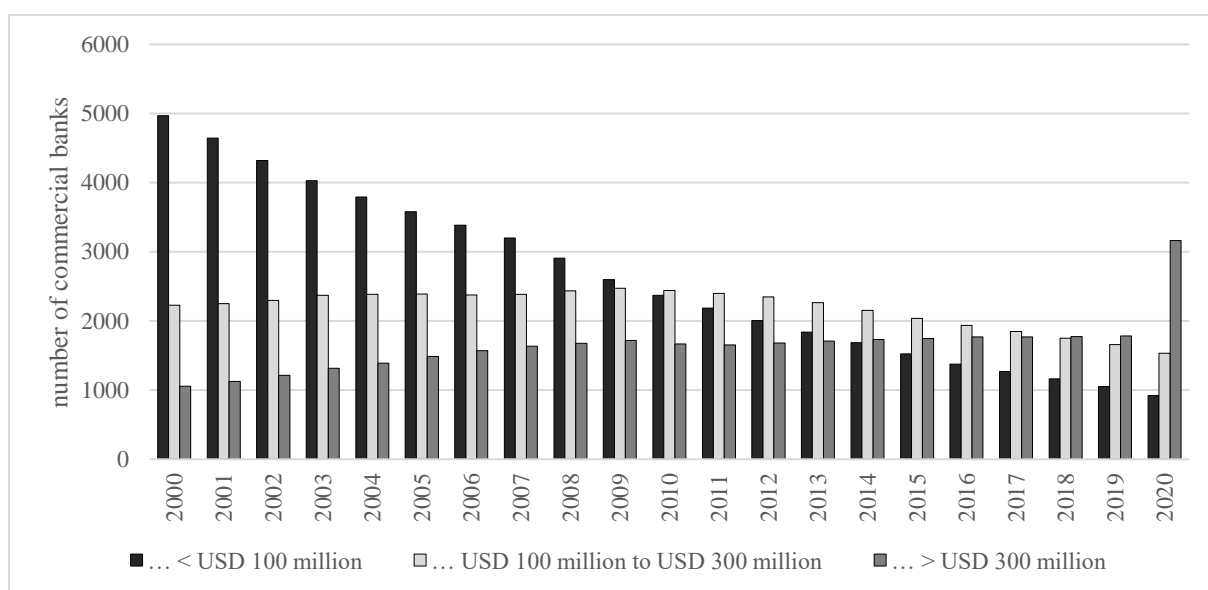


Figure 18: Number of U.S. Commercial Banks with Average Assets...

Source: Federal Reserve Economic Data. Due to the discontinuation of the series, the latest data are from the third quarter of 2020.

In other words, the U.S. banking sector consists of fewer small banks and more megabanks than at the beginning of the period under review. Megadeals of more than ten billion U.S. dollars contributed to the rise of ever-larger conglomerates. A closer look at the M&A activities of the largest U.S. banks and their growth in terms of total assets may reveal these trends. Table 3 shows the changes in the ranking positions of major U.S. banks between year-end 2000 and 2021, as measured by (inflation-adjusted) total assets. Although at first glance, there have been quite a few changes among the top ten players, a deeper look at the listed banks and their M&A histories makes clear that almost all of them maintained a leading position, albeit the ownership structure for some of them has changed due to (mega) M&A deals.

For example, Chase Manhattan Bank merged with JP Morgan in 2000 to form **JPMorgan Chase & Co.** (JPMorgan Chase & Co., 2020), the largest U.S. bank as of December 2021. Since then, the bank merged with Bank One, among others, in 2004, which alone increased its total assets by some 58 billion U.S. dollars (J.P. Morgan AG, 2005, p. 2). Also the 2008 acquisition deal with the financially troubled investment bank Bear Stearns with the purchase price of 1.5 billion U.S. dollars contributed significantly to the growth of its assets (JPMorgan Chase & Co., 2009, pp. 9 f.). As of December 2021, JPMorgan Chase is the fifth largest bank in the world by total assets (S&P Global Market Intelligence, 2022b), and, as such, the only globally systemically important bank assigned to a bucket requiring 2.5% of additional capital buffers (Financial Stability Board, 2021).

Table 3: Ranking Position Changes of the Major U.S. Banks and Thrifts between December 2000 and December 2021, by Asset Size, Inflation-Adjusted in Parentheses

2000		2021	
Institution name	Total assets in million U.S. dollars	Institution name	Total assets in million U.S. dollars
1 Bank of America	584,284	1 JPMorgan Chase Bank	3,306,982 (2,103,391)
2 Citibank	382,106	2 Bank of America	2,519,525 (1,602,533)
3 The Chase Manhattan Bank	377,116	3 Wells Fargo Bank	1,779,504 (1,131,846)
4 First Union National Bank	231,837	4 Citibank	1,669,227 (1,061,704)
5 Morgan Guaranty Trust Company of New York	185,762	5 U.S. Bank	564,155 (358,828)
6 Fleet National Bank	166,281	6 PNC Bank	551,903 (351,035)
7 Washington Mutual Bank, FA	154,656	7 Truist Bank	528,514 (336,159)
8 Wells Fargo Bank	115,539	8 Goldman Sachs Bank USA	434,075 (276,091)
9 Bank One	101,229	9 TD Bank	423,649 (269,460)
10 SunTrust Bank	99,528	10 Charles Schwab Bank, SSB	420,502 (267,458)

Source: FDIC; OECD.

Around the same time as the creation of JPMorgan Chase, namely in 1998, NationsBank and BankAmerica merged to form **Bank of America** (Bank of America, 1999, pp. 2 f.) – the largest U.S. bank in 2000. Through M&A activities, such as the acquisitions of the U.S. Trust Corporation and LaSalle Bank Corporation in 2007 for 3.3 and 21 billion U.S. dollars, respectively, and the purchase of the distressed investment bank Merrill Lynch in 2009, Bank of America continued to grow externally during the period considered (Bank of America, 2008, p. 36, 2010, p. 139). While its inflation-adjusted total assets more than doubled to a value of slightly more than 1,600 billion U.S. dollars in 2021, JPMorgan Chase exceeded that value by more than 500 million U.S. dollars, though. Bank of America’s growth was slowed in part by a post-crisis downsizing phase that lasted until around 2014 (Bank of America, 2012, p. 24, 2015, p. 23). It began to expand again afterward, but this time the bank grew mainly organically (Bank of America, 2019, p. 6, 47, 2022).

The third largest bank at year-end 2021 – **Wells Fargo** – is the result of the merger between Wells Fargo & Company and Norwest Corporation in 1998 (Wells Fargo, 1999). Subsequent

to this, Wells Fargo expanded significantly through acquisitions, including those of National Bancorp of Alaska in 2000, Greater Bay Bancorp in 2007, and Wachovia in 2008 (Wells Fargo, 2001, p. 60, 2009, pp. 34 f., 102). The institution ran into difficulties in 2016, though, when a scandal involving fake accounts damaged its reputation and fines had to be paid, among others (Tayan, 2019; Verschoor, 2017). As a consequence, branch sales and consolidations as well as personnel reductions appeared on its agenda (e.g., Wells Fargo, 2018a, 2018b). Furthermore, the Federal Reserve imposed an asset cap on Wells Fargo in 2018, thus restricting the company's growth until certain governance and risk conditions are met (Board of Governors of the Federal Reserve System, 2018). Despite these current impediments, the institution increased its inflation-adjusted total assets around tenfold over the entire period considered.

Citibank was formed in 1998, too – through the merger of Citicorp and Travelers Group (Citigroup, 2020). Following the merger, it expanded by acquisitions, including those of Associates First Capital in 2000, European American Bank and Banamex in 2001, and Golden State Bancorp in 2002 (Citigroup, 2001, p. 4, 2003, p. 33; SEC, 2001, 2002). However, in 2002, the institution also decided to divest the Travelers insurance division (SEC, 2002). In the wake of the financial crisis, Citibank faced severe financial difficulties and required substantial government aid, which was followed by a restructuring of the group, including the downsizing of its branch network (Citigroup, 2012, 2020). For several years now, the bank appears to be gradually recovering (e.g., Citigroup, 2014, 2019, 2021). Despite the period of severe financial problems, Citibank's inflation-adjusted total assets grew by almost 300% over the 2000–2021 period, which is not especially strong, though, when compared to the growth rates of its competitors JPMorgan Chase and Wells Fargo, which managed to place themselves ahead of Citibank. Together, the so-called “big four” banks in the U.S. held more than 40% of total assets in December 2021, up from just over a quarter at year-end 2000. The fact that even the tenth bank in the 2021 ranking is almost 270% larger than that of 2000 – when it would have ranked fourth – is a further indication of the rise of conglomerates in the United States. As indicated earlier, there are compelling reasons to conclude that the growth in the size of these largest banks was due to external growth rather than organic growth.

Consistent with the development processes of the largest banks – most of which expanded rapidly until the financial crisis and then contracted for some time afterward – is the development of the number of bank branches and offices in the United States. In particular, the number of both bank branches and offices increased steadily until the peak in 2008, while the period thereafter was characterized by a weaker, albeit constant, decline (figure 19).

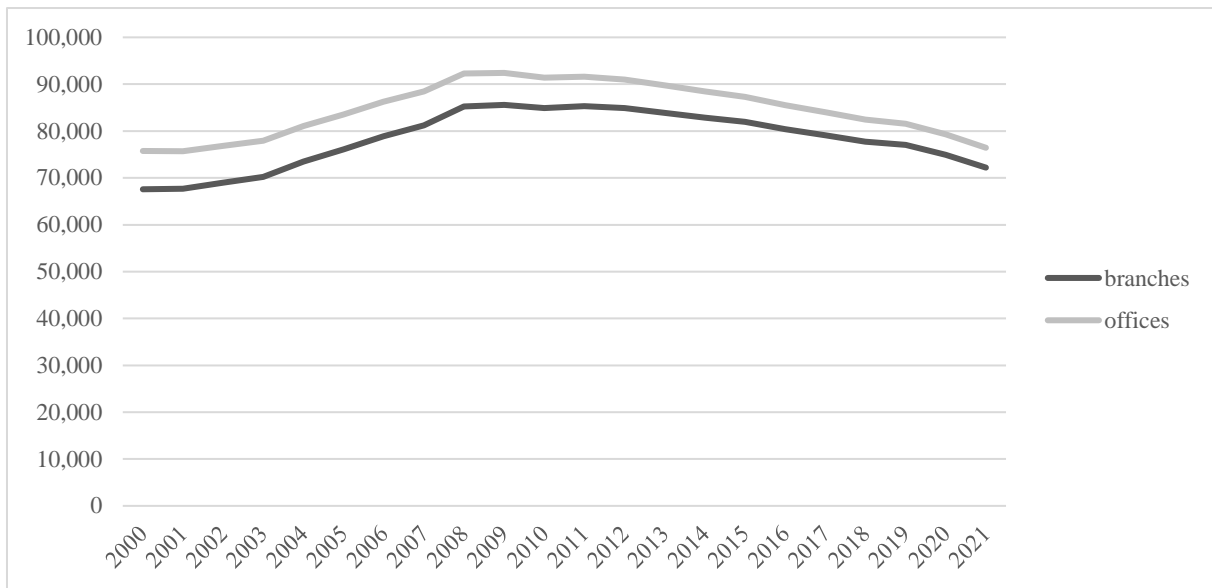


Figure 19: Evolution of the Number of U.S. Bank Branches and Offices

Source: FDIC Historical Bank Data.

4.2.4 Consolidation in Germany

As in the United States, consolidation in the German banking sector was at a relatively high level in the early 2000s and declined thereafter (figure 20). Unlike in the United States, however, M&A transactions in Germany did not pick up again but continued to decline until 2007. Since then, mergers and acquisitions have remained at a relatively low level, only returning to a slightly higher level in 2016. The vast majority of M&As in the period under review were transactions in the cooperative banking sector. Especially in the early 2000s, a relatively large number of mergers and acquisitions were carried out by cooperative banks. More specifically, 241 out of 273 bank mergers in 2000 can be attributed to the cooperative banking sector, which corresponds to a share of almost 90 percent.

However, consolidation in the savings banks sector contributed to the decline in the number of banks as well, albeit not nearly as significantly as consolidation in the cooperative banking sector. Figure 20 shows that especially in the first three years of the period under consideration the number of cooperative bank M&As by far exceeded the M&A activities of savings banks. Furthermore, the share of savings bank mergers and acquisitions in the total number of savings banks is lower than the same share in the cooperative banking sector in all but one year. This indicates that not only the absolute but also the relative degree of consolidation in the savings banks sector was lower than that in the cooperative banking sector.

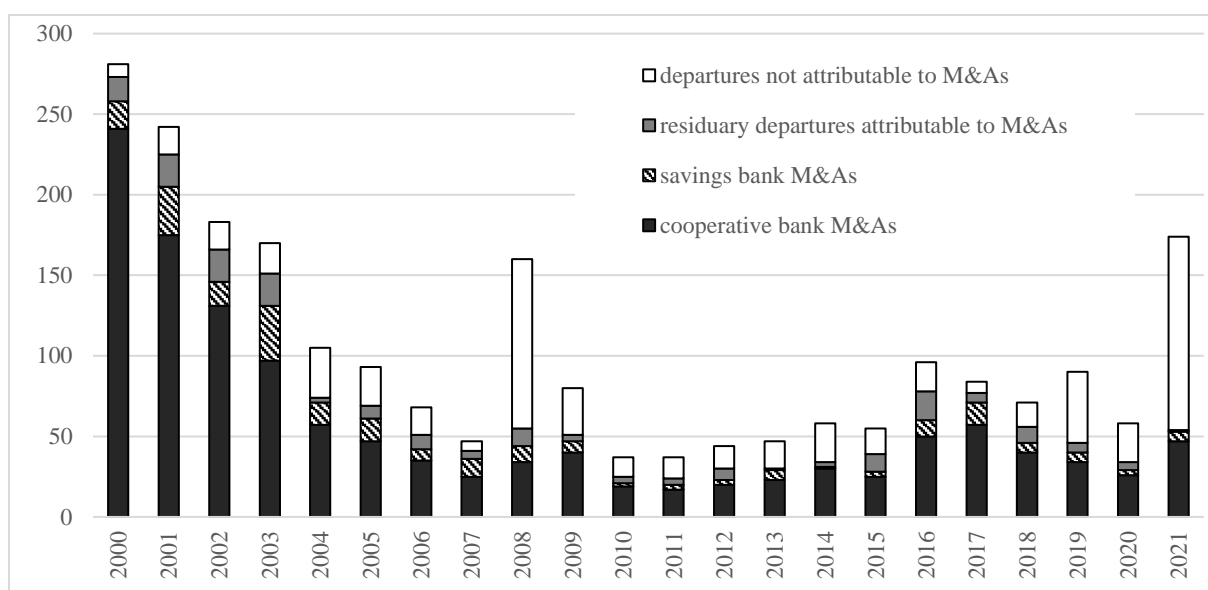


Figure 20: Evolution of the Number of Bank Departures in Germany

Source: German Central Bank; adjusted for relocations.

As can be seen in figure 20, too, a number of mergers and acquisitions can also be attributed to credit banks and other credit institutions, which thus contributed to consolidation in the German banking sector as well. Since no information was available on the number of M&As in the individual bank categories, the mergers and takeovers of both credit and other banks were combined under “residuary departures attributable to M&As”. In some years, this residual number of M&As even exceeded the number of M&As in the savings bank sector. While consolidations of credit institutions belonging to the category “others” most likely played their part in the decline in the total number of credit institutions, this effect was partially offset by several new additions of credit banks over time (see figure 46 in the appendix).

Although the vast majority of bank departures were due to M&As, the overall decline in the number of banks was fueled by other factors as well. The category “departures not attributable to M&As” comprises bank departures for reasons other than mergers and acquisitions, including insolvencies, discontinuations of business operations, expiries or returns of licenses, and reclassifications of institutions. In the early 2000s, these factors still played a minor role, however. For example, between 2000 and 2002, the proportion of departures attributable to M&As was well over 90%, meaning that not only was the total number of M&As exceptionally high compared with the rest of the period but so was their share of the total number of departures. However, the influence of these other factors became apparent in 2008, when, as a consequence of a change in the definition of a credit institution, investment companies were no longer considered as such (German Central Bank, 2009). In the subsequent years up until 2014, the share

of departures not attributable to M&As remained relatively high, consistently exceeding 30%. As the absolute number of mergers and acquisitions was also comparatively low during this period, consolidation did not play as large a role as in the early 2000s. This means that while the large number of bank M&As in the first years of the 21st century is consistent with the strong consolidation wave in Europe during that period, the comparatively low number of M&As between 2006 and 2015 contrasts with the accelerated process of consolidation in the entire euro area around 2009. Therefore, the increase in the number of consolidations in the German banking sector during this time seems to have been less intense than the European average in terms of the number of institutions. However, in 2016 the number of M&As reached a higher level again, which has been more or less maintained since then. The high number of departures not attributable to M&As in 2021 was due in particular to the elimination of branches of British institutions as a consequence of the final implementation of the Brexit and the departure of securities trading banks and branches of foreign securities trading companies, which upon the entry into force of the Securities Institutions Act have no longer been considered credit institutions since.

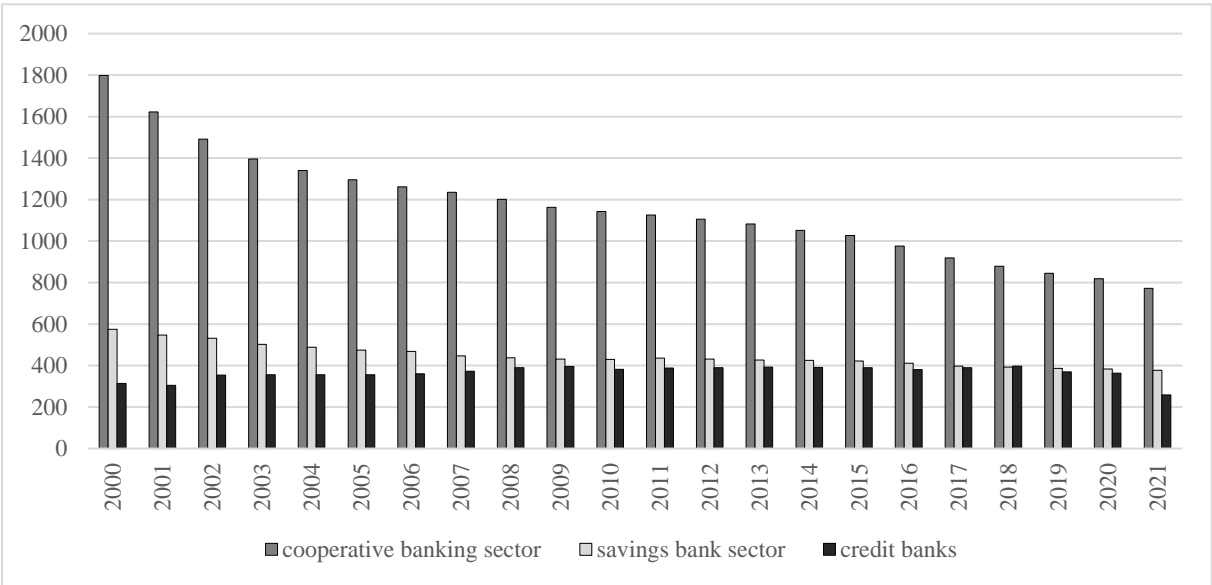


Figure 21: Evolution of the Number of Banks in the Three German Banking Sectors

Source: German Central Bank.

Similar to the United States, the number of mergers significantly impacted the structure of the German banking sector. Since the number of bank market entries was relatively low during the period considered, the total number of banks declined steadily over time. In figure 21, which shows the development of the number of banks within all three German pillars, a relatively sharp decline in the number of savings and cooperative banks can be seen while the number of

credit banks increased. However, since 2019, even the number of credit banks has fallen sharply.

At the beginning of the 2000s – when the number of M&As in the cooperative banking sector was by far the highest – the decline in the number of cooperative banks was most pronounced. In fact, there were 175 fewer banks operating in the market in 2001 than in 2000. A similar interdependence between the trend in the number of cooperative banks and the number of cooperative bank M&As is evident in the rest of the period considered, during which a decline in the number of mergers was generally accompanied by a proportionately smaller decline in the number of cooperative banks. Correspondingly, the correlation coefficient between the two series amounts to 0.78, again indicating that consolidation is a major factor behind the decline in the number of banks in the cooperative banking sector. Since the cooperative banks’ share in the overall German banking market, measured in terms of the number of institutions, is comparatively high, strong consolidation in this specific sector seems to have been decisive also for the decline in the number of banks in Germany as a whole.

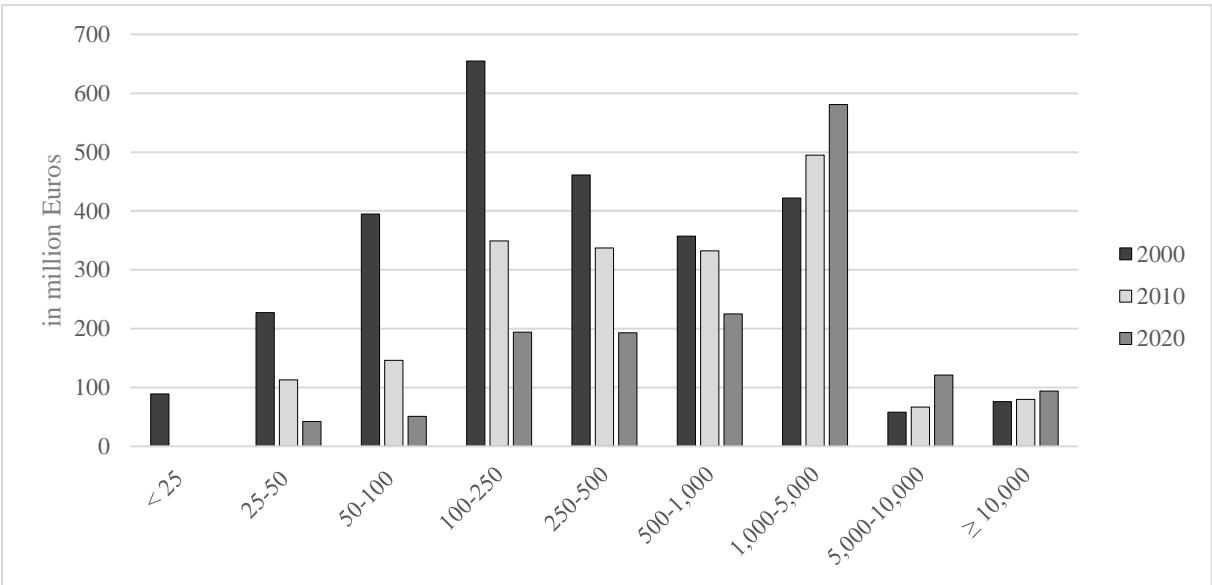


Figure 22: Evolution of Bank Size Distributions in Germany by Total Assets (Million Euros)
 Source: German Central Bank.

Since both cooperative and savings banks are small regional institutions, the strong consolidation trend in these sectors can be seen in the changes in the number of banks in the different size categories as well (figure 22). More specifically, the number of banks in all size classes with an average balance sheet total of fewer than one billion euros decreased over time. This decline was particularly sharp in the smallest categories and became more moderate in the in-

intermediate categories. In contrast, the number of banks in the size classes with banks with average total assets of more than one billion euros increased significantly between 2000 and 2020. Thus, similar to the United States, the average size of German banks increased while the number of banks decreased.

Table 4 might contribute to the clarification of this issue. It shows the balance sheet total of the largest German banks in 2021 compared with their total assets in both 2000 and 2010, with inflation-adjusted monetary values also shown in brackets. The development of the balance sheet totals is not uniform among the leading institutions, which is why a closer look at some of these banks' M&A activities might provide further input in the examination of the German consolidation process.

Table 4: Total Assets of the Leading German Banks in 2021 compared to their Total Assets in 2000 and 2010, in 2015 Prices in Parentheses

Institution name	Total assets in billion euros			Percentage change
	2000	2010	2021	2000–2021
1 Deutsche Bank	940 (1176)	1906 (2043)	1324 (1214)	+3
2 DZ Bank	374 (468)	383 (411)	627 (575)	+23
3 KfW	223 (279)	442 (474)	551 (505)	+81
4 Commerzbank	460 (576)	754 (808)	473 (434)	–25
5 Unicredit Bank AG	336 (421)	372 (399)	312 (286)	–32
6 LBBW	N/A	374 (401)	282 (259)	[–35]
7 J.P. Morgan AG	7 (18)	14 (15)	281 (258)	+2775
8 Bayerische Landesbank	N/A	N/A	267 (244)	/
9 Helaba	N/A	166 (178)	212 (195)	[+9]
10 ING Holding Germany	N/A	N/A	182 (167)	/

Source: Bayerische Hypo- und Vereinsbank (2001); Commerzbank (2001, 2011); DZ Bank (2002, 2011); Historical Society of the Deutsche Bank AG (2022); J.P. Morgan AG (2002, 2011); KfW (2002, 2011); Kuck (2022, p. 14); LBBW (2011); OECD (2022); UniCredit Bank AG (2011).

Starting with the largest German bank, total assets of **Deutsche Bank** increased significantly between 2000 and 2010 but reached only a slightly higher level in 2021 than in 2000. Between 2007 and 2010, Deutsche Bank acquired several major institutions (Historical Society of the Deutsche Bank AG, 2012). In response to the financial crisis, though, the bank was forced to divest risky assets by restructuring its portfolio to free up capital for more profitable purposes (Deutsche Bank, 2010). This transformation plan led to a drastic reduction in its balance sheet total (Deutsche Bank, 2010). However, most recently, i.e., in May 2020, Deutsche Bank merged with DB Privat- und Firmenkundenbank AG, which was also previously one of the ten largest institutions in Germany. This has certainly contributed to the bank still being declared a global

systemically important bank (Financial Stability Board, 2021) and, as such, by far the largest credit institution in Germany.

While Deutsche Bank reached its dominant position very early on (Historical Society of the Deutsche Bank AG, 2012), **Commerzbank** only became a major player after a series of mergers, most notably with Mitteldeutsche Privatbank in 1920 and Mitteldeutsche Creditbank in 1929 (Commerzbank, 1921, 1930). In other respects, a similar pattern was seen for Commerzbank. Starting from second place in 2000, Commerzbank continued to expand its position until 2010, before inflation-adjusted total assets almost halved by 2021, which caused the bank to drop two places. This is because, especially in the 2000s, Commerzbank expanded through a series of M&As (Commerzbank, 2020), among them the acquisition of Dresdner Bank (Commerzbank, 2008), with a transaction volume of 9.8 billion euros (ZEW, 2008). Even before the takeover was completed, however, Commerzbank had begun to gradually reduce its total assets as part of its “Roadmap 2012” strategy (Commerzbank, 2009a, 2009b, p. 9).

Germany’s second largest bank, **DZ Bank**, is the central institution of the cooperative financial network. Especially in the 1980s, when it was still known as DG Bank, it merged with numerous (regional) central institutions to form a new association structure. Thereafter, M&A activity stagnated for quite some time, interrupted only in 2000 by the merger of SGZ Bank and GZB Bank to form GZ Bank, which merged with DG Bank to create DZ Bank a year later. As the final step in the process of consolidation among the cooperative central banks, DZ Bank merged with WGZ Bank in 2016. (DZ Bank, 2020)

Third in the ranking is **KfW Bank**, the Kreditanstalt für Wiederaufbau, a state-owned development bank founded in 1948 with the objective of financing the reconstruction of the German economy (KfW, 2020). Among other factors, the merger with Deutsche Ausgleichsbank contributed to an increase in the bank’s total assets during the reference period (KfW, 2004).

Since 2005, **Unicredit Bank AG**, the former Bayerische Hypo- und Vereinsbank, has been an affiliated company of the Italian UniCredit group, which still operates under the brand name HypoVereinsbank (UniCredit Bank AG, 2019, p. 8). The merger is among the top ten M&A deals by deal volume in Germany as of October 2022, having amounted to more than 15 billion euros (IMAA, n.d.-a).

Landesbank Baden-Württemberg (LBBW), **Bayerische Landesbank**, and **Landesbank Hessen-Thüringen (Helaba)** are three of the current six central banking institutions of the regional Sparkassen. In 2000, 13 of them were still operating as independent entities (German Central Bank, 2001). Over time, however, Landesbanken were subject to a horizontal integration process that constantly reduced their number. Among others, in the course of the financial

crisis, LBBW bought both Sachsen LB and Landesbank Rheinland-Pfalz in 2008 (LBBW, 2009).

Overall, this means that despite the different developments of total assets at the leading banks, mergers and acquisitions contributed strongly to increases in total assets, while reductions were rather induced by internal restructurings. The periods of restructuring and consolidation differed tremendously across institutions, which may partly be explained by intra-banking-group, but of course also by entirely internal or external, challenges and opportunities.

After the examination of bank consolidation, an investigation of bank branch consolidation will follow. Looking at the development of the number of domestic branches in Germany, a continuous decline can be observed that was especially evident in the early 2000s as well as in the last few years (figure 23). This trend appears to be almost identical to that of the number of institutions, which the high correlation of 0.99 between the two series confirms. It can therefore be assumed that bank consolidation was a crucial factor that led banks to also consolidate their (overlapping or neighboring) branches. One example is the closure of 1,085 branches of DB Privatkunden- und Firmenkundenbank AG and Deutsche Postbank AG in the course of their merger in 2018 (German Central Bank, 2019, p. 8). However, Brüser and Schöning (2006, p. 116) found that the greater prevalence of online banking and other distribution options that do not require branches also forced non-merged banks to thin out their branch networks – either by converting staffed branches into self-service branches or simply by closing branches.

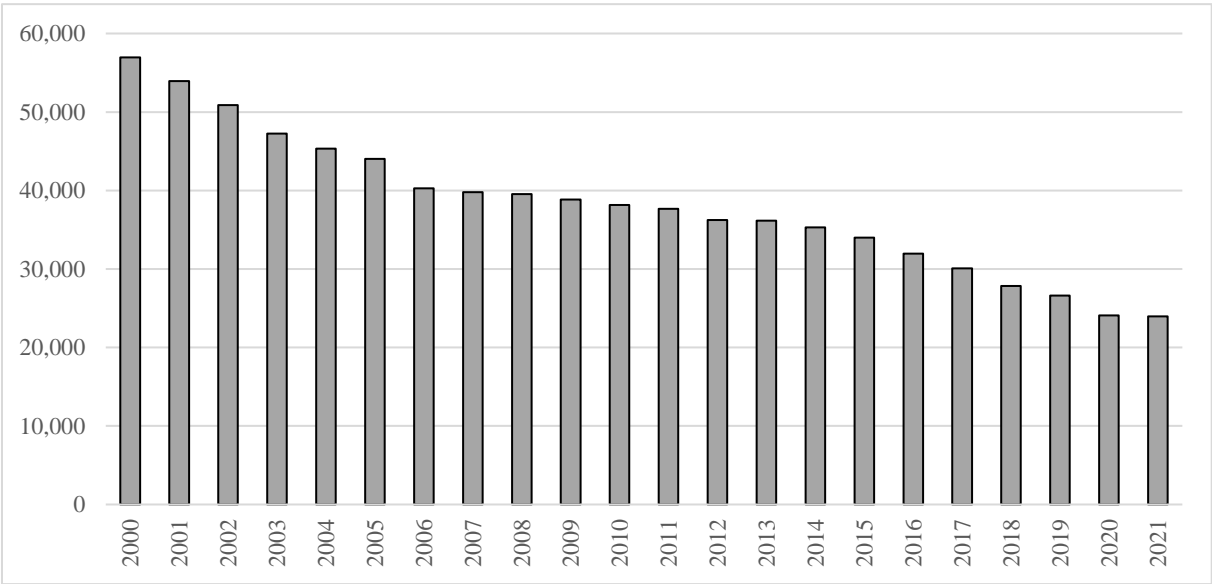


Figure 23: Evolution of the Number of Domestic Bank Branches in Germany

Source: ECB.

While the number of domestic branches declined, the total number of foreign bank branches and subsidiaries in Germany tended to increase over the period under review (figure 24). Leaving aside the years 2020 and 2021, when changes within the different categories were strongly influenced by the United Kingdom’s withdrawal from the EU, the most important factors here were the increase in the number of branches from other EU member states from 61 in 2000 to 87 in 2019 and the significant expansion in the number of subsidiaries from non-EU territories. As the number of branches from non-EU areas decreased only slightly over time, and the current number of subsidiaries from other EU member states is at the same level as in 2000, the increase more than offset the minor reduction in the number of foreign branches and subsidiaries in Germany. This might be the result of progressing cross-border consolidation.

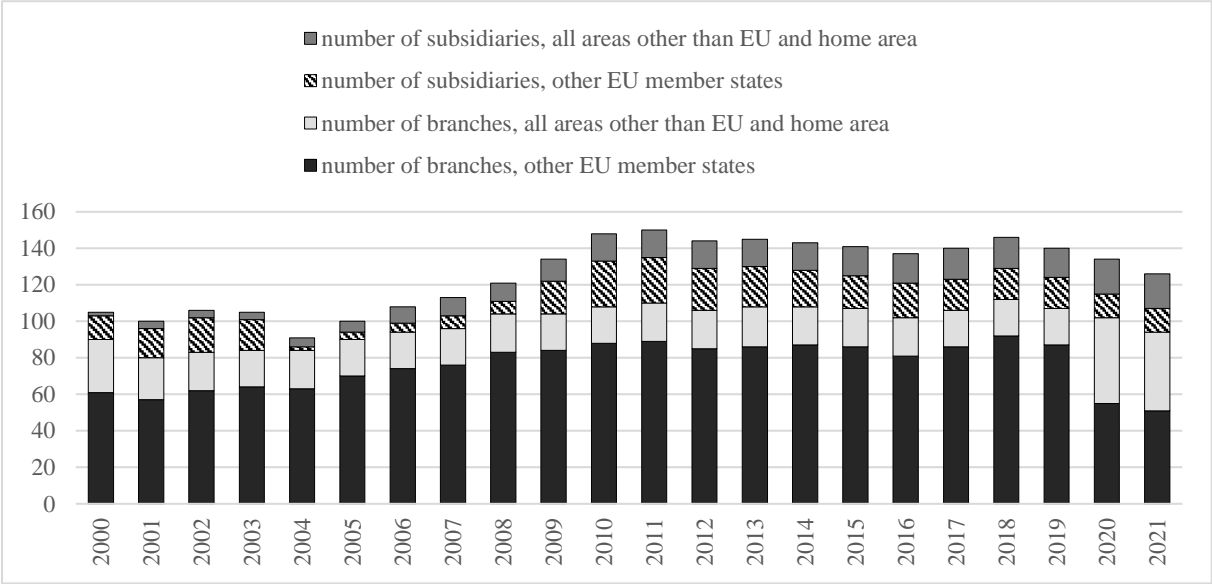


Figure 24: Evolution of the Number of Foreign Bank Branches and Subsidiaries in Germany

Source: ECB.

4.2.5 Consolidation in France

The formerly state-dominated French banking sector underwent privatization and bank restructurings since the mid-1980s (Engerer/Schrooten, 2004). Among others, the savings banks – the so-called *Caisses d’Epargne* – were converted into private cooperative credit institutions in 2000 (Moreau/Boukhorssa, 2002). This means that – unlike the vast majority of German *Sparbanken* – French savings banks have since ceased to be public institutions. The privatization process also involved the sale of cooperative shares to local savings societies – *Sociétés Locales d’Epargne* – which now own the savings banks (Gieseler, 2022a). Subsequently, savings banks were no longer listed as a separate group of institutions in official statistics; instead, a distinction is made only between private commercial banks, including joint-stock banks and municipal

credit banks, and cooperative banks. Following the reforms, there were a number of mergers and acquisitions within and between the groups (figure 25). Consolidation between the (former) savings banks and the cooperative banks began, when Natexis Banque Populaire and IXIS, investment banks of the savings and cooperative banks, respectively, created a joined subsidiary named Natixis (Gieseler, 2022a; Natixis, 2006). Numerous other mergers, especially in 2007 and 2008, led to a decline in the number of French savings banks to 15 in 2022 (Gieseler, 2022a).

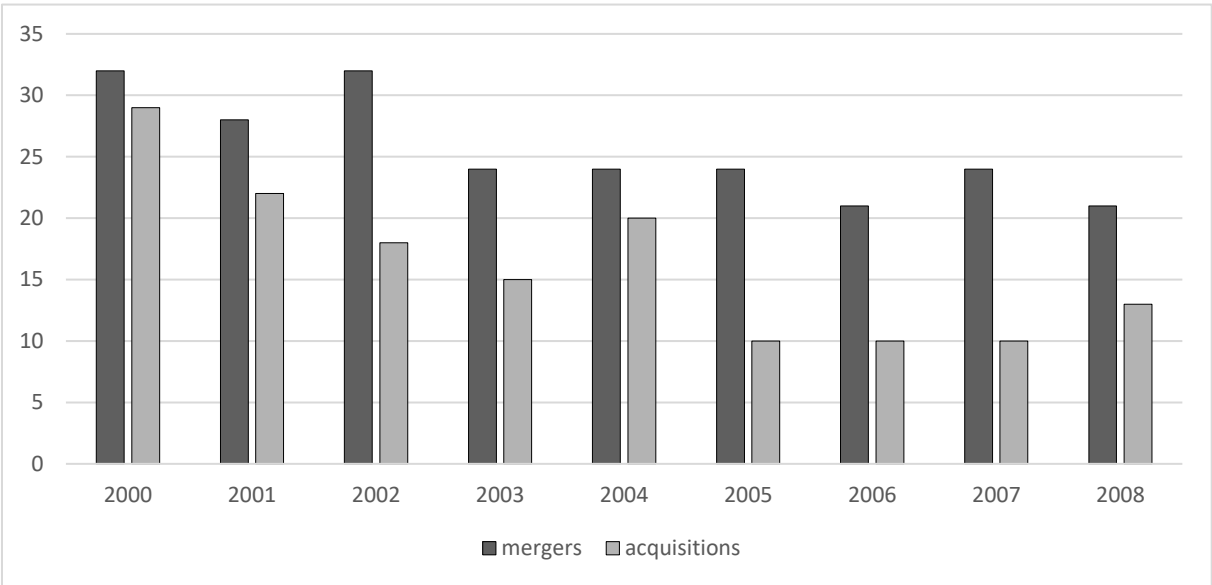


Figure 25: Evolution of the Number of M&As in the French Banking Sector

Source: CECEI (2009, p. 126).

Later, in 2009, the central cooperative bank Banque Fédérale des Banques Populaires and the leading (cooperative) savings bank Caisse Nationale des Caisses d’Epargne merged to form the **Banques Populaires Caisse d’Epargne (BPCE)** group (Gieseler, 2022a). The BPCE Group is the third largest French bank as of 2021 (table 5) and, as such, one of four French banks that are among the global systemically important financial institutions (Financial Stability Board, 2021). There have also been a number of mergers within the BPCE group in recent years. In the (former) savings bank sector, Caisse d’Epargne Nord France Europe and Caisse d’Epargne Picardie consolidated in 2017 to form Caisse d’Epargne Hauts de France, while Caisse d’Epargne Grand Est Europe was created in 2018 from the merger of Caisse d’Epargne d’Alsace and Caisse d’Epargne Lorraine Champagne-Ardenne (Fédération Nationale des Caisses d’Epargne, n.d.). The 2017 merger of the cooperative banks Banque Populaire Atlantique and Banque Populaire de l’Ouest led to the creation of Banque Populaire Grand Ouest (Fédération Nationale Banque Populaire, 2020).

Besides the BPCE group, there are two other cooperative sector groups – **Crédit Agricole** and **Crédit Mutuel** – that constitute the second and fifth largest banks in France in 2021, respectively (table 5). Both groups did, inter alia, grow externally over the period considered. As for **Crédit Agricole**, the year 2003 is particularly noteworthy in this context, as the bank acquired not only Finaref but also **Crédit Lyonnais** – a financial giant in difficulty at the time – which led to a fundamental restructuring of the group (Crédit Agricole Group, 2003; Crédit Agricole S.A., 2005). A major step in the expansion of **Crédit Mutuel** was the acquisition of German Citibank in 2008 (Citigroup, 2008).

Table 5: Total Assets of the Leading French Banks in 2021 compared to their Total Assets in 2000, in 2015 Prices in Parentheses

	Institution name	Total assets in billion euros		Percentage change
		2000	2021	2000–2021
1	BNP Paribas	694 (869)	2554 (2401)	+176
2	Crédit Agricole/ Crédit Lyonnais	536 (671)	2352 (2210)	+229
3	Groupe BPCE	2008: 1143 (1226)	1516 (1425)	[+16]
4	Société Générale	456 (571)	1464 (1376)	+141
5	Crédit Mutuel	2007: 396 (437)	1080 (1015)	[+133]
6	La Banque Postale SA	2005: 107 (122)	772 (726)	[+496]

Source: BFCM (2009); BNP Paribas (2001); BPCE (2010); Crédit Agricole S.A. (2003); Crédit Mutuel (2022); La Banque Postale (2007); OECD (2022); S&P Global Market Intelligence (2022a); Société Générale Group (2001).

On positions one and four, table 5 lists BNP Paribas and Société Générale, respectively. Both are joint-stock banks, which, too, have made intensive use of M&As to grow (externally) in the last two decades. In the early 2000s, **Société Générale** acquired several banks in Central Europe, including Komerční Banka in the Czech Republic and SKB Banka in Slovenia in 2001, but also in Africa, such as Moroccan Eqdom in 2002 (Société Générale Group, 2002, 2003). Other acquisitions, such as those of the German Hanseatic Bank in 2004 and the Croatian Splitska Banka in 2006, followed (Société Générale Group, 2005, 2006). The largest French bank, **BNP Paribas**, is the result of a merger of the domestic banks BNP and Paribas in 2000 (BNP Paribas, 2000). Since the merger, the bank has pursued a business objective of operating increasingly on a Pan-European basis. To this end, it acquired, among others, the Italian BNL in 2005, the Turkish TEB in 2006, the Belgic Fortis, and the Luxembourgian BGL in 2009, the German Dab Bank in 2014, and Deutsche Bank AG’s prime brokerage unit, which further contributed to its growth (BNP Paribas, 2007, 2016, S&P Global Market Intelligence, 2021).

Also one of Europe’s 50 largest banks, **La Banque Postale SA** has nearly quintupled its inflation-adjusted total assets since it was created in 2005 to manage the savings, deposit, and lending businesses of La Poste, a postal service company in France that back then operated under the legal form of an industrial and commercial public company (La Banque Postale, n.d.). The strong growth was primarily driven by the recent merger with CNP Assurances SA in 2020 (S&P Global Market Intelligence, 2021). With almost 800 billion euros in total assets, the bank is now one of the leading players in the country.

This means that, in contrast to the largest German banks, the leading French banks were able to substantially increase their total assets between 2000 and 2021. Mergers and acquisitions contributed greatly to the increase in their asset size. In particular, the acquisition of Cr dit Lyonnais in 2003 increased Cr dit Agricole’s total assets to such an extent that it became the second largest player in the French banking market. But even worldwide, BNP Paribas and the Cr dit Agricole Group ranked among the ten largest banks in 2021 (S&P Global Market Intelligence, 2022b). The British HSBS Holdings is the only European bank larger than BNP Paribas and the Cr dit Agricole Group. The four largest banks in France were also among Europe’s top ten banks by assets (S&P Global Market Intelligence, 2022a). This underscores the size of these institutions compared with their European and international competitors.

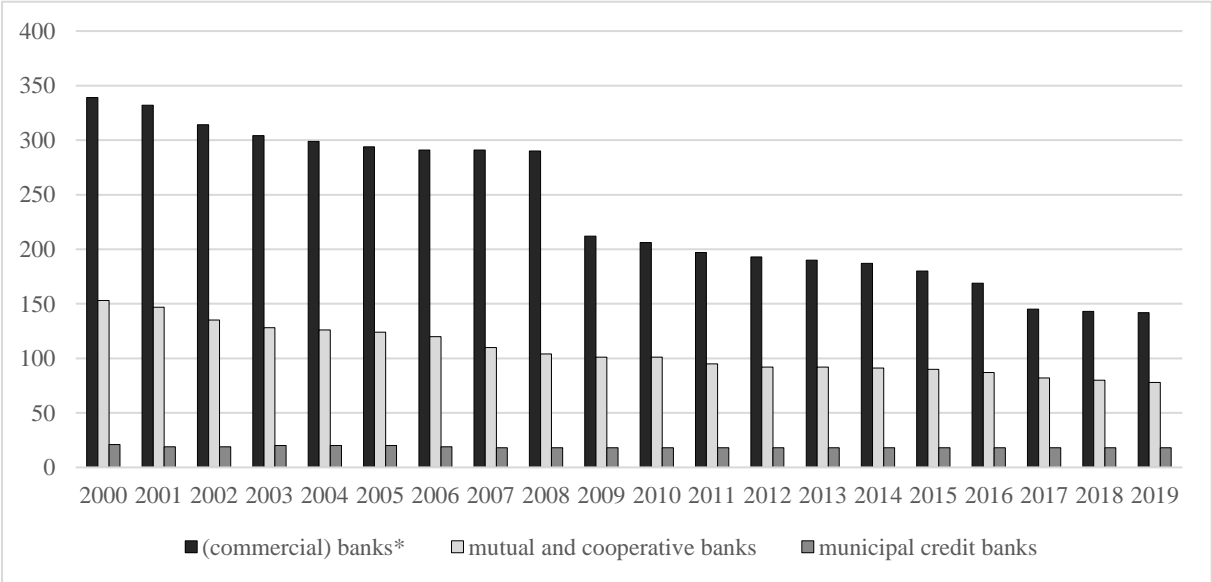


Figure 26: Evolution of the Number of Banks in the French Banking Sector

Source: Annual reports of the Commission Bancaire (2000–2008) and the ACPR (2010–2019).

* The determination of the category “(commercial) banks” for the years 2000 to 2008 is based on the total number of commercial banks (“banques commerciales”) as published in the respective annual reports of the Commission Bancaire, while in the subsequent reporting periods – when the financial supervisory structure was reformed and the newly created ACPR started publishing the annual reports – the classification was changed and “banques” were listed as “banques commerciales” instead.

The effects of restructuring in the French banking sector are reflected in the development of the number of banks (figure 26). In particular, while there were still more than 150 mutual and cooperative banks in 2000, only 78 were left in 2019. Although the number of (commercial) banks also declined strongly and continuously, it must be noted that a change in the categorization of banks took place between 2008 and 2009 (see the captions of figure 26). In contrast to developments in the other two sectors, the (small) number of municipal credit banks remained almost constant over the period considered – only three of the initial 21 banks left the market. This indicates that most of all structural changes in the mutual and cooperative and in the (commercial) banking sector contributed to the decline in the number of banks in France. Structural developments occurring in the field of branches and subsidiaries contrast with developments taking place in Germany and in the European Monetary Union as a whole (ECB, 2022d). While in 2000, the number of domestic branches in Germany exceeded that in France by more than 100%, in 2020, the number is almost 40% higher than in Germany – despite the smaller French population (figure 27). This is due to the sharp increase in the number of domestic branches in France from 2005 to 2006 and their continuous decline in Germany. However, the unnaturally sharp rise from 2005 to 2006 can only be explained by a statistical amendment, so caution is needed when interpreting the data on the number of domestic bank branches in France.

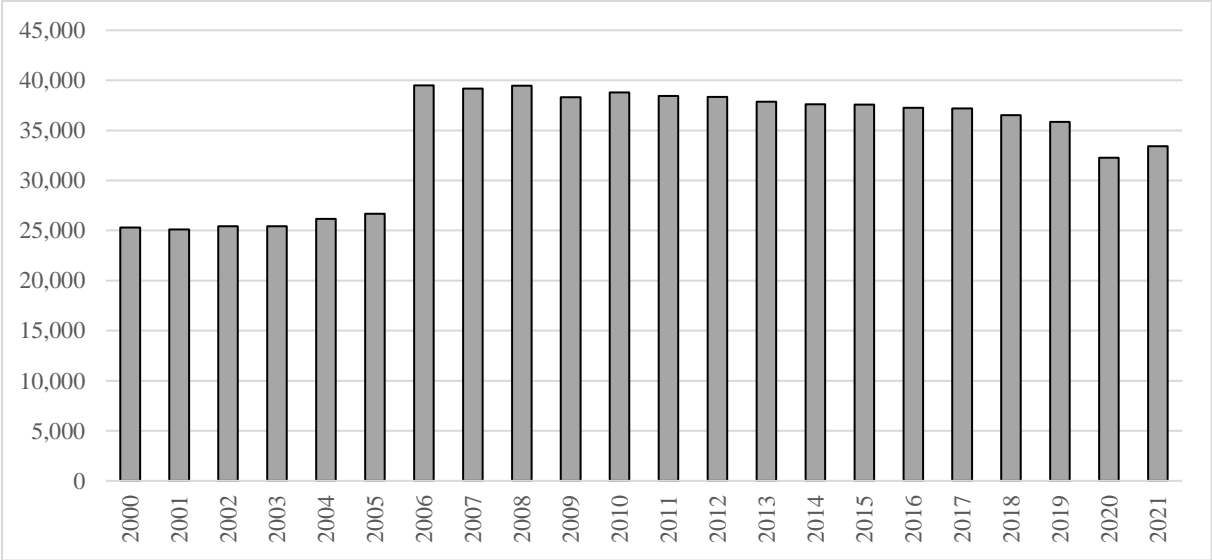


Figure 27: Evolution of the Number of Domestic Bank Branches in France

Source: ECB.

Figure 28 displays the number of foreign bank branches and subsidiaries in France. Compared with Germany, the number of foreign branches and subsidiaries is not only substantially higher, but it also followed a different, namely a decreasing instead of a growing, path over the period considered. The declining trend in the number of subsidiaries from other EU member states has probably been the most significant contributor to the (declining) growth pattern of foreign bank branches and subsidiaries. Specifically, the number of subsidiaries from other EU member states was at a particularly high level in the early 2000s, reaching 173 in 2001, while by 2021 it had declined continuously to only 35. In contrast, the decline in the number of both subsidiaries and branches from non-EU areas was more moderate, while the number of branches from other EU member states remained relatively constant.

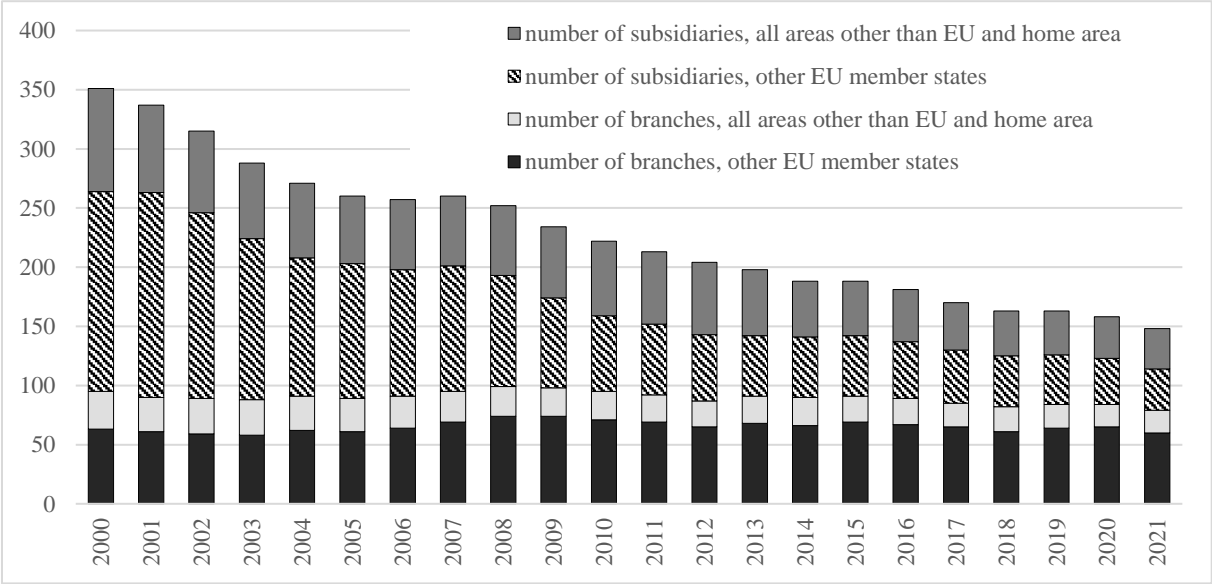


Figure 28: Evolution of the Number of Foreign Bank Branches and Subsidiaries in France

Source: ECB.

4.2.6 Consolidation in Spain

In Spain, the consolidation process gained momentum around 2009, when the savings banks (cajas de ahorros) ran into financial difficulties (IMF, 2012). In fact, in contrast to the (commercial) banks, which survived the financial crisis comparatively unscathed, the cajas were severely affected (Santos, 2014). When the catastrophic situation of the cajas became apparent, the government reacted as early as mid-2009 by establishing the Fund for Orderly Bank Restructuring¹⁴⁸ (Fondo de Reestructuración Ordenada Bancaria, FROB), which formed the starting point for the restructuring and recapitalization of the Spanish banking sector (Otero-Iglesias

¹⁴⁸ Royal-Decree Law 9/2009 established the fund.

et al., 2016, pp. 42 ff.).¹⁴⁹ Among others, the Fund was intended to finance consolidations among the cajas and eventually transform them into banks (Otero-Iglesias et al., 2016, p. 42). Therefore, in July 2010, savings banks were given permission to spin off their banking business into newly created joint-stock banks to enable them to raise equity capital, while the cajas themselves – in the form of (special) banking foundations – were to continue to fulfill their social functions (Gieseler, 2022c, p. 4).¹⁵⁰ This arrangement paved the way for the consolidation of the banking businesses of several cajas, either through a merger or an institutional protection scheme (IPS) (Gieseler, 2022c, p. 4).

Thus, reform developments fostered consolidations of several (ailing) banks during the crisis and the period thereafter (IMF, 2012, p. 19; Otero-Iglesias et al., 2016, pp. 33 f.). For instance, seven savings banks – Caja Madrid, Bancaja, Caja Canarias, Caja Ávila, Caixa Laietana, Caja Segovia, and Caja Rioja – merged in 2010 to form **Bankia** (CaixaBank, 2021), one of Spain's largest banks in 2011 (table 6). Serious financial problems eventually led Bankia to request a major bailout of some 19 billion euros in 2012, even though the FROB had already provided a four-billion-euro capital injection (Santos, 2014). Since 2014, a gradual reprivatization of the bank had been underway (European Commission, 2015a, p. 16). With the restructuring measures having come to an end, however, Bankia re-entered the M&A business through its merger with Banco Mare Nostrum (BMN) in 2018 (Arnoldt, 2018, p. 5; Bankia, 2020) and performed well afterward until, in 2021, it merged with CaixaBank, the third largest bank by total assets as of the merger year, thereby reaching almost the size of BBVA (table 6).

Also having emerged from a former caja, the background of the third largest Spanish bank as of 2021 – **CaixaBank** – (table 6) is similar to that of Bankia. In especially, as part of its reorganization process, the savings bank “la Caixa” – at the time one of the largest financial institutions in Spain – transferred its banking business to CaixaBank in 2011 (CaixaBank, 2012b, pp. 12 ff.). Following the restructuring, the bank launched a strategic plan that included strengthening its leadership position in the Spanish retail banking market (CaixaBank, 2013, p. 41). To improve its market position, in 2012 and 2013, the institute acquired Banca Civica and Banco de Valencia, respectively (CaixaBank, 2013, p. 41; CaixaBank, 2014, p. 52).

¹⁴⁹ Generally, however, there has been great resistance to recognizing the poor state of the system, delaying government intervention (Otero-Iglesias et al., 2016, p. 43).

¹⁵⁰ These measures were introduced by Royal-Decree Law 11/2010. Indeed, the vast majority of cajas transferred their financial operations to a separate commercial bank from the outset (Gieseler, 2022c, p. 4). Nevertheless, in December 2013, the transfer of the banking part and the transformation into a banking foundation became mandatory for all cajas with total assets of more than ten billion euros or with a market share of more than 35% in deposits in the regional domestic market (Gieseler, 2022c, p. 4). Prior to the reform process, non-public banking groups could not acquire savings banks because they were not publicly traded (Santos, 2014, p. 169).

Table 6: Total Assets of the Leading Spanish Banks in 2021 compared to their Total Assets in 2000, in 2015 Prices in Parentheses

Institution name	Total assets in billion euros			Percentage change
	2000	2011	2021	2000–2021
1 Banco Santander	310 (435)	1252 (1292)	1596 (1490)	+243
2 BBVA	296 (415)	598 (617)	719 (672)	+62
3 CaixaBank	N/A	270 (279)	680 (635)	[+128]
4 Banco de Sabadell	2001: 19 (25)	100 (104)	252 (235)	[+833]
5 Bankia	N/A	298 (308)	2020: 207 (199)	[–35]

Source: Banco Sabadell Group (2002, 2012); Bankia (2012); BBVA (2003, 2012); CaixaBank (2012a); OECD (2022); S&P Global Market Intelligence (2022a); Santander (2001, 2009).

The integration process in the Spanish savings bank sector is reflected in figure 29, which shows the evolution of the number of M&As from 2000 to 2014. The year 2010 stands out in particular, as in that year all but one of the M&As were attributable to the cajas sector, while in the rest of the period considered, it was mainly (commercial) banks and credit cooperatives that were involved in mergers and acquisitions. On an aggregate basis, the period in the early 2000s was characterized by a comparatively high level of M&A activity, whereas mergers and acquisitions almost grounded to a halt in the period immediately preceding the financial crisis, only before picking up again in the restructuring phase. Although more recent data could not be taken into account due to the lack of availability, the trend appears to have led to less consolidation, at least compared with the 2010–2012 phase.

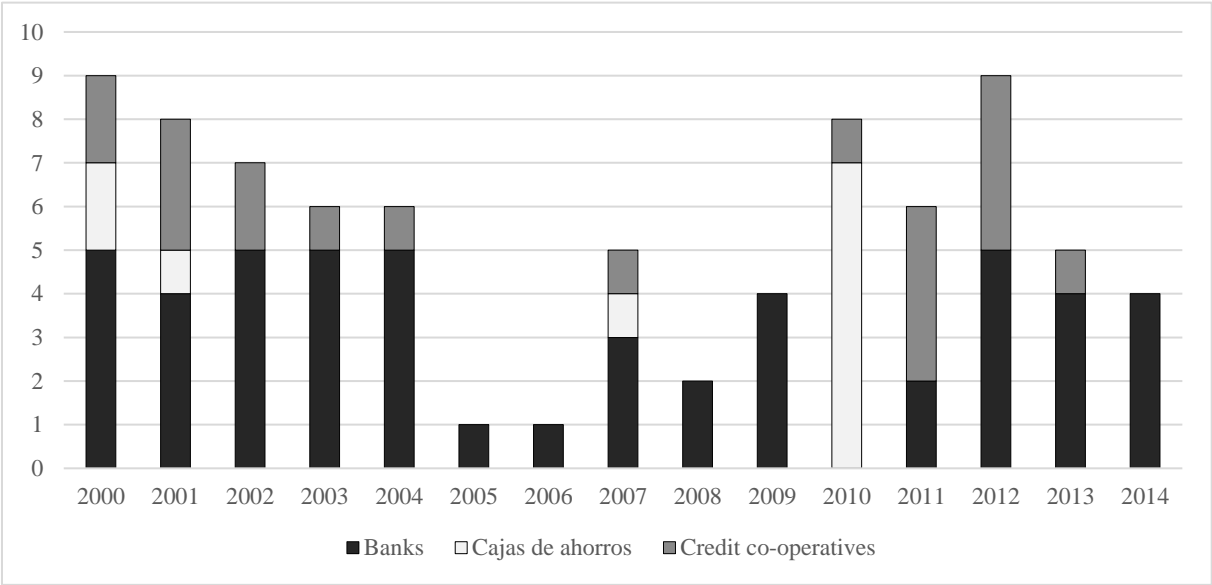


Figure 29: Evolution of the Number of Bank M&As in Spain, Breakdown by Sectors

Source: Reports on Banking Supervision of the Bank of Spain.

As a consequence of the consolidation process in the Spanish savings bank sector, nine of 46 cajas existing in 2009 remained in 2021, of which only two retained the legal status of a caja (CECA, n.d.; Banco de España, 2010, p. 22, 2022, p. 61; see figure 30). While cajas were an essential part of the Spanish banking sector until they were hit by the crisis, credit cooperative banks have never played much of a role in Spain (Santos, 2014, p. 166; Fajardo-García/Soler-Tormo, 2016, pp. 228 ff.). Despite their minor importance, credit cooperatives account for about one-third of all deposit-taking institutions in the Spanish banking market (figure 30). Partly reflecting the development of the number of mergers and acquisitions (figure 29), their number declined in the early years under consideration, then rose again for a while, and finally dropped steadily. A very similar pattern can be seen for the total number of domestic and foreign banks, although the number of foreign branches and subsidiaries increased during most of the period under review. With the de facto disappearance of savings banks and the small market share of credit cooperatives, the Spanish banking sector is now dominated by large-scale commercial banks.

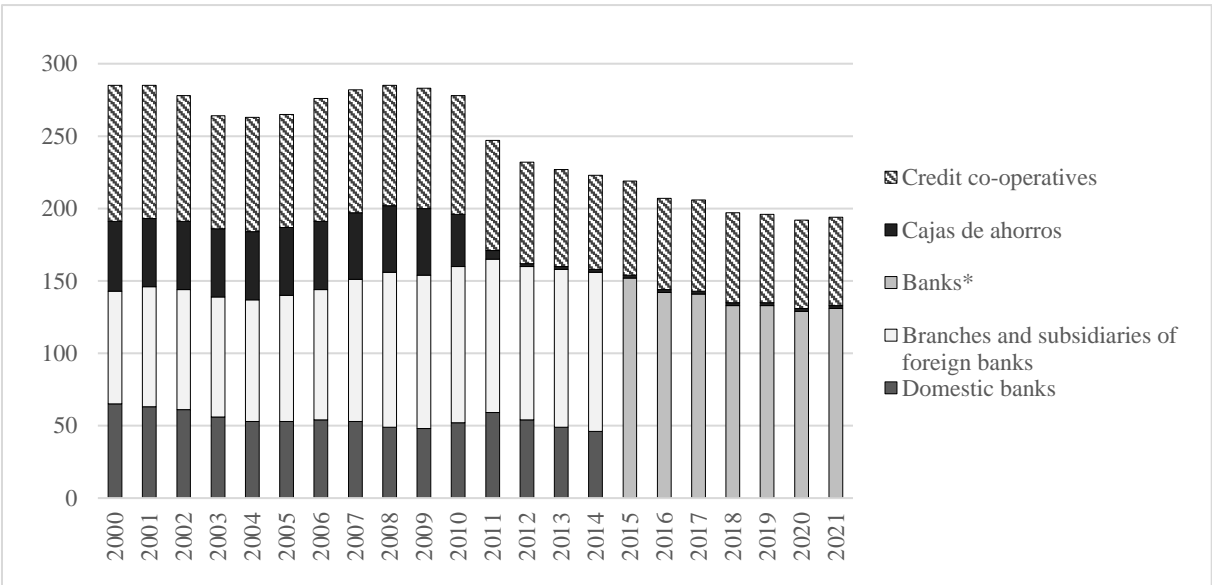


Figure 30: Evolution of the Number of Deposit Institutions in Spain, Breakdown by Sectors

Source: Reports on Banking Supervision of the Bank of Spain.

* In 2015, there was a change in the categorization of domestic and foreign banks in the Reports on Banking Supervision, so that the subdivision of the previous years could not be retained. Instead, in order to ensure comparability – at least to some extent – the category “Banks” was used since, which subsumes branches and subsidiaries of foreign banks as well as domestic banks.

The leading Spanish (commercial) bank is **Banco Santander** (table 6). The bank was not dominant from the outset but began its major expansion at the end of the 20th century by acquiring several banks and opening foreign branches and subsidiaries. It intensively pursued its interna-

tionalization strategy in the period preceding the financial crisis. Among others, Santander acquired Abbey National in 2004. Furthermore, it participated in the joint takeover of ABN AMRO in 2007, which enabled Santander to acquire Banco Real – the Brazilian subsidiary of ABN AMRO. (Santander, n.d.; Santos, 2014, p. 167) The expansion course resulted in Santander growing by more than 200% during the period under consideration. Also **Banco Bilbao Vizcaya Argentaria (BBVA)**, the second largest bank as of 2021 (table 6), increasingly diversified internationally in the early 2000s. For instance, in 2000, it acquired a controlling interest in the Mexican Bancomer. (Santos, 2014, p. 167) Over the 2000–2021 period, BBVA increased its inflation-adjusted total assets by roughly 60%. **Banco de Sabadell** recorded much stronger growth during this period. Its inflation-adjusted total assets rose by more than 800% – from 25 to 235 billion euros (table 6). Since the end of the 20th century, the bank gradually increased its scale, culminating in an initial public offering in 2001 (Sabadell Bank, 2020). Banco de Sabadell, since then, has increasingly expanded through acquisitions, comprising those of Banco Atlántico in 2002, Banco Urquijo in 2006, and Banco CAM (Caja Mediterráneo) in 2011, to name just a few examples (Sabadell Bank, 2020). With its 2014–2016 Triple Plan, the bank also laid the foundation for an internationalization process that led, among others, to the acquisition of the British bank TSB in 2015 (Banco Sabadell Group, 2017, p. 27).

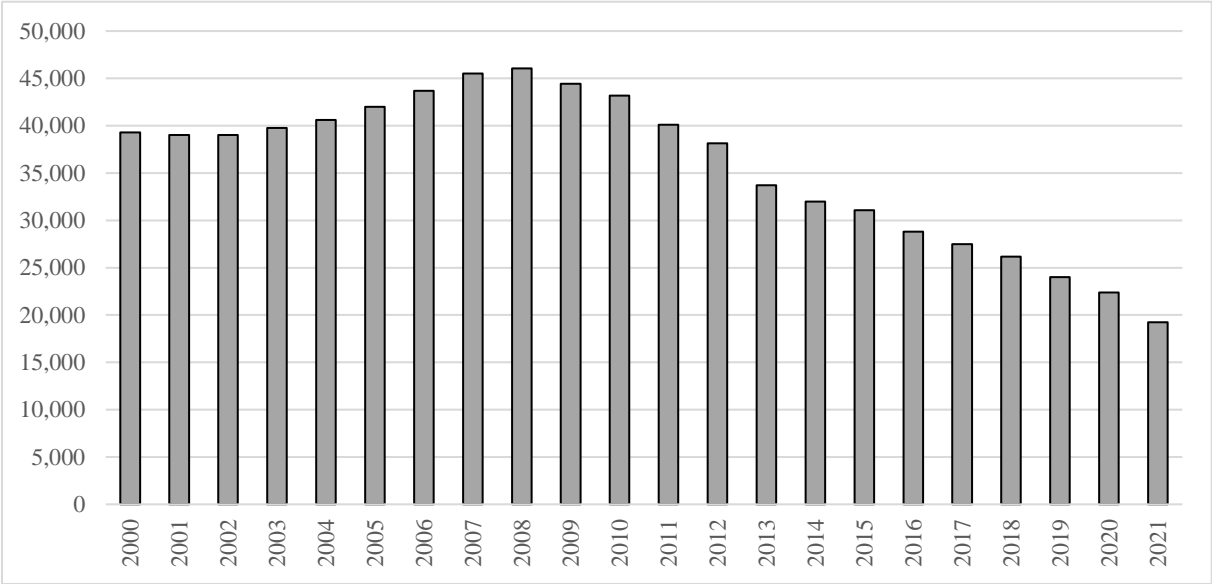


Figure 31: Evolution of the Number of Domestic Branches in Spain

Source: ECB.

To conclude the analysis of the consolidation process in the Spanish banking sector, a brief look is taken at the development of the number of branches. In fact, up until the financial crisis, the number of domestic branches increased steadily (figure 31), due in particular to the expansion

of branches among the cajas (IMF, 2012, p. 9). The peak was reached in 2008, after which the trend reversed. In particular, the number of domestic branches fell sharply by 51%, probably reflecting the consequences of the restructuring process in the savings bank sector. A similar pattern can be seen in the total number of foreign bank branches and subsidiaries (figure 32). However, looking at the different categories separately, it becomes clear that they have undergone markedly different developments. While the number of branches from other EU member states increased until 2010 and remained at that level afterward, the number of branches from all areas other than the EU and the home area has dropped continuously until 2021. Due to the Brexit, the figures from 2020 and 2021 should be treated with caution again.

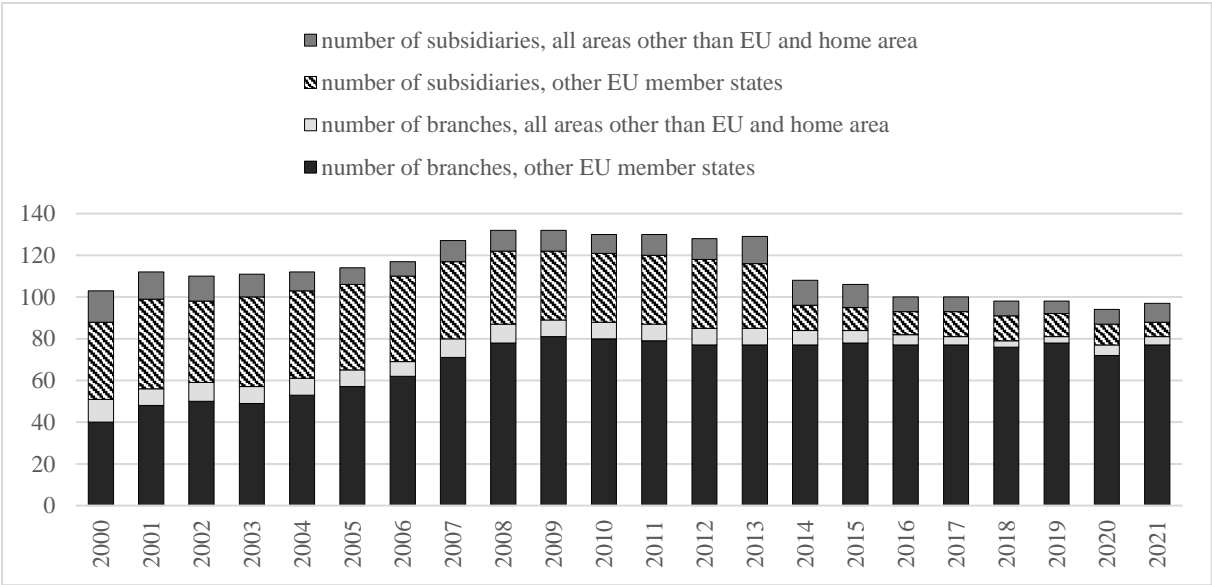


Figure 32: Evolution of the Number of Foreign Bank Branches and Subsidiaries in Spain
Source: ECB.

4.2.7 Consolidation in the Netherlands

In the Netherlands, there was no extensive growth process among the three leading banks from 2000 to 2021 when measured in terms of total assets (table 7). More specifically, while the inflation-adjusted total assets of two of them – Rabobank and ABN Amro – increased, the increase was not particularly large. For the largest bank, the inflation-adjusted value of total assets actually declined. In comparison, the consolidated inflation-adjusted total assets in the Netherlands rose by as much as 57% over the 2000–2021 period, which is, however, the lowest growth rate of the countries considered, except for the growth rate of 10% in Germany (ECB, 2022a; FDIC, n.d.; OECD, 2022). Nonetheless, for an economy the size of the Netherlands, the national banking sector and, in especially, its leading banks are relatively large. This is best illustrated by the fact that – as of 2021 – consolidated total assets exceeded the GDP by more than factor

three, while total assets of the top three banks alone are 2.3 times the national GDP (ECB, 2022a; World Bank, 2022).¹⁵¹ Both the sector’s size and comparatively low growth in the period considered might be due to the large number of consolidations already carried out before the turn of the millennium (De Nederlandsche Bank, 2015, p. 17).

Table 7: Total Assets of the Dutch Leading Banks in 2021 compared to their Total Assets in 2000, in 2015 Prices in Parentheses

Institution name	Total assets in billion euros		Percentage change
	2000	2021	2000–2021
1 ING	650 (866)	892 (808)	–7
2 Rabobank	343 (457)	591 (535)	+17
3 ABN AMRO	223 (297)	375 (340)	+14

Source: ABN AMRO Holding (2003); ING Group (2001); OECD (2022); Rabobank Group (2002); S&P Global Market Intelligence (2022a).

Nonetheless, in the course of the financial crisis, M&As involving major institutions (re-)occurred. In particular, the major takeover of **ABN AMRO** in 2007 by the Dutch RFS Holdings BV, consisting of the British Royal Bank of Scotland, the Spanish Banco Santander, and the Dutch-Belgian financial group Fortis, is worth mentioning in this context (ABN AMRO Holding, 2008, p. 2). During the integration process with Fortis Bank – especially due to the bailout of the distressed Fortis in late 2008 – Forti’s ABN AMRO assets were transferred to state ownership (Fortis, 2008). The legal merger of Fortis Bank and ABN AMRO Bank was completed in 2010, resulting in the newly formed entity ABN AMRO Bank (ABN AMRO Bank, n.d.). Since 2015, ABN AMRO has been re-listed as a public company following an IPO (ABN AMRO Group, 2016, p. 13). The new institution is still the third largest Dutch bank in terms of total assets (table 7), having achieved its size partly due to its frequent involvement in mergers and acquisitions since the 18th century already (ABN AMRO Bank, n.d.).

Also **ING** – the leading Dutch bank (table 7) – has been heavily involved in acquisitions since its inception through the merger of the banking business of NMB Postbank Groep and the insurance business of Nationale-Nederlanden in 1991 (ING, n.d.). Among others, it acquired Bank Śląski of Poland in 2001, DiBa bank of Germany in 2002, and Oyak bank of Turkey in 2007 (ING, 2002, p. 30, 2003, p. 6, 2008, pp. 150 f.). However, in the wake of the 2008 financial crisis, ING accepted state aid, forcing it to sell several businesses as part of a required restructuring plan (ING, 2015, p. 8, 2015b). Although ING completed the repayment to the state in

¹⁵¹ It has to be noted that comparing stock data (total assets) with flow data (GDP) can be misleading. Nevertheless, this widely-used indicator gives a rough idea of the banking system’s relevance and size.

2014 (ING, 2015, p. 8), the divestment of business units presumably prevented the institution from growing further during the period considered. Anyway, ranking among the 40 largest banks worldwide (S&P Global Market Intelligence, 2022b), it is included in the list of global systemically important banks (Financial Stability Board, 2021).

In its current form, the second largest Dutch bank – **Rabobank** – only exists since 2016, when the network of local agricultural cooperative Rabobanks legally merged with its central institution (Rabobank Group, 2018, pp. 34 f.). Rabobank was actually founded through the merger of the umbrella organizations Coöperatieve Centrale Raiffeisen-Bank and Coöperatieve Centrale Boerenleenbank in 1972, though (Rabobank Group, 2018, pp. 20 ff.). After the merger, consolidations among the (overlapping) member banks led to a continuous decline in their number, while the ongoing digitalization of services resulted in the closure of numerous branches (Rabobank Group, 2018, pp. 22, 27). Furthermore, Rabobank has since been expanding internationally – including through acquiring agricultural-related banks (Rabobank Group, 2018, pp. 30 ff.). Over the period under examination, acquisitions comprise those of the Irish ACC Bank in 2002 and the Mid-State Bank & Trust in 2007 (Rabobank Group, 2003, p. 11, 2008, p. 19). However, downsizing processes were initiated in the aftermath of the crisis, although Rabobank weathered the crisis comparatively well (Boonstra, 2010, pp. 40 ff.; Rabobank Group, 2018, p. 31). This may explain why total assets grew only modestly during the examined period.

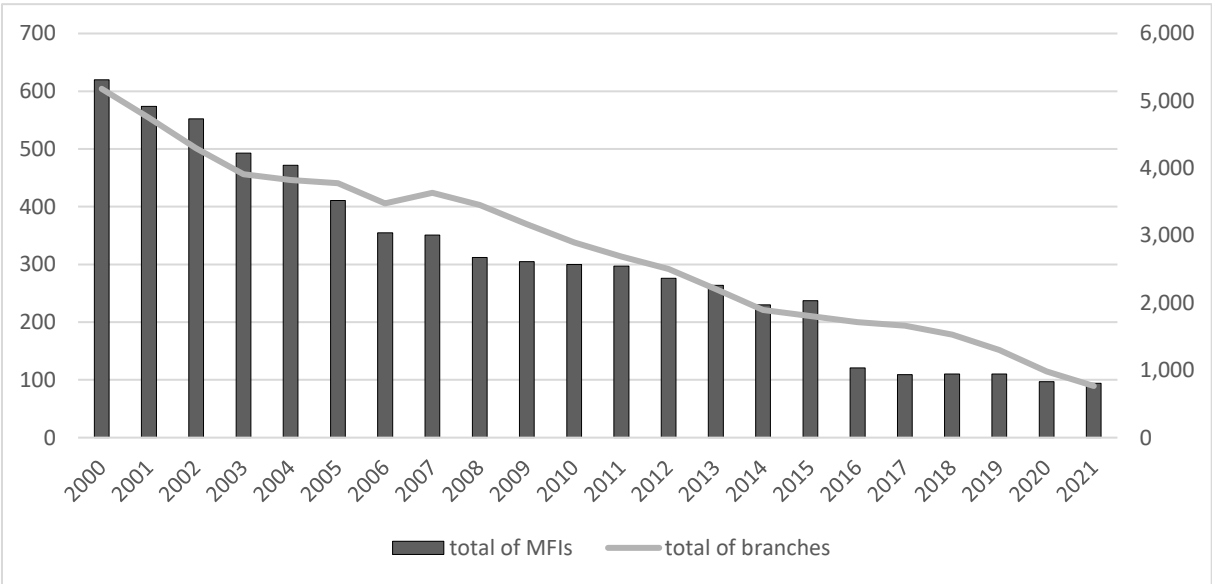


Figure 33: Evolution of the Number of MFIs and Bank Branches in the Netherlands

Source: ECB.

Despite the relatively slight increase also in consolidated (inflation-adjusted) total assets over the period considered (ECB, 2022a; OECD, 2022), the total number of MFIs declined sharply from 620 in 2000 to just 94 in 2021 (figure 33). This means that a 57% higher consolidated, inflation-adjusted balance sheet total in 2021 is spread across more than 500 – or 85% – fewer institutions than in 2000. Since the leading banks have not grown particularly strongly, the developments suggest that M&As have mainly taken place between MFIs smaller in size. Especially in the aftermath of the financial crisis, consolidation processes involving smaller institutions led to large banks dominating the national banking market even more. Another consequence of the consolidation process is the significant decrease in the heterogeneity of the Dutch banking sector in recent decades (De Nederlandsche Bank, 2015, p. 20). In fact, all types of banks, except for commercial banks and banks for government lending, ceased to exist (De Nederlandsche Bank, 2015, p. 21).

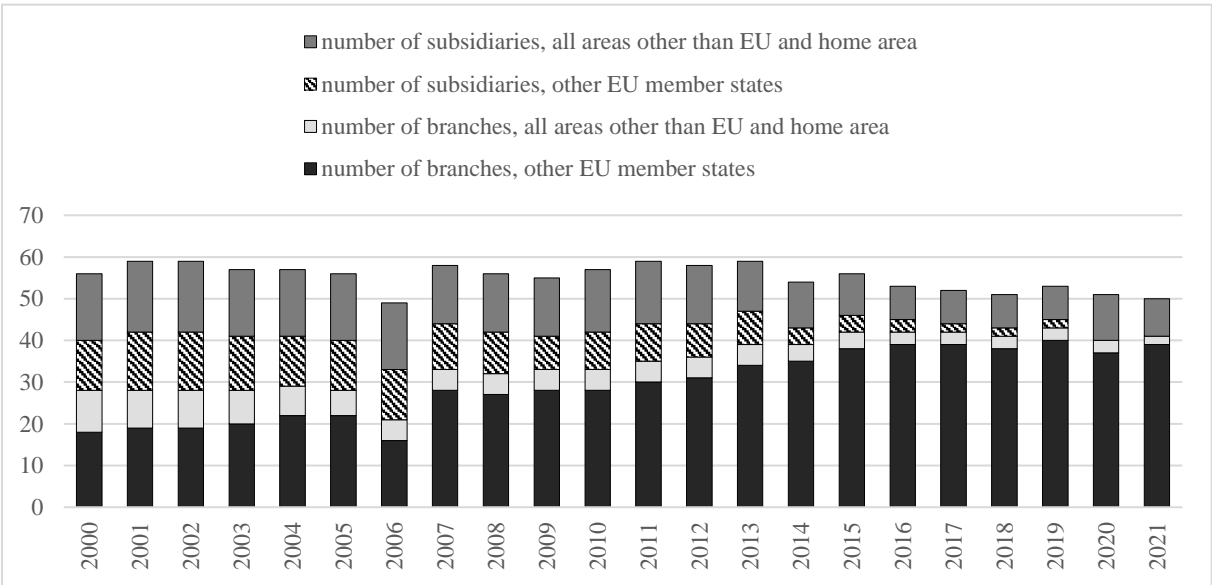


Figure 34: Foreign Bank Branches and Subsidiaries in the Netherlands

Source: ECB.

The development of the number of branches was almost identical to the development of the number of MFIs – a continuous decline resulted in 85% fewer branches in 2021 than in 2000 (figure 33). With just over four branches per 100,000 inhabitants as of year-end 2021 (Eurostat, 2022b; ECB, 2022b), branch density in the Netherlands is now particularly low. But also the presence of foreign bank branches and subsidiaries in the Dutch banking sector is relatively low, which may be explained by the significant barriers to market entry associated with the high market concentration (De Nederlandsche Bank, 2015, p. 22). As can be seen in figure 34, the number of subsidiaries from both other EU member states and non-EU areas declined steadily

over the period considered, reaching zero and two, respectively, in 2021. By contrast, however, the number of branches from other EU member states recorded a substantial increase.

4.2.8 Consolidation in Italy

To gain a more detailed insight into the consolidation processes in the Italian banking sector, the following section will look at the reform developments in the different banking groups, as they have strongly driven bank consolidation. In particular, the gradual change in the governance structures of savings banks and mutual banks led to a number of mergers, which in turn led to a significant decrease in the number of banks (Birindelli/Ferretti, 2018; Poli, 2019, pp. 298 f.).

To begin with, Italian **savings banks** – *casse di risparmio* – still exist as a brand name, but, from a legal point of view, they are no longer part of a separate group of institutions. Rather, the association of Italian savings banks (ACRI) refers to them as those independent joint-stock banks that emerged from the savings banks and are members of the ACRI. The legal transformation of the former public-law institutions into joint-stock corporations was initiated in the 1990s when their regional principle was also abolished. Specifically, the “Amato law” of 1990 gradually transferred share ownership to newly created (public-law) foundations. When, in 1998, the “Ciampi law” required the transformation of public-law foundations into private ones and obliged them – with few exceptions – to dispose of their majority shares, the material privatization of the savings banks finally began.¹⁵² These ownership changes fostered a consolidation process among the savings banks that led, among other things, to the emergence of two big entities – UniCredit and Intesa Sanpaolo. (Gieseler, 2022b; Birindelli/Ferretti, 2018)

Among the **mutual banks**, two different types are distinguished in Italy – those denoted “*banche popolari*” (BP), which are large cooperative banks, and those denoted “*banche di credito cooperative*” (BCC), which are smaller mutual banks (Federcasse, n.d.; Landi, 2012, pp. 62 ff.). Both types have recently been subject to a series of measures aimed at reforming the Italian banking system. Among others, in 2015, **BPs** with total assets of more than eight billion euros were required to transform into joint-stock banks – *Società per Azioni* (S.p.A.) banks – within 18 months (Poli, 2019, pp. 307 ff.).¹⁵³ This served, i.a., to facilitate consolidations (Bank of Italy, 2018, p. 6). For instance, as a result of the reform process, Banco Popolare Group and Banca Popolare di Milano merged in 2017 to form Banco BPM and assume the

¹⁵² At the time, as the savings banks were privatized, the majority of other public law banks were privatized as well (Gieseler, 2022b, p. 4).

¹⁵³ This measure was introduced by Decree Law 3/2015 of January 24, 2015, which was later transformed into Law 33/2015 of March 24, 2015. All but two cooperative banks, namely Banca Popolare di Sondrio and Banca Popolare di Milano, followed the law’s requirement.

S.p.A. status (Banco Popolare & Banca Popolare di Milano, 2016). As is depicted in table 8, Banco BPM was the fourth largest Italian bank in 2021.

In 2016, the **BCCs**, too, underwent a governance structure reform that forced them to consolidate under joint-stock banks holding net assets of at least one billion Euros within 18 months (Bank of Italy, 2016, pp. 44 f.).¹⁵⁴ This resulted in the banking groups ICCREA and Cassa Centrale Banca becoming the central institutions of two full-fledged banking organizations, into which most BCCs merged (Poli, 2019, pp. 318 ff.). Of the remaining mutual banks, some joined the (looser) institutional protection scheme under the smaller regional Raiffeisen network (Poli, 2019, pp. 318 ff.).

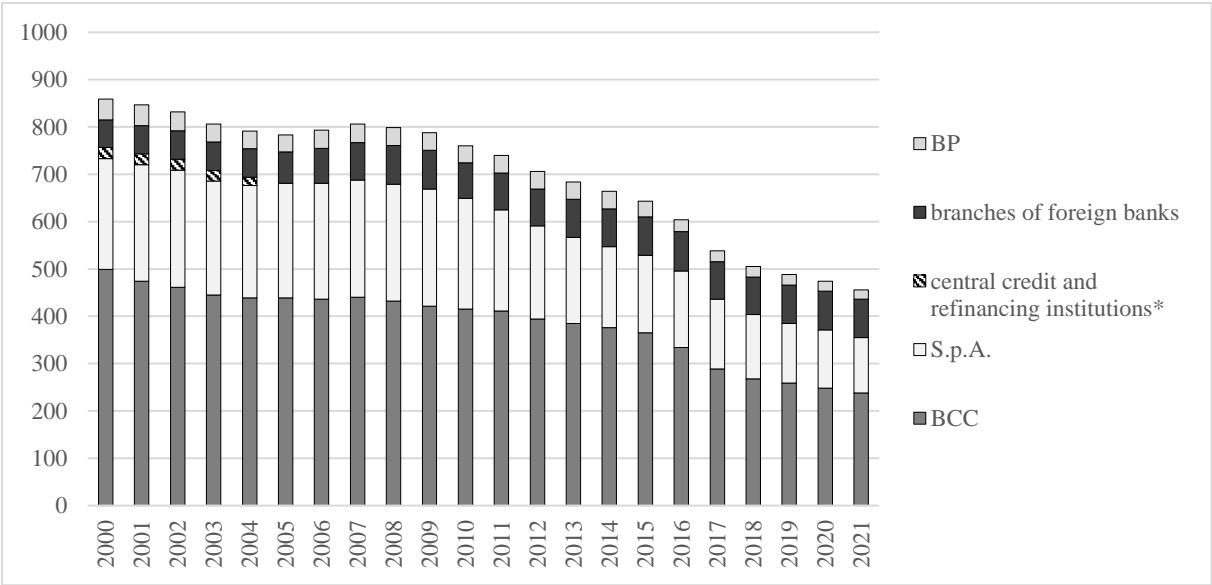


Figure 35: Evolution of the Number of Banks in Italy by Institutional Category

Source: Bank of Italy.

* In January 2005, the category “central credit and refinancing institutions” was eliminated and merged into the “S.p.A.” category.

The preceding findings may help explain part of the evolution of the number of banks by institutional category shown in figure 35. In especially, the particularly steep fall in the total number of banks between 2016 and 2017 may be attributed – at least to some extent – to the reform in the BCC sector, while the measures taken in the BP sector a year earlier may have contributed to the decline in the number of BP institutions from 33 in 2015 to 25 in 2016. However, already in the aftermath of the crisis, the decline in the number of banks began to manifest itself more

¹⁵⁴ Decree Law 18/2016 of February 14, 2016, later transformed into Law 49/2016 of April 8, 2016, introduced this reform.

intensively. Over the entire period from 2000 to 2021, the number of banks in all groups decreased by more than 50%, with the exception of Italian branches of foreign banks, whose number actually increased. This implies that, overall, no (domestic) category of banks was more severely affected by consolidation than the others, but that consolidation contributed similarly to the decline in the total number of banks in all groups.

The consolidation processes are also reflected in the evolution of bank size distributions (figure 36). Although there was an increase in the number of banks smaller than 1.3 billion euros in average total assets until the beginning of the financial crisis, the number fell sharply thereafter, so that of 554 banks in 2004, only 300 remained in 2021. The category of banks with the highest balance sheet total saw a similarly sharp decline in the number of banks, although the trend over time was different. More specifically, the number of banks with an average balance sheet total of more than 26 billion euros decreased from 29 banks in 2004 to the local minimum of 12 in 2013 and then increased to 25 in 2016, while it is now decreasing again. This could indicate that consolidation also took place among the large and major banks, but that – over time – consolidation among the smaller groups led to the renewed increase in the number of large and major banks until 2016.

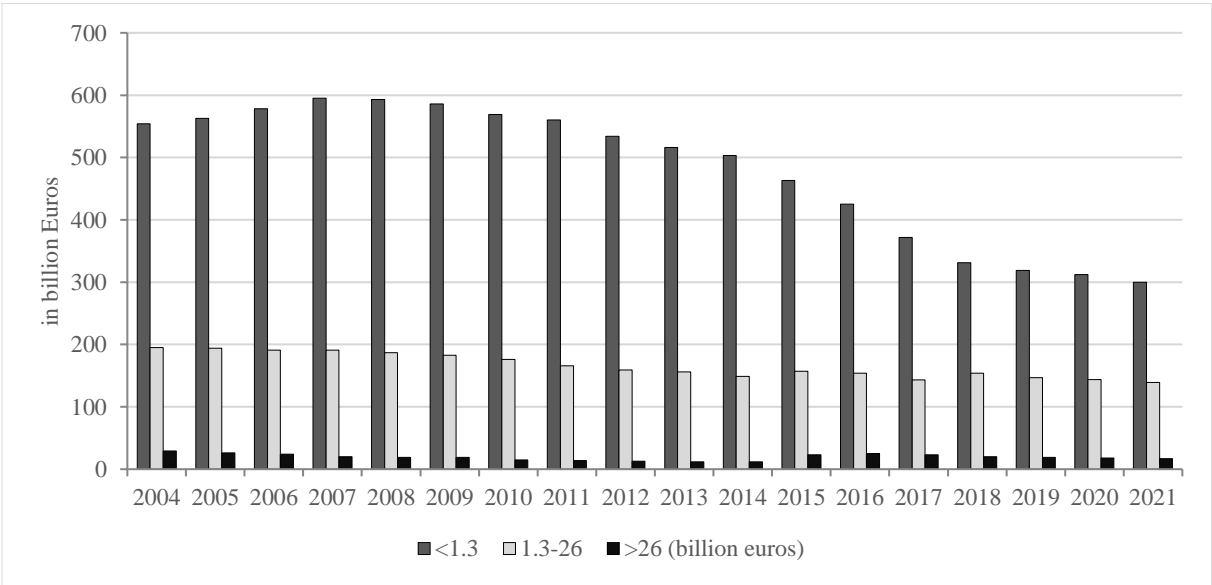


Figure 36: Evolution of Bank Size Distributions in Italy by Average Total Assets

Source: Bank of Italy.

Table 8 lists the six largest Italian banks in terms of total assets. Most of them are joint-stock corporations that emerged from former savings or mutual banks. As pointed out above, in the case of UniCredit and Intesa Sanpaolo, consolidations with savings banks largely contributed to attaining their today’s size, while Banco BPM is the result of the consolidation process in the

BP banking sector; and BPEER Banca S.p.A. reached its size by incorporating both savings and mutual banks (BPER Banca, n.d.).

Table 8: Total Assets of the Leading Italian Banks in 2021 compared to their Total Assets in 2000, in 2015 Prices in Parentheses

Institution name	Total assets in billion euros		Percentage change
	2000	2021	2000–2021
1 Intesa Sanpaolo S.p.A.	643 (857)	1069 (1021)	+19
2 UniCredit S.p.A.	2004: 245 (295)	917 (876)	[+197]
3 Cassa Depositi e Prestiti S.p.A.	2004: 108 (130)	413 (394)	[+204]
4 Banco BPM S.p.A./Banco Popolare	2008: 121 (132)	200 (191)	[−13]
5 BPER Banca S.p.A.	2007: 49	159 (152)	+174
6 Banca Monte dei Paschi di Siena S.p.A.	117 (156)	138 (132)	−15

Source: Banca Monte dei Paschi di Siena (2001); Banco Popolare (2010); BPER Banca (2009); Cassa Depositi e Prestiti (2022); CDP (2006, 2021); Gruppo Intesa (2001); OECD (2022); S&P Global Market Intelligence (2022a); UniCredit (2005).

The largest bank, **Intesa Sanpaolo**, was only established in 2007 through the merger of the Italian banks Banca Intesa and Sanpaolo. Both institutions emerged from a merger in 1998 and expanded, especially in the early 2000s, by consolidating with savings banks, among others (Intesa Sanpaolo, 2019). As can be seen in table 8, the merged institution did not grow much in terms of total assets during the period considered, despite some further acquisitions (e.g., Intesa Sanpaolo, 2008a, 2008b). **UniCredit** is not only the second largest Italian bank but – as one of the leading European commercial banks – also a global systemically important bank (Financial Stability Board, 2021). Although UniCredit was already expanding steadily through consolidations before the 2000s, it grew the most when it merged with Germany's Hypovereinsbank in 2005 (UniCredit, 2019). **Cassa Depositi e Prestiti** is a national promotional institution that was privatized by becoming a joint-stock company in 2003 (CDP, 2018, p. 12). Nevertheless, the Ministry of Economics and Finance remained the majority owner (CDP, 2018, p. 12). While Cassa Depositi e Prestiti was founded as early as 1850 (CDP, 2018, p. 12), **Banco BPM** started operations only in 2017 through the merger of the former BPs Banco Popolare and Banca Popolare di Milano, which were created through consolidations of various other (former) BPs and savings banks (e.g., Banca Popolare di Milano, 2008a, 2008b; Banco Popolare di Verona e Novara/Banca Popolare Italiana, 2007). **BPER Banca** has grown substantially since 2007, to which the purchase of Banca Carige S.p.A. contributed largely, making it the fifth largest Italian bank in 2021 (S&P Global Market Intelligence, 2022a). Italy's sixth largest bank in 2021 – **Banca Monte dei Paschi di Siena** – expanded steadily in the early 2000s, including by acquiring some regional banks (Banca Monte dei Paschi di Siena, 2019), while it continuously

encountered financial difficulties after the financial crisis (European Commission, 2012e). Overall, the institution has not grown in size during the period under consideration.

Following the analysis of consolidation processes among the largest Italian banks, figure 37 displays the development of the number of bank branches in Italy. Similar to Spain, the number of domestic bank branches peaked in 2008 before falling continuously to a level even below that at the beginning of the reference period. In particular, while there were just over 28,000 branches in 2000, the number had fallen to 21,768 in 2021. Since the outbreak of the crisis in 2008, the number of branches has declined by more than 35%.

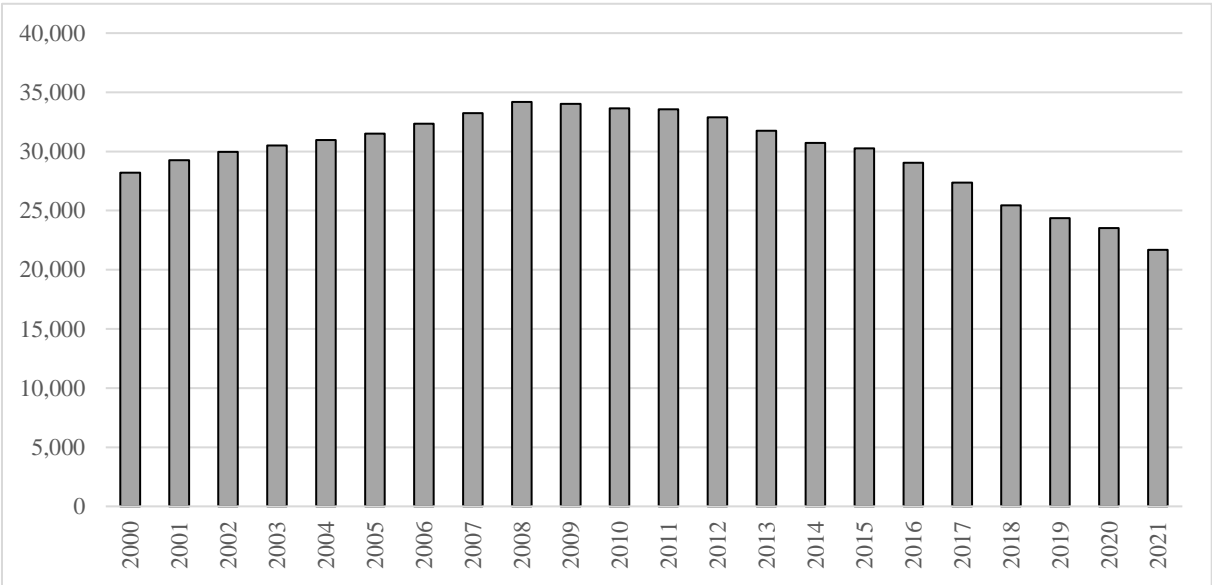


Figure 37: Development of the Number of Domestic Bank Branches in Italy

Source: ECB.

As regards foreign bank branches and subsidiaries (figure 38), it can be seen that their total number has increased over the period 2000–2021. This increase was mainly due to the increase in the number of subsidiaries from other EU member states and the number of branches from non-EU areas. Although the number of branches from other EU member states and the number of subsidiaries from non-EU areas displayed an increase for some time during the period considered, the number almost fell back to the initial level.

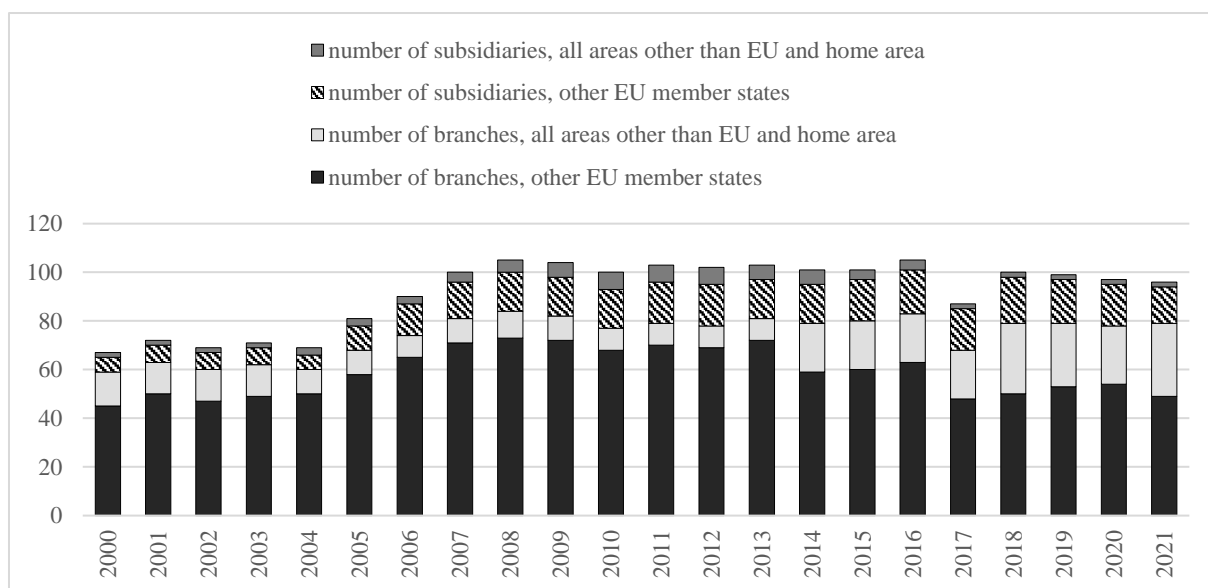


Figure 38: Development of the Number of Foreign Bank Branches and Subsidiaries in Italy

Source: ECB.

4.2.9 Structural Implications: Cross-Country Comparisons

Having thoroughly investigated the consolidation processes in the United States, Germany, France, Spain, the Netherlands, and Italy, the structural effects of these two decades of consolidation on the banking sectors are considered on a comparable basis below. This shall allow for identifying similarities and differences in the level and the intensity of the consolidation processes. As was remarked before, however, due to national differences in the classification of banks, measurement methods, and definitions, a comparison of the levels of consolidation cannot provide entirely accurate results. Nevertheless, it seems practical to give a brief comparative overview.

Consolidation leads, *ceteris paribus*, to an increase in the average bank size. Hence, the respective **average size of a bank** in the six countries considered might be a good reference point for a comparative analysis, as it adjusts for the size of the banking sector, i.e., its aggregate consolidated balance sheet total. Indeed, the average (inflation-adjusted) balance sheet total per bank rose in all countries studied (table 9). However, it has to be taken into account that factors other than consolidation have an impact on the average bank size as well. More particularly, the increase could to some extent also be the result of internal bank growth or market withdrawals by smaller-than-average banks. For this reason, aggregate consolidated total assets and the number of banks in the market are considered below as well. Roughly speaking, a *ceteris paribus* increase in the aggregate consolidated balance sheet total can come about through the internal growth of banks or bank market entries. Since the latter factor hardly plays a role at present, the (inflation-adjusted) total assets of a banking sector are approximately the reflection of organic

growth of the banks in that sector. This means that if, for example, both average bank size and total aggregate assets increase, at least part of the increase in average size is attributable to banks' internal growth. As for the number of banks in the market, it can be concluded that a ceteris paribus decline results from banks leaving the market or consolidations. Using these indicators, a variety of information can be derived from the data.

Table 9: Structural Indicators in a Cross-Country Comparison (I)

		<i>US</i>	<i>DE</i>	<i>FR</i>	<i>ES</i>	<i>NL</i>	<i>IT</i>
Ø total assets per bank (inflation-adjusted, in millions of national currency)	2000	1,023	2,737	2,651	2,831	2,468	2,683
	...						
	2021	4,701	5,774	17,015	11,636	25,479	8,077
	Δ	+359%	+111%	+542%	+311%	+933%	+201%
total assets (inflation-adjusted, in billions of national currency)	2000	8,390	7,614	4,677	1,617	1,530	2,372
	...						
	2021	19,912	8,407	10,396	2,804	2,395	3,804
	Δ	+137%	+10%	+122%	+73%	+57%	+60%
number of banks*	2000	8,200	2,782	1,764	571	620	884
	...						
	2021	4,236	1,456	611	241	94	471
	Δ	-48%	-48%	-65%	-58%	-85%	-47%

Source: Board of Governors of the Federal Reserve System; ECB; FDIC; Federal Financial Institutions Examination Council; Federal Reserve Bank of St. Louis; OECD; World Bank; own calculations.

* "Number of banks" includes the total number of MFIs for the EMU countries but the total number of commercial banks for the United States.

To begin with, average total assets per bank have increased much more in the United States than in Germany, while the number of banks has declined roughly the same in both countries. A major difference is to be found in the relative change of the aggregate consolidated balance sheet total, which was relatively small in Germany but reached +137% in the United States. This suggests that the increase in the average size of banks in Germany was primarily due to M&As and the exit of smaller institutions from the market, while in the United States, internal growth must have played a role as well.

Furthermore, it can be noted that whereas the average bank size in the United States was comparatively small in 2000, it was virtually the same in all five EMU countries considered. Over time, however, it underwent distinct developments in the different countries. The Netherlands stands out here in particular, with an increase in average bank size of more than 900% between 2000 and 2021 and a sharper decline in the number of banks than in the other four countries.

What all countries have in common, however, is that the percentage increase in average bank size was greater than the percentage increase in aggregate consolidated total assets.

The status quos of the average bank size consequently reflect the outcome of the (percentage) changes and allow for determining, in approximate terms, how far the consolidation process has progressed already. It turns out that the Netherlands – due to by far the highest growth rate in the average bank size – is also the country where banks held, on average, by far the highest total assets in 2021. In especially, the average inflation-adjusted balance sheet total per bank in the Netherlands in 2021 amounted to more than 25,000 million euros, compared with only 4,701 million U.S. dollars in the United States and 5,774 million euros in Germany. But also the average bank sizes in Italy and Spain not even reached half the Dutch value, while with roughly 17,000 million euros in average inflation-adjusted total assets per bank, a somewhat higher level was reached in France.

A look at traditional structural indicators may give some more insight into the consolidation trends in the banking sectors of the countries considered (table 10). These indicators include bank and branch density per 100,000 inhabitants and the five-bank asset concentration ratio. The analysis of the development of bank branch density shows a somewhat ambiguous picture, while the evolutions of bank density and the concentration ratio seem more homogeneous, as they at least point in the same direction. However, the absolute values of the countries considered clearly differ for all structural indicators. Once again, the Dutch banking sector stands out in all indicators.

Table 10: Structural Indicators in a Cross-Country Comparison (II) (Concentration)

		<i>US</i>	<i>DE</i>	<i>FR</i>	<i>ES</i>	<i>NL</i>	<i>IT</i>
Bank density (per 100,000 inhabitants)	2000	2.9	3.4	2.9	1.4	3.9	1.6
	2021	1.3	1.7	0.9	0.5	0.5	0.8
	Δ	–55%	–48%	–69%	–63%	–86%	–49%
Branch density (per 100,000 inhabitants)	2000	23.9	69.3	41.6	96.8	32.4	49.6
	2021	21.8	28.9	49.4	40.7	4.4	36.9
	Δ	–9%	–58%	+31%	–42%	–87%	–26%
CR ₅ (in %)	2000	28	20	47	45	81	23
	2021	50	32	49	69	84	52
	Δ	+77%	+59%	+5%	+53%	+4%	+128%

Source: Eurostat; EZB; FDIC; Federal Reserve Bank of St. Louis; U.S. Census Bureau; World Bank; own calculations.

In line with the ongoing consolidation of banks between 2000 and 2021 and the associated decline in the number of banks, **bank density** decreased considerably in all countries considered. In the Netherlands, bank density declined most sharply over time, reaching a very low value of 0.5 in 2021. Although bank density in Spain declined less than in the Netherlands, it still assumed a similarly low value in 2021. Conversely, German bank density remained comparatively high (1.7), despite a decline of almost 50%. The 2021 values of the Italian (0.8), French (0.9), and U.S. (1.3) banking sectors fall somewhere in between.

Regarding **branch density**, the direction of development differed in the selected countries. While branch density dropped sharply in the Netherlands (–87%), Germany (–58%), and Spain (–42%), France (+31%) actually expanded its network of branches. Branch density in 2021 is by far the lowest in the Netherlands (4.4), while it is more than nine times higher in France (49.4) and Spain (40.7). In the United States (21.8), Germany (28.9), and Italy (36.9), branch density is at a medium level. It can therefore be concluded that there is an enormous range in the provision of banking services in the individual countries.

Bank market concentration, as measured by the **five-bank asset concentration ratio** (CR₅), is strongly affected by mega-mergers, which is why it can be used as an indicator for the consolidation process among the leading institutions in a national banking market. The level of concentration differs fundamentally between the countries under consideration. More specifically, while in the Netherlands, the share of total assets held by the five largest banks reached 84% in 2021, it amounts to just above 30% in Germany. This not only reflects the results of the bank density analysis but is also indicative of the uneven distribution of market shares – i.e., the concentration of market power – in the Dutch banking sector. The fairly similar concentration ratios in Italy (52%), the United States (50%), and France (49%) are about 20 percentage points higher than in Germany, while the concentration in the Spanish banking sector (69%) is another 20 percentage points higher. Yet, it is far from reaching the level of the Netherlands. Although concentration has increased in all countries considered, the percentage increase in France (+5%) and the Netherlands (+4%) is vanishingly small. While there is hardly any scope for further domestic consolidation involving the leading banks in the Netherlands – due to some 100 out of 105 banks accounting for a market share of only 16% – the limit for megadeals is far from being reached in the French banking sector. Apparently, however, the top French institutions seem to be saturated (for the time being). The picture is entirely different for Italy, where the concentration ratio more than doubled between 2000 and 2021. Although also in Germany, the concentration ratio rose relatively sharply, i.e., by 71%, at least part of the increase is likely to

be attributable to the application of the provisions of the German Accounting Law Modernization Act (BilMoG), which, among others, required the reporting of derivative financial instruments in the trading portfolio from the 2010 financial year onward and thus led to an increase in total assets particularly at the major banks (German Central Bank, 2012).

4.2.10 Interim Conclusion

The banking system's current structure is the result of decades of consolidation. In all countries considered, large international, universal banks dominate the banking systems, which – in a large number of cases – were already large and powerful a century ago. Often, these banks could maintain their dominance through mega M&A transactions. While at the beginning of the century, national M&A transactions, such as the merger of BNP and Paribas in 2000 in France, dominated the consolidation process in the EMU, cross-border deals, such as the ABN AMRO deal in 2007, are becoming increasingly important. Especially in the wake of the financial crisis, however, major national mergers and acquisitions continued to occur. In this context, for example, the acquisitions of Dresdner Bank by Commerzbank, Merrill Lynch by Bank of America, and Postbank by Deutsche Bank are worth mentioning.

Clearly, the process of consolidation of major banks and financial conglomerates contributed to an increasing degree of concentration. Most banking systems in Europe and also that of the United States are meanwhile clearly dominated by an ever-dwindling number of very large banks that are increasingly universal and international in scope. The dominance of a few major (internationally active) banks is particularly pronounced in the Netherlands, where the consolidation process in the banking sector is already at a very advanced stage. And still, banks appear to be consolidating strongly, although this no longer substantially impacts the concentration ratio of the five largest institutions. The situation is similar in Spain and France, where, however, developments have been less pronounced, and the degree of consolidation is still much lower. In contrast, the consolidation process appears to be the least advanced in the German banking sector. The level of bank consolidation in the United States and Italy seems to be somewhere between that of Spain and France and Germany.

5 THE (ECONOMIC) RATIONALE BEHIND THE CONSOLIDATION PROCESS

Although the consolidation processes in the countries studied differed in their degree, bank M&As have not reached a standstill in either country. This means that there is (still) a trend toward ever larger banks, which leads to the question of whether, from an economic perspective, the banking sectors in Europe and the United States are (still) declared “overbanked”, i.e., characterized by overcapacities, as commonly noted by researchers, policymakers, and regulators (e.g., Andreeva et al., 2019; Dombret, 2018; Draghi, 2016; ESRB, 2014; Frydl, 1993; IMF, 2017, p. 32 f.). Because in this case, an ongoing consolidation process might be appropriate. Overall, there may be three principal grounds of justification for economic policies favoring the consolidation process: the achievement of allocative efficiency, economic stability, and distributive justice. To examine the appropriateness of these grounds for justification, the consolidation developments described above must be evaluated from a welfare-economic and stability-policy perspective.¹⁵⁵ In order to be able to address social welfare matters, it is necessary to clarify some related terminology.

5.1 The Concept of Efficiency

In particular, it appears reasonable to explain different types of economic efficiency that make up the multidimensional concept of social welfare. Specifically, the concepts of allocative efficiency, price efficiency, technical and x-efficiency, scale efficiency, structural efficiency, and dynamic efficiency are distinguished below. It should be noted at the outset, however, that the naming and definitions of the types of efficiency vary widely in studies on the subject, so a classification has been chosen that most closely reflects the author’s economic understanding of efficiency. Before addressing the constituents of efficiency, though, it seems appropriate to briefly discuss the generic concept of (Paretian) social welfare.

According to Pareto (1906/1971, p. 261), a welfare maximum is reached when the allocation of resources is optimal in the sense that there is no other allocation in which at least one individual would be better off while all others are at least as well off. Such an allocation is called Pareto optimal or **allocatively efficient**¹⁵⁶ (Arrow et al., 2010, pp. 59 f.; Deng/Leonard, 2008,

¹⁵⁵ Although many economists agree that social welfare should be the goal of antitrust enforcement, some scholars emphasize that consumer welfare alone should be maximized (e.g., Pittman, 2007). See Albæk (2013) and Wilson (2019) for discussions of these two possible economic policy goals.

¹⁵⁶ The concept of allocative efficiency is not used consistently in the academic literature. Some researchers use the terms “allocative efficiency” and “price efficiency” (see below) interchangeably. The term “price efficiency” was first coined by Farrell (1957) but is often referred to as “allocative efficiency” (e.g., Färe et al., 1984; Uri, 2001; Aparicio et al., 2017). To avoid confusion, I stick with the original term.

p. 452; Førsund/Hjalmarsson, 1974, p. 142). Under the – admittedly unrealistic – assumption of a perfectly competitive or contestable¹⁵⁷ banking market, this would be the case.

At the firm level, Farrell (1957) differentiated between price and technical efficiency. According to Farrell (1957, pp. 260 ff.), a bank is **price efficient** if it chooses the optimal set of inputs given their respective prices, while **technical efficiency** is achieved if the output is maximized for a given set of inputs (Farrell 1957, pp. 259 f.; Koopmans, 1951, p. 60). A concept very similar to technical efficiency is that of **x-efficiency**. First introduced by Leibenstein (1966), it also indicates that a bank can operate (x-)inefficiently if it produces below the production possibility frontier (Leibenstein, 1966, p. 397).¹⁵⁸ Although the approaches differ in some respects, the essential distinction lies in the management’s work motivation and effort. Whereas according to Leibenstein’s concept, inefficiencies mainly arise because managers do *not try* to work efficiently, according to Farrell’s concept, inefficiencies arise because of managers’ *inability* to work efficiently.¹⁵⁹

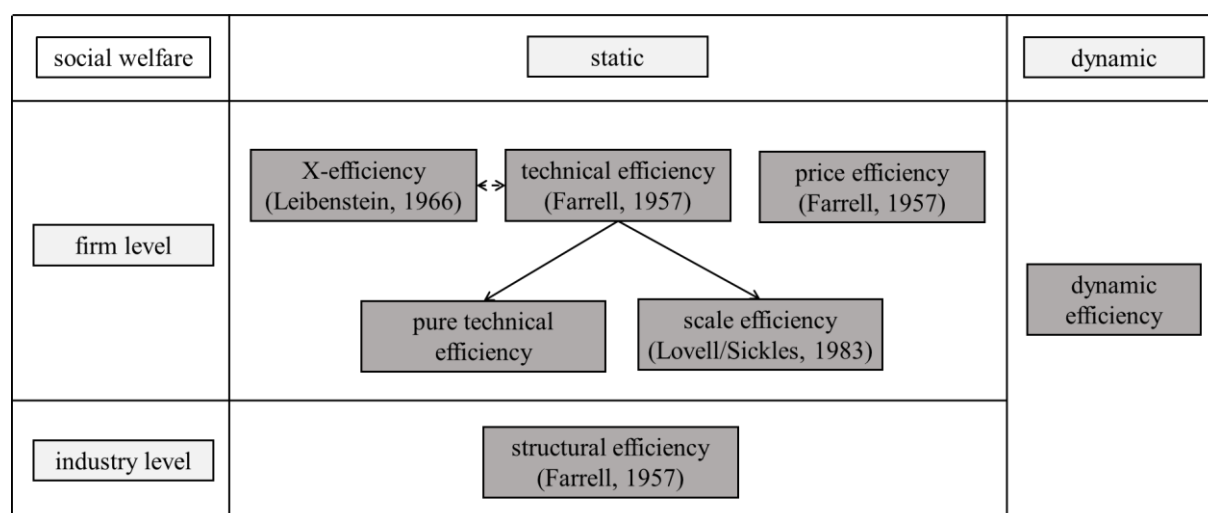


Figure 39: The Multidimensional Concept of Social Welfare

Source: Own representation.

In the empirical literature (e.g., Aly et al., 1990; Rangan et al., 1988), Farrell’s concept of technical efficiency was further broken down, namely into **pure technical efficiency**, i.e., the absence of any waste of resources, and **scale efficiency**¹⁶⁰, which refers to the optimal quantity of

¹⁵⁷ Section 5.3.1, i.a., deals with the contestable markets theory.

¹⁵⁸ Thus, Leibenstein acknowledged that there is not only allocative inefficiency, whose sole existence was conventional wisdom at that time, but that people do not always behave rationally and, therefore, that a firm’s production is not always efficient. Due to the non-recognition of that type of inefficiency, which constitutes an anomaly, Leibenstein called it unknown, or x-, efficiency. (Frantz, 2018)

¹⁵⁹ See Button and Weyman-Jones (1994) for a more detailed discussion of the distinctions.

¹⁶⁰ The concept of scale efficiency was introduced by Lovell and Sickles (1983).

outputs produced by a bank and thus takes into account the existence of economies of scale and scope.¹⁶¹ This means that to operate technically efficiently, a bank must necessarily ensure that no resources are wasted in the production process (pure technical efficiency) and that it achieves its minimum efficient scale of production (scale efficiency). Relating the efficiency concepts to the whole industry, **structural efficiency** accounts for “the extent to which its [the industry’s] firms are of optimum size, to which its high-cost firms are squeezed out or reformed, to which production is optimally allocated between firms in the short run” (Farrell 1957, p. 262). Figure 39 illustrates the composition of the efficiency components.

From the scale efficiency point of view, it would be optimal to increase the size of a bank (through external or internal growth) up to the point where the minimum of the long-term average cost curve is reached. In the extreme case, such a process could lead – under the exclusion of interventions by antitrust authorities – to a (natural) monopoly. A monopolistic market structure could indeed be structurally efficient, but potentially monopolistic pricing behavior would lead to allocative inefficiencies. Thus, there could be trade-offs between the different efficiency concepts resulting in overall economic inefficiency.¹⁶² While any such forms of inefficiency have adverse effects on social welfare, it can be stated that if efficiency exists with respect to *all* concepts, a state will meet the requirements of Pareto optimality so that social welfare is maximized.

In addition to the aforementioned static concepts of efficiency, there is a dynamic approach to efficiency. **Dynamic efficiency** – or “workable competition”, as it was called by Clark (1940) – refers to competitive dynamics driven by innovation and technological progress, among others (Abel et al., 1989; Blaug, 2001; De Soto, 2009; Klein, 1984). It should be noted, however, that there is also a trade-off between static and dynamic efficiency, as dynamic efficiency requires that a firm earns a supernormal profit at some point in time in order to be able to invest in research and development (Ghemawat/Ricart Costa, 1993). Since by far the most standard microeconomic models do not capture the dynamic aspects of market processes, this thesis focuses on the static types of efficiency.¹⁶³

¹⁶¹ When economies of scope exist, it follows that the production of different output goods by multiple banks is more inefficient than the production of these goods by a single bank. Economies of scale lead to a disproportionate increase in output when all input factors are increased proportionally.

¹⁶² Due to the problem of trade-offs between the different types of efficiency, a (partial) analysis of the effect of structural changes on social welfare can only be meaningful if it is based on the *ceteris paribus* assumption (Gischer, 2010, pp. 17 ff.).

¹⁶³ For a modern analysis of the role of dynamic aspects for productivity, see the monograph by Aghion (2021), who revived Schumpeter’s notion of creative destruction but arrived at more optimistic conclusions.

5.2 A Bank's Minimum Efficient Scale and the Optimal Structure of a Banking Sector

Theoretical Considerations

In order to approach the aim of assessing consolidation processes from a welfare perspective, a good starting point may be to derive the optimal structure of a banking sector from a theoretical point of view. To this end, the optimal choice of size at the firm level (pure technical, x- and scale efficiency) is considered first before conclusions for the industry level (structural efficiency) are drawn.

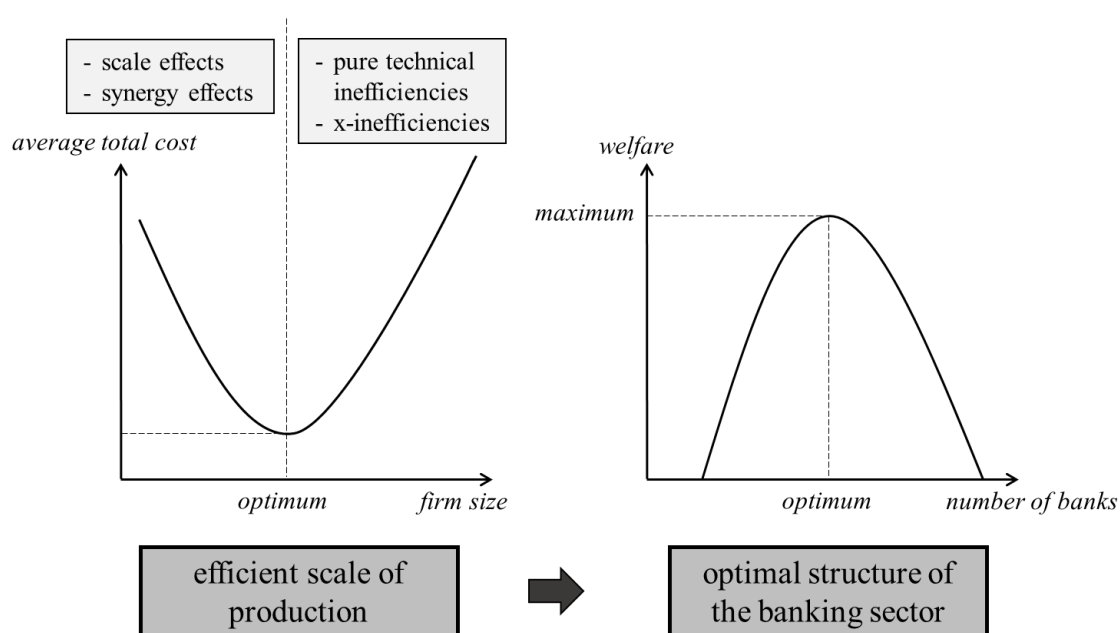


Figure 40: Optimal Bank Size and Optimal Structure of the Banking Sector

Source: Own representation.

From a business perspective (see figure 40, left-hand side), a bank may take increasing advantage of economies of scale and scope¹⁶⁴ as its size increases, while above a specific size, pure technical and x-inefficiencies may outweigh the positive size effects (Sherman/Zhu, 2006, p. 5). The result would be a U-shaped average cost function, at the minimum of which the optimal operational size can be read on the horizontal axis. This curve progression would imply that banks smaller than the optimal size could become more productive through consolidation. If the consolidated bank were to pass on the cost advantages to the customers, it could drive out of the market other, more inefficient, banks, eventually reducing the number of banks in the

¹⁶⁴ These can result, among other things, from learning curve effects, increased division of labor, or cost savings from larger purchases of input goods (Scherer/Ross, 1990, p. 97).

industry (see figure 40, right-hand side) while increasing absolute concentration. This rise in concentration would not be economically detrimental, however, as productive and structural inefficiencies would be eliminated. If additionally, the market were highly contestable, allocative efficiency would be achieved.

Empirical Evidence on Economies of Scale and the Efficient Scale in Banking

Empirical studies of **economies of scale** in banking typically use translog **cost functions** (e.g., Bossone/Lee, 2004; Jacewitz et al., 2020; Lang/Welzel, 1996; Mahajan et al., 1996), as opposed to Fourier-flexible frontier cost functions (e.g., Berger/DeYoung, 1997; Berger/Humphrey, 1997; Carbó Valverde et al., 2002; Mitchell/Onvural, 1996) or cubic spline cost functions, to estimate banks' marginal production costs.¹⁶⁵ This specification implies a U-shaped average cost curve, in line with the explanations above.

Consistent with the theoretical considerations, most studies suggest that economies of scale in terms of bank size can be exploited primarily by **small banks**, while medium-sized banks tend to be close(r) to scale efficiency. Among others, Vander Venet (2002), analyzing the period from 1995 to 1996 for a large **European bank sample**, suggested that small banks have much scope for exploiting economies of scale, while universal banks and financial conglomerates appeared to be scale-efficient. Similarly, Altunbaş et al. (2001), for a large sample of European banks over the period 1989 to 1997, found that scale economies are most prevalent for small banks. In an earlier study of **U.S. banks**, McNulty (2000) indicated that the optimal commercial bank size might range from three to five billion U.S. dollars, which also implies that banks with total assets below these values can exploit economies of scale, while larger banks seem to face diseconomies of scale.

The view that small banks, in particular, can exploit economies of scale when growing is contrasted by Hughes et al. (2001) and Hughes and Mester (2013), whose findings on a sample of top-tier BHCs from the **United States** indicated significantly higher productivity improvements for **large banks**. Similarly, Feng and Serletis (2010), using a sample of 292 U.S. banks with total assets of at least one billion U.S. dollars over the 2000 to 2005 period, suggested that increasing scale economies exist at large banks. For **European banks**, Beccalli et al. (2015), too, found that economies of scale are particularly large for the biggest banks.

In an earlier study of **German** cooperative banks, Lang and Welzel (1996), in contrast, saw moderate scale effects for **banks of all sizes**. In line with this, Leggett and Strand (2002) and

¹⁶⁵ Carbó Valverde and Humphrey (2004) and Humphrey and Vale (2003), among others, used all three approaches to predict the impact of scale economies on costs for 22 mergers of Spanish savings banks over the 1986 to 2000 period.

Wilcox (2005) found a generally negative relationship between average operating expenses and size for **U.S.** credit unions. By relying on 1984 to 2006 data for all U.S. banks, Wheelock and Wilson (2012), too, found evidence of the existence of scale economies for both small and large banks.

Estimating the **sensitivity of (components of) noninterest expenses** to a proportional increase in U.S. BHCs' asset size, Kovner et al. (2014) suggested that a 10% increase in assets appeared to be associated with a 0.3% to 0.6% decrease in scaled noninterest expenses, with the negative relationship being most pronounced for compensation, followed by certain components of other noninterest expenses such as expenses for accounting, printing and postage, IT and data processing as well as for legal fees, for other financial services and for directors' fees and other compensation. In contrast, Kovner et al. (2014) found a positive relationship between asset size and scaled expenses related to consulting and advisory services and between asset size and scaled expenses related to amortization and impairment of goodwill and other intangible assets. Although a number of studies on both European and U.S. banks pointed to a high **potential for scale economies** (e.g., Allen/Rai, 1996; Berger/Mester, 1997; Huizinga et al., 2001; Bossonne/Lee, 2004; Vander Venet, 2002), it seems that only small reductions in inefficiencies can be achieved through the realization of economies of scale post-consolidation (e.g., Casado et al., 2004; Koetter/Vins, 2008). Furthermore, several studies suggest that the potential for reducing x-inefficiencies is greater than that for exploiting economies of scale and scope (e.g., Berger et al., 1993; Lang/Welzel, 1996; Mester, 1996). However, taking into account possible **changes over time**, Mester (2005) argued that scale economies in the United States may have risen over time since branching restrictions were removed and consolidation was facilitated, i.e., since consolidation costs were lowered. More recently, Jacewitz et al. (2020) also concluded that the efficient bank size increased over time. If this were indeed the case, consolidation processes might well be triggered by an increase in optimal bank size, for whatever reason. However, various other factors, not all of which are necessarily welfare-enhancing, may also explain consolidation decisions. That is why a variety of potential rationales for bank consolidation are investigated in the following.

5.3 Explanatory Approaches

Figure 41 gives an overview of a selection of possible drivers of consolidation, including regulation, which are addressed in the following analysis. It is conceivable that a combination of all these factors, with varying degrees of influence, contribute(d) to the consolidation in the U.S. and European banking sectors. It is started to discuss consolidation drivers that could lead to welfare improvements if the consolidation is carried out. First, endogenous and exogenous factors that lead banks to consolidate because of the prospect of productivity gains are addressed, while afterward, risk and stability considerations as drivers of consolidations are examined. The elaboration of economically favorable incentives is followed by an analysis of rationales compliant with the interest group theories of regulation.

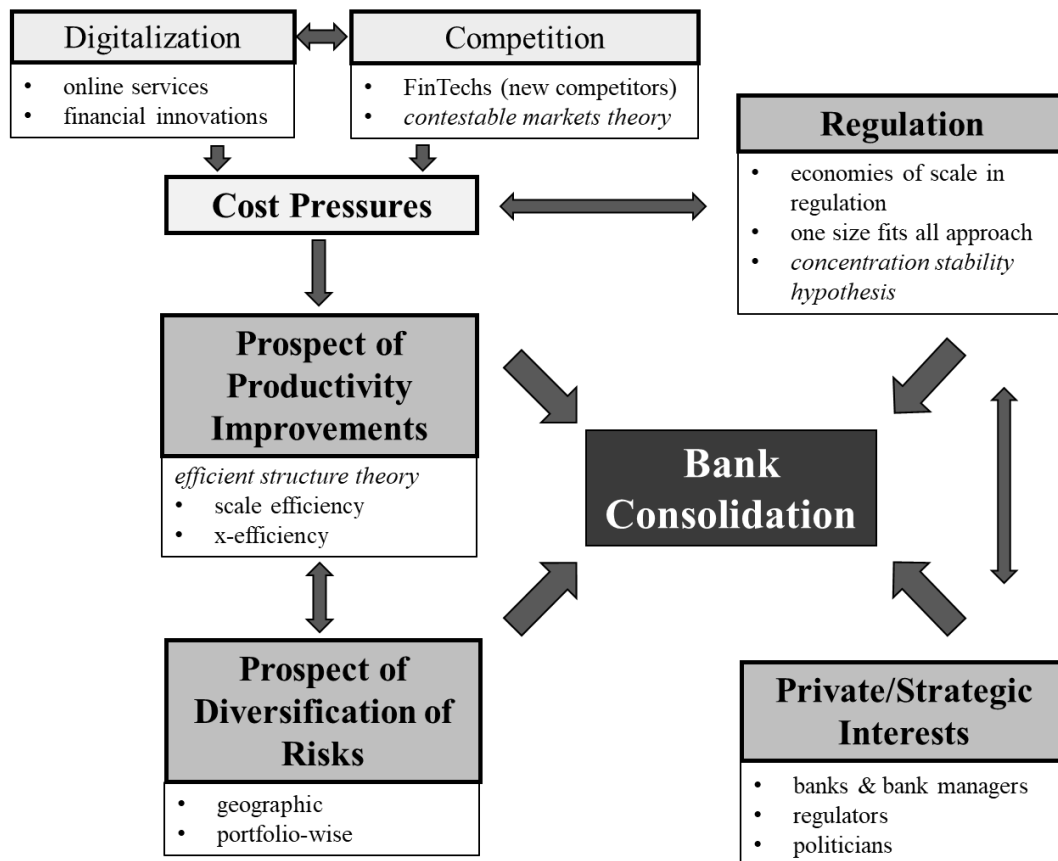


Figure 41: Consolidation Driver Regulation?

Source: Own representation.

5.3.1 The prospect of Productivity Improvements

Efficient Structure Theory

As explained above, consolidations can lead banks to reach their (minimum) efficient scale of production, either because they did not produce at the efficient scale beforehand or because their (minimum) efficient scale increased due to endogenous or exogenous factors. Furthermore, consolidations may also contribute to better management, thereby reducing x-inefficiencies. Thus, if the prospects of economies of scale and reducing x-inefficiencies play a role in the consolidation decision, banks may either consolidate for the very reason of achieving economies of scale or reducing x-inefficiencies or various factors may force them to reduce all types of inefficiencies in order not to be driven out of the market. In either case, consolidation would be welfare-enhancing.

In line with these thoughts, the **efficient structure theory** (EST) explains differences in the industry structure by industry- and market-specific differences in the optimal organizational pattern rather than by differences in the market power exercised by the market players (e.g., Demsetz, 1973a; 1973b; Peltzman, 1977).¹⁶⁶ This would mean that larger market shares and higher profits are achieved by those firms that are more productive because they can produce at lower costs (Berger/Hannan, 1997, p. 7). The EST approach comprises two hypotheses – the x-efficiency hypothesis and the scale efficiency hypothesis – whose explanations of the relationship between market concentration (processes) and market performance are presented in the following.

X-Efficiency Hypothesis: Prospect of Reductions in X-Inefficiencies

The **x-efficiency hypothesis** of the efficient structure theory relates increases in a firm's market share to productivity gains stemming from reductions in x-inefficiencies (Berger/Hannan, 1997, p. 7). Accordingly, consolidations can contribute to eliminating x-inefficiencies – as one source of potential inefficiencies – and thus to increased welfare, in the event that they help to assemble a superior management team and form optimal organizational structures (DeYoung/Whalen, 1994, p. 11).

Generally, studies that empirically test the x-efficiency hypothesis use estimates of a best-practice cost function to infer the degree of inefficiency by measuring the deviation from this efficient frontier. Estimation techniques include stochastic frontier analysis (e.g., Berger, 1995; Carbó Valverde et al., 2002; Koetter, 2005; Koetter/Vins, 2008), the distribution-free approach (e.g., Berger/Humphrey, 1992), thick frontier analysis (e.g., Berger/Humphrey, 1991; Mahajan

¹⁶⁶ The idea behind the EST was first formulated by Demsetz (1973a).

et al., 1996), and data envelopment analysis (e.g., Ferrier/Lovell, 1990), the latter being a non-parametric technique.

The (limited) empirical evidence pointing toward little or no change or even modest increases in X-inefficiencies stemming from consolidations (Berger, 1998; Berger/Humphrey, 1992; DeYoung, 1997; Garden/Ralston, 1999; Peristiani, 1997; Pillioff, 1996) outweighs the evidence partially supporting the x-efficiency hypothesis (e.g., Beccalli/Frantz, 2009; Berger, 1995; Punt/Rooij, 1999). This might be in line with the notion that managers of large banks tend to enjoy quiet lives rather than draw on their full potential (Berger/Hannan, 1997; see chapter 5.3.3 on the “quiet life” hypothesis).

Scale Efficiency Hypothesis: Prospect of Economies of Scale

The scale efficiency version of the efficient structure theory provides an alternative theoretical explanation for a productivity-driven consolidation process. The scale-efficiency hypothesis sees differences in scale inefficiencies as the decisive factor for a changing market structure rather than x-inefficiencies or assuming concentration as a random event (Berger, 1995; Peltzman, 1977; Smirlock, 1985). More specifically, the scale efficiency hypothesis postulates that, when growing, banks focus on achieving the optimal scale of operations, which – as was elaborated already – leads to decreasing unit costs and increasing unit profits (Berger, 1995, p. 405; Smirlock, 1985). This advantage in productivity results – if companies forego higher profits – in larger market shares of those firms operating efficiently, while inefficient banks will lose market shares or be driven from the market (Berger, 1995, p. 405).

Hence, the scale-efficiency hypothesis – much like the x-efficiency hypothesis – suggests that the market performance directly influences the market structure (Varmaz, 2006, p. 143), which would mean that efficiency-driven bank consolidations do change both market performance and structure but without having a negative impact on the market conduct of banks in the sense of collusive behavior, for example.¹⁶⁷ Accordingly, although consolidation comes along with a higher concentration of the banking market(s), the rise in concentration would not be economically detrimental in this case as it was presumed to be the result of a decrease in inefficiencies (Berger, 1995, p. 405).

¹⁶⁷ However, over time, the increase in market shares brought about by the search for the optimal scale of operations might lead to market-dominating positions, which can be detrimental to competition in the long term (Bikker/Bos, 2008, p. 97; Homma et al., 2014). This is because a deterioration of the competitive situation could eventually entail markup pricing behavior, which would result in allocative inefficiencies, as according to the structure conduct performance hypothesis (Bikker/Bos, 2008, p. 97). Additionally, due to the lack of the (incentive of a) competitive drive, x-inefficiencies may occur as well, consistent with the quiet life hypothesis (Homma et al., 2014), which is elaborated upon in the chapter on the motives in line with the interest group theories of regulation (chapter 5.3.3).

The existing **empirical literature** on the scale efficiency hypothesis is rather extensive but mixed, with most of the studies testing the EST theory in general rather than the scale efficiency hypothesis in particular (e.g., Campa and Hernando, 2006¹⁶⁸; Kapopoulos/Siokis, 2005). Evidence generally in favor of the scale efficiency hypothesis was provided by Carbó Valverde and Humphrey (2004) and Peristiani (1997), among others. Concerning the German savings banks sector, the evidence of Koetter and Vins (2008) indicates that only small-scale effects of consolidations do exist. The scale efficiency hypothesis was, however, generally confronted by Berger and Hannan (1997) whose study on U.S. banks tends to support contradicting hypotheses instead, and also Berger's (1995) conclusions are more in line with the relative market power theory.

Some of the differences in the results may be explained by differences in the **various approaches** that were followed to test the theory and their differing interpretations of the regression results. One approach, which is widely used in the empirical literature, is to simply regress profitability on market structure variables, with a positive and statistically significant market share coefficient being regarded as evidence supporting the scale efficiency hypothesis (e.g., Smirlock et al., 1984, 1986; Smirlock, 1985). This reasoning is, however, contradicted by Shepherd (1986), who pointed out that a positive market share coefficient may not only be explained by a positive effect of efficiency on both market share and profitability but also by a positive relationship between market share and market power or product differentiation. Other studies, therefore, incorporated direct productivity measures, for example, in the form of scale economy measures, in their regression models to separate the effects of market power from the productivity effects (e.g., Allen/Hagin, 1989; Altunbaş et al., 2001; Berger/Hannan, 1997; Shepherd, 1983).¹⁶⁹ Also opposing the first approach, another strand of the literature tested the efficient structure theory by using an efficiency measure as the explanatory variable, instead of a profitability measure, with a positive relationship between this variable and both profitability and market structure being considered as evidence in favor of the EST (e.g., Berger, 1995).

Exogenous Factors: Competition and Digitalization

Productivity-driven consolidation processes in banking can be endogenously or exogenously generated. In especially, banks might see the potential of positive cost and revenue synergies

¹⁶⁸ Since Campa and Hernando (2006) used the cost-income ratio (CIR) as a measure of productivity, their results must be questioned. See Gischer/Richter (2009) for a discussion of the CIR.

¹⁶⁹ This approach was, however, also criticized by Bikker/Bos (2005), who referred to multicollinearity issues should the EST hold true.

induced by consolidations, including cost reductions and revenue increases due to broader functional or geographic risk diversification. However, the search for the optimal scale of operations might not only be due to endogenous mechanisms but might also be driven by exogenous factors. Among others, technological progress in general and financial innovations, in particular, might have led to more competition and larger (relevant) markets (e.g., Berger, 2003; DeYoung, 2007; Siaw/Yu, 2004; Wheelock/Wilson, 2009). The launch of online banking platforms, for example, has brought competition in various segments to an international level and reduced the cost of using banking services at distant banks, while financially innovative market entrants such as FinTechs have increased competition for (traditional) banks (DeYoung, 2007; Navaretti et al., 2018; Siaw/Yu, 2004; Wheelock/Wilson, 2009). Due to increasing opportunities for online services, barriers to entry and exit may have decreased over time, resulting in higher contestability of banking markets.¹⁷⁰ Higher contestability could, as according to the contestable markets theory, lead to favorable outcomes.

In fact, the **contestable markets theory** assumes that market structure is irrelevant to market performance, meaning that a non-linear relationship between market structure and market performance prevails. In particular, the theory presupposes contestable markets, which, according to Baumol (1982, pp. 3 f.), are markets “into which entry is absolutely free, and exit is absolutely costless”. In such markets, the threat of potential entry or hit-and-run behavior disciplines incumbent firms, i.e., forces them to operate x-efficiently (Baumol, 1982, p. 14; Baumol et al., 1988, p. 292). According to the theory, thus, in markets without entry and exit barriers, prices converge to long-run marginal costs regardless of the market structure (Baumol, 1982, p. 2). This would imply that even with increasing concentration, there are no adverse welfare effects as long as market contestability is ensured.

In addition to changing the contestability of banking markets, the digitalization process, by modifying the relevant market environment, may also have affected the optimal bank size and structure of a banking sector, potentially contributing to bank consolidation. While competitive pressures may have given banks incentives to improve productivity to avoid being forced out of the market, changes in the optimal bank size may mean that previously efficient banks need to increase their size to remain efficient.

¹⁷⁰ However, as Gischer and Richter (2011, p. 182) argued, there are restrictions to the contestability of banking markets, mainly due to the presence of sunk costs, which – although possibly reduced – still constitute an exit barrier. Furthermore, also entry barriers, including long-standing customer relationships with incumbents and, potentially, economies of scale as a structural market entry barrier, still exist.

Exogenous Factors: Regulation

However, the focus of this thesis should be on how **regulation** affects consolidation. Ideally, regulation is a supporting factor for the realization of optimal bank sizes and the optimal structure of the banking sector(s), which is essentially the assumption of the Economic Theory of Regulation. Ultimately, this corresponds to the fact that economic welfare should be higher with regulation than without. Thereby, the assessment of both costs and benefits should play a role, as regulation involves costs, too. Due to the EU's more or less one-size-fits-all approach, these costs weigh disproportionately on small banks, which may be forced to consolidate for this reason, i.e., for being "too small to comply" (Boss et al., 2018; Schackmann-Fallis et al., 2016; Nițescu, 2018). Therefore, regulation can affect the optimal bank size and, consequently, the optimal structure of the banking system itself. This means that regulation has redistributive effects, favoring larger banks that can spread their fixed costs over a higher output at the expense of their smaller rivals.¹⁷¹ Although bank regulation in the U.S. is more tailored to bank asset size (Carvalho et al., 2017; Valeria, 2020), the relative regulatory burden imposed on small community banks is still significantly higher than on larger banks (Dahl et al., 2016; Dolar/Dale, 2020). To provide an overview of regulatory and compliance costs in EU and U.S. banking, previous research on this subject is presented below.

Empirical Evidence on Regulatory and Compliance Costs in Banking

The vast majority of empirical evidence consists of **case studies and surveys**, most of which did not estimate aggregate total compliance costs but only compliance costs caused by specific regulations. Furthermore, both research methods generally resulted in samples that do not contain all banks in the region under study unless the sample represented the population, with case studies in particular being characterized by small samples of only a few banks. Surveys, on the other hand, usually provide a much larger amount of data. But also in terms of data quality, studies on regulatory and compliance costs differ significantly. Specifically, case study data tend to provide comprehensive, accurate data because researchers often spend considerable time collecting data from a small number of institutions, including a thorough preparation of the case interview. However, surveys, too, when conducted well, with questions guiding the respondents appropriately, can provide valuable insights. In particular, survey and case study data quality depends on their executors' efforts to consider and tackle potential response errors, for example,

¹⁷¹ Among others, Bartel and Thomas (1987) pointed out that due to the heterogeneity of firms, the regulatory effects of one-size-fits-all regulation are asymmetrically distributed across them, resulting in a competitive advantage for those firms whose compliance costs are (relatively) higher.

by means of specific rather than broad questions. Furthermore, surveys rely on banks' participation, which can lead to unrepresentative samples. For example, a nonresponse bias may occur because banks with comparatively low regulatory and compliance costs may be less likely to participate in the study. Responses could also be biased due to incentives on the side of the banks to give inaccurate answers, i.e., to overestimate the burden in order to avoid adverse consequences, especially if regulators conduct the survey. In contrast, respondents might also underestimate costs due to a lack of ability to fully reconstruct the total amount of compliance action taken without a tracking record (CFPB, 2013; Elliehausen, 1998, p. 6).

In addition to surveys and case studies, researchers used **analogies** to derive compliance costs from available data on costs of activities similar to those related to compliance. Available data typically come from anecdotal reports by bankers, surveys, or government agencies. (Elliehausen, 1998, p. 9)

Only a handful of studies on regulatory and compliance costs in banking conducted **econometric analyses** to derive costs, reflecting a lack of (cost) data. In particular, U.S. bank Call Reports do not distinguish between compliance costs and costs not related to compliance, but instead, banks report data on specific areas, such as personnel or data processing – including compliance costs. Furthermore, data on some relevant compliance cost components, such as accounting and audit costs, have only been reported since 2008 and only for banks above a specific size. Even most surveys only captured direct compliance costs, as bankers themselves were unable to quantify all types of indirect costs arising from regulatory requirements because these are too dispersed across different functions and departments (CFPB, 2013). Most of these studies attempted to estimate cost changes following regulatory events to infer the impact of regulation on compliance costs. However, costs are also affected by factors other than regulation, which may make it hard to be sure of the effect (Phillips/Calder, 1979, 1980; Joskow/Rose, 1989). Econometric analyses have the advantage, though, of being based on objective data from the entire population of banks while ruling out response biases.

In the following, a more in-depth look at the current state of research on regulatory and compliance costs in banking is provided by presenting the methodologies and results of relevant papers, with a focus on more recent studies conducted for EU and U.S. banks.

Elliehausen (1998), for more backdated periods, provided a review of the literature on **compliance costs in U.S. commercial banking**, concluding from the evidence that, on average, 12% to 13% of noninterest expenses appeared to be attributable to compliance costs. More recent results from two surveys of **U.S. community banks** conducted by KPMG (2014, 2016) suggest that compliance costs account for five to 20% of operating expenses, as reported by the vast

majority of participating banks. As part of its Community Banking Study, the FDIC (2012) sought to identify the key driving forces affecting compliance costs and assess those costs by conducting structured interviews with nine community bankers in 2012. While the participants could not determine indirect costs, the estimation of direct costs revealed that the cumulative impact of regulation was recognized as particularly burdensome. It was also revealed that the number of employees assigned to compliance increased and that even non-compliance staff were increasingly involved with compliance matters compared to 2007. The FDIC (2020b) Community Banking Study conducted in 2020 confirmed that the cumulative impact and constant changes in regulations were particularly burdensome for community bankers. The Florida Chamber Foundation (2012) conducted a survey in 2012 of 75 community banks and credit unions headquartered in Florida with assets of no more than five billion U.S. dollars, underscoring the fact that small community banks fear the ongoing regulatory impact on compliance efforts and costs.

For the **German banking sector**, the consulting firm IW Consult GmbH Köln (2006), on the basis of a sample of 33 banks, used a standard cost model to estimate the cumulative regulatory burden at approximately 4.1% of administrative expenses or 3.1 billion euros in total for the entire banking industry.

Most existing studies are not comprehensive, though, but focused only on specific regulations. Some time ago already, Barefoot et al. (1993) conducted two mail surveys to estimate the **regulatory-specific compliance costs in U.S. banking** induced by 14 federal consumer regulations and laws, but with a focus on the Bank Secrecy Act, the Community Reinvestment Act, and the Real Estate Settlement Procedures Act, to which 445 commercial banks responded. Regulatory costs were estimated using a Cobb-Douglas cost function whose explanatory variables comprised bank size as measured by total assets, regional population, and a dummy variable indicating the affiliation with a multibank holding company weighted by bank size. Their results suggest that the cost of compliance with the 14 regulations accounted for, on average, 2.6% of noninterest expenses. More recently, Dolar and Shugart (2007) investigated the regulatory-specific effects of the Patriot Act on the compliance costs of U.S. commercial banks and thrifts, which they approximated by total noninterest expenses, using the heterogeneous firm model of regulation, which claims that a one-size-fits approach penalizes the less inefficient firms. They found that noninterest expenses increased by almost 45% on average after the enactment of the Patriot Act, with the relative cost burden decreasing with bank size. The CFPB (2013) conducted a case study with employees of seven U.S. banks to infer the costs imposed by deposit-related regulations. For the two banks studied with less than one billion U.S. dollars

in total assets, compliance costs accounted for 3.9% and 5.6% of retail operating expenses, respectively, while the share was more than double for banks with more than one billion U.S. dollars in total assets. Using publicly available Call Report data from 1991 to 2014, Cyree (2016) evaluated the impact of the FDIC Improvement Act, the Patriot Act, and the Dodd-Frank Act on the relative compliance costs, productivity, and profitability of small U.S. banks using a panel regression. To approach the cost effect of the regulations, he incorporated various components of noninterest expenses in his model, such as the ratio of salaries to assets, average employee pay, and technology and fixed-asset expenditures. The findings of Cyree (2016) indicate that smaller banks, i.e., those with less than five billion U.S. dollars in total assets, incurred higher relative compliance costs. While Cyree (2016) did not find evidence of an increase in regulatory burden following the implementation of the FDIC Improvement Act, the data suggest that the Dodd-Frank Act triggered a significant decrease in pre-tax return on equity and loans per employee, as well as an increase in the number of employees and their average salary, with resources being diverted away from technology. After the Patriot Act, average salaries increased, with smaller banks paying more per full-time equivalent employee (FTEE) on average.

Based on structured interviews with persons of 78 firms operating in the **EU financial services industry**, including 40 banks and financial conglomerates, in 2008, Europe Economics (2009) calculated the compliance costs induced by key directives of the Financial Services Action Plan. The results suggest that average one-off costs amounted to 2.41% and the share of ongoing costs averaged 0.43%. Härle et al. (2010), while also studying the European banking sector, estimated the one-off costs of introducing Basel III. Their evidence suggests that total implementation costs of regulatory compliance for a mid-sized European bank ranged from 45 to 70 million euros and from 135 to 210 FTEE years, corresponding to incremental costs of 30% to 50% compared with the compliance costs related to the Basel II regulations. In three separate studies, KPMG (2012, 2013a, 2013b) investigated the (cumulative) cost implications for the Dutch, Belgian, and German banking sectors of the different regulations implementing Basel III and the European Banking Union based on high-level data. The estimates of 7.9¹⁷² and 2.2¹⁷³ billion euros for the Dutch and Belgian banks, respectively, represent costs incurred in the 2012–2015 period and in 2012, respectively, while for the German banking sector, direct costs

¹⁷² The cumulative costs for the Dutch banking sector consisted of the effects of the bail-in costs, Basel III, the bank tax, and the ex-ante DGS (KPMG, 2012, p. 38).

¹⁷³ The cumulative costs for the Belgian banking sector consisted of the financial transaction tax, the bail-in costs, the LTRO replacement effect, the cost of meeting Basel III target ratios, the financial stability contribution tax, the contributions to the Deposit Protection Fund, the “loans-to-deposit” tax, and the “abonnement tax” (KPMG, 2013b, p. 41).

were estimated to have amounted to 3.8 and 4.8 billion euros for the periods of 2010–2012 and 2013–2015, respectively. The EBA (2014) estimated cost ranges of both total annual one-off and ongoing costs for different size classes of the EU member states' banks to comply with the Bank Recovery and Resolution Directive. While the EBA calculated ongoing costs of between 740,000 and 1.7 million euros on average for Belgian banks, these were estimated at between ten and 23 million euros on average for German banks. For one-off costs, the differences between the highest and lowest values were more substantial, ranging from 74,000 to six million euros and one to 65 million euros, respectively.

Cosma et al. (2013) surveyed 33 **Italian banks** to measure the regulatory implementation costs induced by transparency guidelines. Based on a log-linear regression model, the authors estimated the average one-time costs per bank at approximately one million euros, or 0.56% of administrative expenses, while the annual running costs were estimated at 650,000 euros, or 0.27% of administrative expenses. Concerning the requirements for money-laundering prevention and anti-terrorism financing, IW Consult GmbH Köln (2006) estimated the annual costs for all **German banks** at 775 million euros, equivalent to 1% of administrative expenses. For the German cooperative banking sector, Stappel (2014) estimated that the annual incremental costs incurred as a result of implementing regulation in the wake of the creation of the Banking Union, i.e., as a result of the DGS and the BRRD, have amounted to as much as ten to eleven billion euros.

Regarding the **distribution of compliance costs across different cost categories**, Elliehausen (1998) deduced from previous research that a substantial share of both regulatory implementation costs and, more even, ongoing costs may likely be attributed to personnel. Besides his study of economies of scale in compliance costs, Schroeder (1985), for the **U.S. banking sector**, examined the **regulatory-specific** distribution of compliance costs across different cost categories for the Electronic Fund Transfer Act. Among others, he revealed that almost half of the incremental running costs were attributable to payments for nonsupervisory employees, while managerial and legal expenses accounted for nearly one-quarter. He additionally suggested that more than one-third and almost 30% of implementation costs were attributable to managerial and legal expenses and data-processing costs, respectively. Similar results, but for the Truth in Savings Act, were provided by Elliehausen and Lowrey (1997), who estimated managerial and legal expenses to have accounted for approximately one-fourth and data-processing costs for almost 40% of the start-up costs. More recent evidence from the CFPB (2013) case study of seven U.S. banks suggests that one of the highest shares of compliance costs was devoted to the operations and IT business functions, while – across all business functions – **in-house labor**

was denoted to have accounted for almost two-thirds of total compliance expenses. Similarly, Dahl et al. (2016) showed that 65.2% of U.S. community banks' compliance costs in 2014 were attributable to personnel expenses. For banks with less than 100 million U.S. dollars in total assets, personnel compliance costs were estimated to have amounted to more than 5% of non-interest expenses, while for banks with between one and ten billion U.S. dollars in total assets, the share was estimated to have amounted to not even 2%. Consistent with their earlier study and that of the CFPB (2013), Dahl et al. (2018) found that, on average, personnel costs assumed the largest part, i.e., around two-thirds, of total compliance costs and that personnel compliance costs accounted for more than 11% of total personnel costs. Furthermore, Dahl et al. (2018) revealed the relevance of **mortgage regulations**, which were responsible for about one-third of total compliance costs. In line with the latter, the FDIC (2020b) also found that mortgage lending regulations present a particularly tough challenge for community bankers. Similarly, KPMG (2014) pointed out that U.S. community banks cited regulations related to lending practices, anti-money laundering, and consumer protection as the largest single drivers of compliance costs. For the **European banking sector**, Härle et al. (2010) estimated that the “risk IT and operations” item was the largest single cost factor, having accounted for between approximately 35 and 45 million euros.

Empirical Evidence on Economies of Scale in Compliance Costs

Regarding the existence of **compliance cost economies in U.S. banking**, Elliehausen (1998), in an earlier study, inferred from prior research studies that a 10% increase in bank size was usually associated with an increase in compliance costs of between 6% and 8%, but that scale economies decreased with bank size. Wheelock and Wilson (2011) investigated the possible presence of scale economies in U.S. credit unions from 1989 to 2006 using a nonparametric local-linear estimator, with their finding also pointing toward regulatory-induced economies of scale. Ferri and Kalmi (2014) applied a log-log regression model to demonstrate the existence of economies of scale in regulatory compliance for a sample of 77 U.S. and 82 Canadian credit unions. Based on data from a 2013 survey, the results for the United States indicate that compliance costs, converted to FTEE equivalents, amounted to 43% of total employee resources for the smallest quartile of banks, compared with 4% for the largest quartile. Further evidence of cost economies comes from their analysis of the relationship between size and compliance costs, which revealed that a 10% increase in bank size would be associated with a 5.6% decrease in relative compliance costs. The fixed-cost nature of labor-intensive, regulatory-induced activities was cited as one of the key influencing factors contributing to economies of scale in compliance. The ICBA (2014) 2014 Community Bank Call Report Burden Survey also pointed to

an increasing regulatory burden on U.S. community banks that manifested itself in an increase in personnel costs associated with call report preparation. Their evidence suggests that an increase in bank size of at least 150% would be accompanied by a 45% increase only in compliance costs for accounting, i.e., for the preparation of required financial reports. And also the study by Dahl et al. (2016) implies that the proportion of compliance costs relative to noninterest expenses increased monotonically with decreasing bank size. Accordingly, in 2014 – the only reference year – community banks with total assets of less than 100 million U.S. dollars faced compliance costs averaging nearly 9% of noninterest expenses, while the share of compliance costs for banks with total assets between one and ten billion U.S. dollars averaged less than 3%. The authors indicated that this heterogeneity of compliance costs is due to the fixed nature of the costs, particularly for compliance costs related to data processing, accounting and auditing, and consulting. For their study, the authors used data from a survey conducted by the Conference of State Board Supervisors and state banking commissioners, with a sample of 469 U.S. community banks. By having relied on 2015 to 2017 data on 1,091 U.S. community banks, once again from annual surveys conducted by the Conference of State Bank Supervisors, Dahl et al. (2018) confirmed the evidence of their 2016 study, suggesting that there are indeed economies of scale in compliance. Over the entire observation period, with average compliance costs of 9.8% of noninterest expenses, the share reported by smaller banks with total assets of less than 100 million U.S. dollars significantly exceeded that of 5.3% reported by the largest banks in the sample. In terms of economies of scale for individual cost components, Dahl et al. (2018) found that the ratio of personnel costs to operating expenses averaged 7% for banks in the smallest size category, compared with only 3.9% for the largest banks, and that personnel compliance costs averaged more than 16.7% for the smallest institutions and only 8.3% for the largest of them. Although compliance expenses related to data processing were found to have been less relevant than personnel expenses, it was shown that they exhibited significant economies of scale as well, while data on compliance costs related to accounting, consulting, and legal activities were even smaller in magnitude and also less consistent with economies of scale.

Qualitative information provided by the CSBS (2013), along with the Federal Reserve System, revealed that regulatory issues were regarded as a major concern by community banks who pointed toward the importance of scale for coping with increased regulatory burden. For their study, meetings in town halls were organized in 28 U.S. states in 2013 to talk to more than 1,700 community bankers, and additionally, phone calls and surveys were used to gather information. Grant Thornton (2013), in 2013, in collaboration with the Bank Director magazine, conducted a poll of senior bank executives and board members at more than 130 banks with at

least 500 million U.S. dollars in total assets. Consistent with the CSBS (2013), the results show that bank leaders at small community banks view regulatory issues as a major challenge, with the Dodd-Frank Act cited as the most significant concern.

To study the effects triggered by **Dodd-Frank**, Marsh and Norman (2013b), citing anecdotal information from community bankers, pointed to the increase in compliance costs due to the Act as adding to the cumulative burden and disproportionately affecting small banks. Feldman et al. (2013), based on 2012 data from a sample of more than 5,400 U.S. community banks, i.e., banks with total assets of less than one billion U.S. dollars, modeled changes in these banks' ROA for alternative scenarios in terms of the effect of additional regulation on the number of employees hired as well as on compensation costs. The authors' simulations suggest that banks in the smallest size category, i.e., those with total assets of less than 50 million U.S. dollars, account for the major share of all banks that would become unprofitable due to the incremental costs of regulation. Also specific to the Dodd-Frank Act, Peirce et al. (2014) used a survey conducted by the Mercatus Center at George Mason University in 2013 of a sample of some 200 small banks from 41 U.S. states with total assets of less than ten billion U.S. dollars. He revealed that an increasing number of regulations have forced small banks in the United States to spend more time and resources on compliance matters, as such posing a major challenge.

Much earlier and specific to consumer credit regulations Z (Truth in Lending) and B (Equal Credit Opportunity), Elliehausen and Kurtz (1988), from a Cobb-Douglas cost function whose explanatory variables included the number of consumer credit accounts, factor prices, and output homogeneity variables, derived economies of scale in (incremental) compliance costs for U.S. commercial banks. Using a sample of 51 banks whose data were obtained from a survey conducted by the FRB in 1981, it was found that a 10% increase in bank size, as measured by the number of consumer credit accounts in the portfolio, would be associated with only a 6.8% increase in compliance costs and that economies of scale declined rapidly as bank size increased. A study providing evidence of economies of scale in compliance costs in U.S. banking related to the Electronic Fund Transfer Act is the one of Schroeder (1985). Schroeder (1985) used Federal Reserve data to estimate a log-linear cost function for start-up costs and a cost function for incremental costs. While the independent variables of the former cost function comprised the monetary amount of consumer transaction accounts and holding company assets, the number of offices, and an indicator variable for ATM use, those of the latter included the number of electronic fund transfers rather than the monetary amount of consumer transaction accounts. His results point toward cost economies in both one-off and ongoing costs, indicating that a 10% increase in output would be accompanied by increases of 7.7% and 4.3% only in

implementing and ongoing costs, respectively. In line with these results, also Barefoot et al. (1993) found that relative compliance costs are larger for smaller institutions.

Poshakwale et al. (2020) inferred from a recent difference-in-differences analysis of **EU banks** versus a control group of U.S. and Canadian banks that compliance costs related to the Statutory Audit and Corporate Reporting Directives, which are part of the FSAP, increased by 11% to 13% over the 2004 to 2013 period, with smaller banks appearing to have been disproportionately affected by the increase in compliance costs. Schenkel (2017) examined the impact of the implementation of four regulations in the areas of risk management, securities services, anti-money laundering, and IT standards on 325 small cooperative banks in **Germany**, including as regards their adherence to the EU's proportionality principle. Using the reference year 2015, he conducted a survey to measure the respective compliance costs incurred, indicating that the regulatory burden varies with bank size. His regression model estimates revealed that while compliance costs accounted for 6.4% of administrative expenses for small banks, the ratio amounted to 2.4%, 1.6%, and 1% only for medium-sized, medium-large, and large banks, respectively. Consistent with these results and based on a sample of more than 500 German cooperative banks, the survey conducted by Hackethal and Inderst (2015) revealed that direct regulatory costs are disproportionately high for smaller banks.

Interim Conclusion

In line with the evidence presented above, it is not unreasonable to hypothesize that the extensive and dynamic regulatory requirements posed on banks in the EU and the United States will generate ever higher (fixed) costs for banks. Incremental fixed costs include additional training costs, administrative costs, restructuring costs, capital costs, and consultancy and legal advice costs, among others. With rising fixed costs, all else held constant, the (minimum) efficient scale of production, i.e., the optimal bank size, increases. Therefore, regulation increases the pressure to consolidate or to go out of business, especially for smaller institutions, while at the same time, it acts as a deterrent against market entry (e.g., Adams/Gramlich, 2016; European Commission, 2014, pp. 84 f.). In 1988 already, Elliehausen and Kurtz (1988) hinted at the fact that “[i]f the burden of compliance is larger for small firms, such firms might leave regulated markets, entry might be difficult, and industries might ultimately become more heavily concentrated” (p. 147).

5.3.2 Risk and Stability Considerations

Endogenous Factor: Diversification Benefits

While banks may or may not see potential productivity gains as an incentive to consolidate, they may, perhaps additionally, seek to reduce risks by diversifying through consolidation – geographically or portfolio-wise. Geographic synergies can be particularly exploited if the consolidating institutions operate in separate, uncorrelated markets prior to consolidation, so pooling the risks inherent in their lending and funding activities is possible after consolidation. However, consolidations can well bring the opposite result if the diversification benefits cannot be reaped, as this circumstance can lead banks to take on much higher risks in order to recoup the missed diversification gains.

The **empirical literature** on the nexus between consolidation and diversification of bank-specific risks is not extensive. An early study by Liang and Rhoades (1988), using a sample of more than 5,000 U.S. banking organizations over the 1976 to 1985 period, provided evidence generally in favor of a **negative relationship between geographic diversification and bank risk**, having made clear, however, that some individual components of the risk measures used were increasing. Earlier empirical evidence on the consolidation-risk nexus in European banking was provided by Rivard and Thomas (1997) and Hughes et al. (1999), among others. They, too, suggested that the geographic diversification of bank activities would be associated with risk reductions rather than increases in risk exposures. And also the study of Méon and Weill (2005) pointed to possible positive effects of cross-border consolidations in the EU on banks' risk exposure, which they attributed to the existence of imperfect correlations of business cycles within the union. More recent evidence was provided by Bauer et al. (2009), whose study of a sample of U.S. credit unions over the 1994 to 2004 period hinted at a positive effect of mergers on the financial stability of the target firms and a minimal effect on the acquiring firms.

The studies of Demsetz and Strahan (1995), Berger et al. (1999), and the Group of Ten (2001) did, however, point out that the generally positive effects of diversification resulting from consolidations may have been outweighed by the tendency of banks to increase their risk-taking. Focusing on the risk-taking issue, De Nicoló (2001), using data from a sample of publicly traded banks in 21 industrialized countries over the period from 1988 to 1998, found that for most banks, except for small U.S. BHCs, there was a **positive link between bank size and risk-taking**, concluding that consolidation may result in higher bank insolvency risk. Studying the largest 500 financial firms worldwide in 1995 and 2000, the evidence provided by De Nicoló et al. (2004) also pointed toward a higher risk exposure of large conglomerate firms in 2000, while in 1995, the differences in risk exposure appeared to be minor.

Lown et al. (2000) and Estrella (2001) attempted to predict the diversification benefits that might result from hypothetical consolidations between banks and **nonbank financial institutions**. Lown et al. (2000), using U.S. data from the 1984 to 1998 period, concluded that mergers between BHCs and life insurance firms have the potential to result in lower-risk firms, while mergers between banks and securities and property and casualty firms appeared to slightly increase risk exposures. Estrella (2001), while confirming the positive diversification effects of mergers between banking institutions and insurance companies, hinted toward even larger positive effects for consolidations with property and casualty insurance companies.

Exogenous Factors: Focus Regulation

While at the micro-level, banks might consider consolidations in order to benefit from potential diversification effects in terms of costs and risks, at the macro-level, regulators might take into account the stability effects coming along with a consolidation-induced change in the market structure. Since, as was elaborated above, bank regulation provides incentives for consolidation or at least does not seem to restrain the process, it is also conceivable that, from the regulators' point of view, consolidation processes are considered desirable or even intended for stability purposes. Since many studies claim that competition is detrimental to stability, regulation in a Public Interest Theory sense might be interested in increasing concentration to increase stability. There are, however, also studies arguing that the opposite is true, namely that competition has a positive effect on stability. To elaborate further on this issue, the theoretical hypotheses dealing with this relationship are explained in more detail below.

Concentration Stability Hypothesis

According to the **concentration stability hypothesis**, more concentration leads to more stability. This view is based on the assumption that a high degree of concentration leads to greater market power, which, *ceteris paribus*, increases profits and thus reduces the incentives for banks to take unnecessary risks (Calice et al., 2021, p. 2). Supporting this view, Beck et al. (2007), using data from 69 countries over the 1980 to 1997 period, found that higher market concentration in banking appears to have reduced the likelihood of a crisis occurring. Also Berger et al. (2017) tested the hypothesis using data from more than 8,000 banks in 23 developed countries, showing that banks with greater market power tended to be exposed to lower overall risk. Relying on data from 79 countries over the 1980 to 1997 period, Evrensel (2008) found that a higher degree of concentration in a banking market appears to have lengthened the period during which no crisis was experienced. Similarly, the results of Schaeck et al. (2009), who used data from 45 countries from 1998 to 2005, indicated that both the probability of a banking crisis

and the time to crisis decreased as concentration increased. Likewise, the analysis by Deltuvaite (2010) revealed that banking crises seemed to occur less frequently in countries with more concentrated banking markets. The hypothesis was also supported by more recent evidence from Maslak and Senel (2021), who found that U.S. domestic bank M&As during the 2007–2008 financial crisis contributed to a reduction in systemic risk.

Concentration Fragility Hypothesis

The **concentration fragility hypothesis** contrasts the concentration stability hypothesis in that it assumes that an increase in market power due to a higher degree of market concentration will ultimately cause banks to raise lending rates, which not only increases the risk of insolvency on the part of borrowers but also incentivizes banks to take higher risks (Boyd/De Nicoló, 2005, pp. 1331 f.). Furthermore, consolidation may result in banks receiving an implicit government guarantee in the form of the “too big to fail” status, which could incentivize these banks to take excessive risks, thereby worsening financial stability (Bretschger et al., 2012, p. 3337). On the other hand, allowing the failure of large banking institutions created through consolidation may induce severe implications for the financial system’s stability, especially given their high degree of interconnectedness (Berger et al., 1999, p. 175).

Providing **empirical evidence** for the concentration fragility hypothesis, De Nicoló and Kwast (2002) suggested that during the 1988 to 1999 period, the degree of interdependence and systemic risk increased among the sample of U.S. large and complex banking organizations, a development to which consolidation contributed, although less so at the end of the period examined. Having studied the largest 500 financial firms worldwide, De Nicoló et al. (2004) found that over the 1993 to 2000 period, a highly concentrated banking market seemed to be associated with a higher systemic risk potential than a less concentrated market, a relationship that was particularly pronounced in the last four years of the study period. Similarly, having analyzed a sample of some 2,500 U.S. banks in 2003 and a panel data set of about 2,600 banks in 134 non-industrialized countries over the 1993 to 2004 period, Boyd et al. (2006) suggested that a higher degree of concentration appears to be associated with a higher probability of bank failure. For the 1997 to 2005 period, Uhde and Hemeshoff (2009) used balance sheet data from a sample of EU banks to also provide evidence of a negative relationship between market concentration and financial soundness. In a more recent paper, Weiß et al. (2014) used data on international, domestic, and cross-border mergers to point to an increase in systemic risk following the mergers examined, to which not only the acquirers and targets firms contributed but also their competitors.

Ambiguous Results

While the studies presented above provided fairly clear evidence in favor of either hypothesis, Bretschger et al. (2012) pointed to country-specific differences with respect to the concentration-stability nexus. **Ambiguous results** on the concentration-stability nexus were also provided by Calice et al. (2021). Using cross-country data on bank consolidations, they concluded that for stability purposes intermediate levels of concentration are optimal, as for low concentration levels the concentration-stability hypothesis holds true, while a high market concentration tends to have negative effects on stability.

Bank-Specific Risk versus Systemic Risk

Most studies have analyzed either the impact of consolidations, or concentration, on bank-specific risk or on systemic, or country-level, risk. However, some studies have also considered the effects of both the nexus between concentration and bank-level risk and between concentration and country-level stability. Among others, Allen and Jagtiani (2000) studied the diversification effects of hypothetical U.S. bank consolidations for the 1986 to 1994 period, suggesting that expansion into nonbank businesses, i.e., securities and insurance, would reduce the risk to the firm but increase systematic market risk. And also Ijtsma et al. (2017) analyzed both relationships for a sample of EU-25 banks over the 1998 to 2014 period, finding no significant effect of concentration on either of the two levels of risk.

5.3.3 Motives In Line With the Interest Group Theories of Regulation

Although the rationale for regulations encouraging bank consolidations should be welfare or stability improvements, while banks should consolidate for the very reasons of reducing inefficiencies or risks, other motives of banks and regulators could also explain their actions. Among others, banks could be pursuing their strategic interests by increasing their size through M&As, while bank managers, in particular, could aim to build a reputation or enjoy a “quiet life” by exploiting the market power potentially resulting from consolidations. Regulators, too, might be interested in reducing their workload, which could be achieved through nontailored regulations and more homogeneous banks. Furthermore, other interest groups could play a role in promoting the consolidation process. For example, politicians could steer the actions of regulators, e.g., to create strong national champions or to enforce banks’ lobbying interests. The most relevant motives are presented in figure 42 and are elaborated upon below.

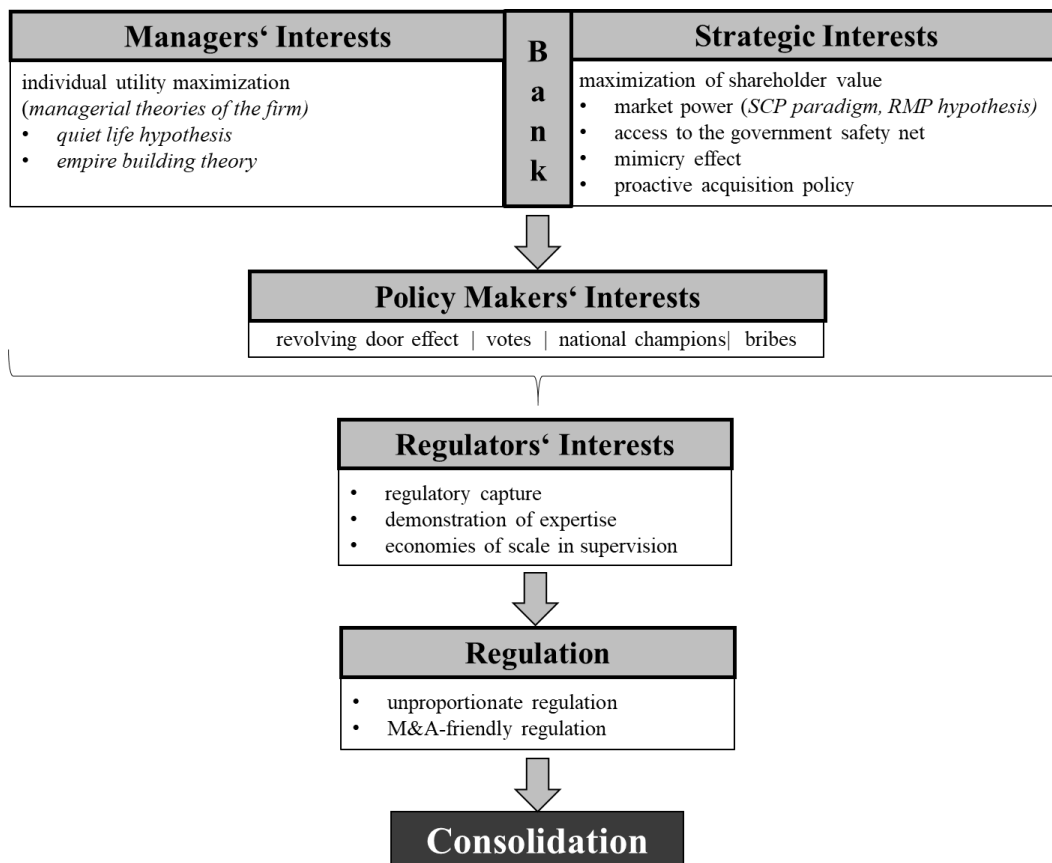


Figure 42: Focus: Interest Group Theories' Motives

Source: Own representation.

A Bank's Strategic Interests

First, a bank's strategic interests could play a role in its decision to consolidate. In this sense, mergers would not necessarily reduce inefficiencies or risks but might simply aim to increase their pricing power, gain access to the government safety net, or compete in the race of size, among others. One of the main goals underlying these sub-goals could be the **maximization of shareholder value**, as considered by Berger et al. (1999), Shull and Hanweck (2001), and Walter (2004), among others.

Generally supporting this notion, Rad and Van Beek (1999), for their sample of **European** cross-border mergers, found significant positive abnormal returns for target bank shareholders over the entire period from 1989 to 1996, while the change was not significant for bidder bank shareholders. Analyzing large European bank M&As conducted in the 1989 to 1997 period, Cybo-Ottone and Murgia (2000) suggested that, on average, shareholder value improved, but not for cross-border transactions and M&As involving securities firms. Similarly, the study of Beitel and Schiereck (2001) of 98 large M&As of exchange-listed European acquiring banks

over the 1985 to 2000 period revealed that, on average, shareholder value increased post-consolidation, but that, in especially, cross-border deals carried out since 1998 actually led to negative cumulated abnormal returns. Relying on a sample of 98 large European bank mergers over the period from 1985 to 2000, Beitel et al. (2004) suggested that more than 60% of the transactions they analyzed created shareholder value, i.e., increased cumulative abnormal returns for the combined entity of target and bidder. Pointing in a similar direction, Lepetit et al. (2004) found a positive and significant increase in the target banks' values to have prevailed for their sample of banks from 13 European markets over the 1991 to 2001 period. Focusing on the return on equity, the findings of Campa and Hernando (2006), who studied European bank consolidations over the 1998 to 2002 period, indicate that, on average, ROE increased by approximately 7% post-merger. The study of Ekkayokkaya et al. (2009) on EU bank bids over the 1990 to 2004 period revealed that bank M&As created value for the bidding banks only before the introduction of the euro in 1999 and only in the case of foreign acquisitions, while no value was added in the immediate period before the euro introduction and in the post-euro period. Consistent with Rad and Van Beek (1999), Starova et al. (2010) indicated that in their sample of 59 M&A deals of listed European banks over the 1998 to 2007 period, a large amount of value was created for the target banks' shareholders, while decreases in the value were found for the bidders' shareholders, with the net effect having been positive though.

In an earlier study, Zhang (1995) found evidence of an increase in value for shareholders of **U.S.** banks when they announced their consolidation. Less conclusive is the result of an examination of U.S. bank mergers provided by DeLong (2001), which indicates that for the 1988 to 1995 period, only mergers that were similar in terms of activity and geographic scope increased shareholder value after the announcement. Furthermore, also Becher and Campbell (2005), having used data from a sample of 443 U.S. bank mergers among publicly-traded banks announced in the 1990s, pointed toward value creation in the pre-deregulation period between 1990 and 1996, but not for the period afterward, i.e., 1997–1999, when mergers were found to have led to losses even for mergers with a high degree of branch overlap. Analyzing the effect of the Dodd-Frank Act on shareholder wealth gains using a sample of 640 U.S. bank consolidations announced during the 1990 to 2014 period, Leledakis and Pyrgiotakis (2022) indicated that the Act had a positive impact on small bank mergers, which they attributed to savings in compliance costs and higher profitability. On the other hand, the evidence provided by Pilloff (1996) and, more recently, by Sharma (2010) did not point to significant positive effects of U.S. bank M&As on shareholder value, while Madura and Wiant (1994), having used a sample of 152

U.S. bank mergers over the 1983 to 1987 period, actually found negative cumulative abnormal returns, at least for the three post-consolidation years.

Since (risk-averse) shareholders are potentially interested in profit increases (and risk reductions), bank managers who use acquisitions to increase shareholder value seem to expect higher revenues, lower average operating costs¹⁷⁴, or diversification benefits coming along with the consolidation, the latter two of which would of course also be beneficial from a welfare perspective (see chapter 2.2.1). To meet these expectations, the acquisition should, ideally, result in improved management of the consolidated bank (see chapter 5.3.1) or an increase in market power, the second being suggested as a rationale for consolidations by Copeland and Weston (2014, pp. 733 ff.), among others. The point on the **market power** incentive is supported by two market power theories, which are considered in more detail in the following.

Market Power Theories

As distinguished by Berger (1995), market power theories compete with efficient structure theories in explaining the positive relationship between concentration and profitability (figure 43). One of the market power theories is the **Structure Conduct Performance** (SCP) hypothesis, which dates back to the works of Mason (1939) and Bain (1950, 1951). In contrast to efficient structure theories, the SCP paradigm assumes a clear causal relationship between market structure, the conduct of market players, and their market performance. This means that, according to the SCP paradigm, any increase in a bank's pricing power results from a prior (random) change in the structure of the banking market. If this were the case, the conclusion would be that an increase in banking market concentration through consolidations should be prevented. Among others, early **empirical evidence** supporting the SCP paradigm for **the U.S. banking market** was provided by Heggstad (1977), who pointed to a major impact of the market structure on bank profitability, and Hannan (1991) and Berger and Hannan (1989, 1997), who found that price levels appear to be positively correlated with (local) market shares, i.e., that a higher market concentration appears to be associated with lower interest rates on retail deposits and higher interest rates on small business loans. The latter was confirmed by Sharpe (1997), Simons and Stavins (1998), Garmaise and Moskowitz (2006), and Craig and Dinger (2009), among others. In particular, while Sharpe (1997), Simons and Stavins (1998), and Craig and Dinger (2009) used monthly U.S. bank data to show that mergers lead to lower deposit rates, Garmaise and Moskowitz (2006), who investigated 316 U.S. bank M&As over the 1992 to 1999

¹⁷⁴ Houston et al. (2001), examining 41 large U.S. bank acquisitions between 1985 and 1996, suggested that cost-saving estimates of the management were more critical than estimates of earnings increases in explaining post-merger stock price increases.

period, concluded that consolidations result in higher lending rates and less lending. In contrast, Akhavein et al. (1997) did not find evidence of a significant increase in market power after megamergers. Then again, consistent with the market power theories, Jackson (1997) indicated that deposit rates respond rigidly to increases in open-market rates prevailing in relatively concentrated markets, while Prager and Hannan (1998), citing the opposite trend, provided evidence that consolidations leading to considerable increases in market concentration strongly and negatively affect deposit rates. Supporting the SCP paradigm as well, Berger et al. (1999) suggested that consolidation in U.S. banking markets between 1988 and 1997 was associated with an increase in market power. Based on a state-by-state analysis of the U.S. banking sector, also in the 1980s and 1990s, Jeon and Miller (2002) pointed to a causal relationship between bank concentration and profitability, likewise in line with the structure conduct performance paradigm. More recent evidence was provided by Tregenna (2009), who analyzed U.S. banks over the 1994 to 2005 period and, like Jeon and Miller (2002), indicated a causal relationship between concentration and profitability. Taking a different approach, Fraser et al. (2011), based on a sample of more than 3,000 commercial borrowers of U.S. banks involved in large consolidations, saw the observed negative effect of mergers on borrowers' stock prices as evidence of an increase in market power, supporting the SCP hypothesis.

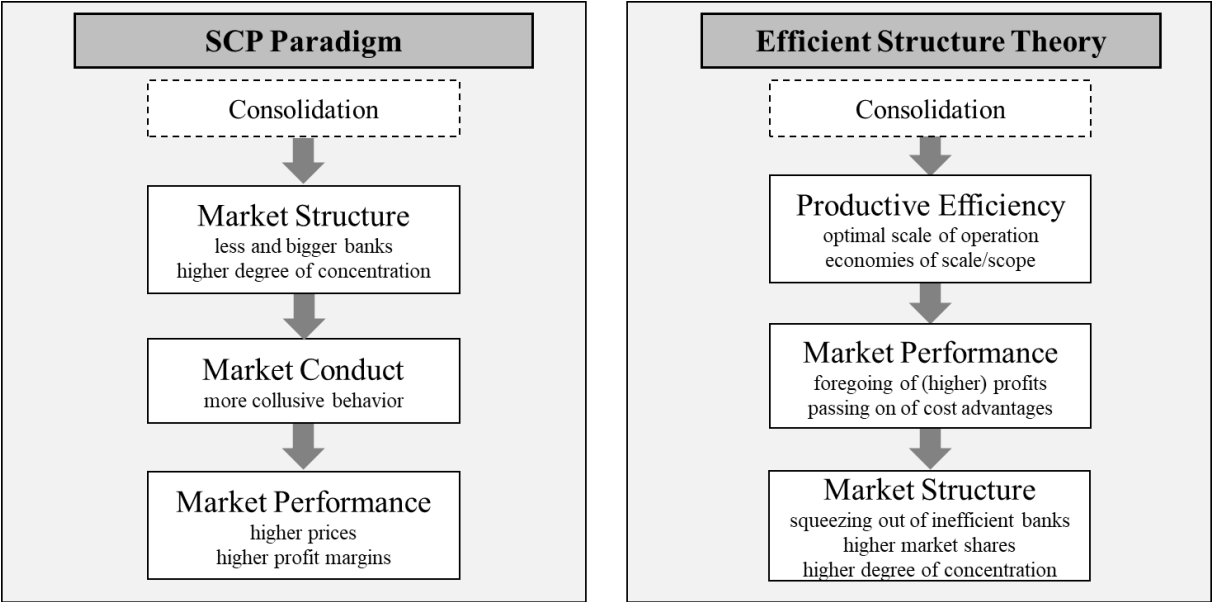


Figure 43: Constitutional Economic Assessment: SCP Paradigm vs. EST

Source: Own representation.

An early study of the **European banking sector** was conducted by Molyneux and Forbes (1995), who used data for banks from 18 European countries for the period between 1986 and

1989 to provide evidence in favor of the structure-conduct-performance approach. Also in line with the SCP paradigm, Bikker and Haaf (2002), who used the Panzar Rosse model to evaluate the level of competition, indicated that in the early 1990s, the degree of market concentration in U.S. and European banking markets appeared to be a major determinant of profitability. Using the Panzar Rosse model as well, Bikker et al. (2006), based on a sample of more than 18,000 banks in 101 countries, showed that bank size is an essential factor for the degree of pricing power. Similarly, Hankir et al. (2011), using data on 600 intra-industry M&A transactions of public banks in North America and Europe from 1990 to 2008, concluded that market power constitutes an important motive for bank M&A deals.

Investigating the impact of Italian bank consolidations over the 1989 to 1995 period, Sapienza (2002) pointed out that after initial productivity improvements, the steady increase in market power offset the first effect over time, indicating that the confirmation of the theory also depends on the time component. Carbó Valverde et al. (2009) used a range of competition measures to assess the pricing power of 14 European banking systems, having found not only country-specific differences but also inconsistent results on different indicators, a finding confirmed by Gischer et al. (2016). For the European banking market over the 1993 to 1999 period, Corvoisier and Gropp (2002) pointed to different effects of market concentration on market performance, depending on the product type. In particular, while the increasing concentration in the markets for loan and demand deposits seems to have led banks to increasingly exploit pricing power, the markets for savings and time deposits appear to have become more contestable or less inefficient. Other factors affecting the relationship were considered by Hsieh and Lee (2010), who, using a sample of more than 15,000 banks from 61 countries over the 1992 to 2006 period, indicated that the impact of concentration on profitability depends on the market structure, laws and regulations, corporate governance, the level of economic development, and intra-industry competition, among other factors.

The **relative-market power** (RMP) hypothesis constitutes a second market power theory, which originated with Shepherd (1972), whose study of a sample of 231 U.S. companies suggested a positive relationship between a firm's profitability and its market share. In particular, Shepherd (1972, p. 35) concluded that, inconsistent with the SCP paradigm, the market share contributes much more to a company's profitability than factors such as market concentration, entry barriers, or advertising activities. In line with this, Shepherd (1986) indicated that a market player that dominates a market through high market shares or a great degree of product differentiation could exploit its market power through price and profit increases. In an early study of

eleven European banking markets over the 1988 to 1991 period, Goldberg and Rai (1996) provided evidence supporting the RMP theory when the return on equity was used as a measure of profitability, while the evidence was in favor of the X-efficiency hypothesis when the net interest margin was used as the dependent variable. Based on data from Spanish banks for the 1990 to 1993 period, the evidence provided by Maudos (1998) pointed to a positive influence of both efficiency and market share on profitability, which may support not only the RMP hypothesis but also the X-efficiency hypothesis. Likewise, evidence supporting both hypotheses was also provided by Berger (1995). More recently, Mirzaei et al. (2013), too, pointed to a positive relationship between market share and profitability for the developed countries in their sample of 1,929 banks in 40 emerging and advanced economies over the 1999 to 2008 period.

Access to Government Safety Net

While gaining market power constitutes one strategic rationale for bank consolidations, banks may also consolidate with the goal of reaching a certain size at which access to the **government safety net** is provided, for example, explicitly in the form of a lender-of-last-resort facility or deposit insurance, or implicitly in the form of other guarantees such as the “too big to fail” status. Government guarantees, whether implicit or explicit, can lower funding costs and increase the shareholder value of those banks that are provided with safety nets because the risks to investors and creditors are greatly reduced (Berger et al., 1999, p. 145 f.; DeYoung et al., 2009, p. 95). Evidence supporting the presumption that too-big-to-fail institutions can benefit from lower costs of funding has been provided by Soussa (2000), Shull and Hanweck (2001), and Penas and Unal (2004), as well as by the majority of studies, as pointed out by Lybeck (2016, p. 360): “Most studies would agree that there are few economies of scale in banking above, at most, 100 billion dollars in total assets and if there are, they are due to the existence of the TBTF syndrome, allowing these banks to borrow at lower rates than other, smaller banks since there is a high likelihood that they will be bailed out.”

Other Strategic Interests

Also the bandwagon or **mimicry effect** may play a role in the decision to consolidate. In particular, a bank may follow leading banks in their strategy of racing for size (Ayadi/Pujals, 2004, p. 19). However, in seeking to consolidate, banks may also pursue a **proactive acquisition policy** to maintain their position, further improve their industry ranking even, or protect themselves from a hostile takeover transaction through a defensive merger (Ayadi/Pujals, 2004, p. 19; Gorton et al., 2009). The latter rationale for consolidation follows the notion that a bank must be large to avoid being taken over.

Interim Conclusion

As elaborated above, banks might consolidate to pursue strategic interests, such as strengthening their pricing power, gaining access to the government safety net, or improving their industry position. This would mean that certain banks could seek consolidation-favoring regulation, i.e., those major banks that could gain even more market power through (cross-border) M&As and eventually become global players. In particular, large banks would benefit both from lower regulatory costs associated with consolidations and from a high degree of regulatory complexity and dynamism in general. This is because more (homogeneous) regulatory pressure serves as a market entry barrier that protects large banks from (potential) new entrants, while the increase in optimal bank size due to the increase in fixed costs eliminates small competitors. Since the organizational competencies of large banks exceed those of smaller institutions, large banks are in a better position to assert their interests than smaller banks. Among other things, they do have the capacity to offer regulators (implicit or explicit) rewards for capturing them (see chapter 2.2.2).

Personal Motives of a Bank's Management

Having considered possible strategic objectives of the entity “bank”, it should also be borne in mind that decisions within the bank are made by individuals who may not always be entirely focused on profit maximization. In particular, **managerial theories of the firm** (e.g., Baumol, 1959, 1962; Marris, 1964; Williamson, 1966) take into account that bank managers may aim at maximizing their own utility rather than maximizing profits. Among others, they may have a personal interest in consolidations – either through a “quiet life” or other private benefits associated with bank size. These motives are referred to in the quiet life hypothesis on the one hand and the empire-building theory on the other, both of which are presented in more detail in the following.

Quiet Life Hypothesis

Similar to the SCP paradigm, the **quiet life hypothesis** assumes that the absence of a competitive drive associated with market power leads to sloppy management behavior that prevents a firm from realizing its profit potential. The theory goes back to Hicks (1935, p. 8), who noted that “people in monopolistic positions [...] are likely to exploit their advantage much more by not bothering to get very near the position of maximum profit, than by straining themselves to get very close to it. The best of all monopoly profits is a quiet life”. Accordingly, the managers of a bank seeking a large market share through consolidation might be more intent on exploiting market power and living a “quiet life” than on achieving efficiency. However, the lack of (x-)

efficiency (see chapter 5.1), i.e., the insufficient management effort, implies that profit is forgone, so, contrary to the SCP paradigm, banks with higher market share would not necessarily earn higher profits.

Early **empirical evidence** supporting the quiet life hypothesis for U.S. banking markets was provided by Heggstad (1977) and Rhoades and Rutz (1982), among others, who indicated that banks with market power tend to forego potential rents by being more risk-averse than banks in highly competitive markets. The quiet life hypothesis was also generally supported by the findings of Berger and Hannan (1997). Based on 1985 survey data on U.S. banks, they pointed toward a negative relationship between concentration, as a measure of market power, and X-efficiency, with the effects of concentration on deposit and loan rates having been in line with the SCP paradigm and thus also with the quiet life hypothesis. Empirical evidence for more than 5,000 U.S. banks in the 1980s was provided by Berger and Hannan (1998), whose regression results suggest a negative impact of concentration on efficiency and an effect on prices higher than that on profits. The empirical investigation of these authors additionally indicated that the resulting x-inefficiencies are larger than the allocative inefficiencies resulting from mispricing. Applying a maximum localization technique, Delis and Tsionas (2009) used data on EMU and U.S. banks for the period between 1999 and 2005 to point to a negative relationship between cost inefficiency and market power that was at a similar level for both markets. For the Italian banking market, Coccorese and Pellicchia (2010) used data from 1992 to 2007 to support the quiet life hypothesis in general. However, they noted that the (negative) effect of market power, as measured by the Lerner index, on efficiency, proxied by bank-level efficiency scores, was not particularly strong. Even more recently, Färe et al. (2015) found for the Spanish banking industry that, when the entire banking sector was considered, the relationship between market power and efficiency was non-linear, leading them to suggest that effects are firm-specific. The authors additionally indicated that a separate analysis of the different components of inefficiency and the type of banking firm could help explain the differences in the relationship. Using data on European Union banks over the 2008 to 2015 period, Gavurova et al. (2017) tested the relationship between market structure, as measured by the HHI and the CR₅, and performance, proxied by ROA and ROE, and found that performance appeared to have a negative impact on concentration, which they regarded as evidence supporting the quiet life hypothesis.

The quiet life hypothesis was, however, **rejected** by Maudos and De Guevara (2007), among others, who used 1993 to 2002 data on EU-15 banks to examine the relationship between market power, as proxied by the Lerner index, and cost-efficiency. For five European banking sectors

over the 2000 to 2005 period, Casu and Girardone (2009), having used Granger-type causality tests, found a positive causal relationship between market power, as measured by the Lerner index, and efficiency, which they regarded as consistent with the rejection of the quiet life hypothesis. Applying a different approach to measure market power, Koetter et al. (2008, 2012) used efficiency-adjusted Lerner indices to test the quiet life hypothesis. While both Koetter et al. (2008), based on a sample of about 4,000 U.S. BHCS over the 1986 to 2006 period, and Koetter et al. (2012), for all insured U.S. commercial banks between 1976 and 2007, found a negative relationship between competition and cost efficiency, thus rejecting the quiet life hypothesis, Koetter et al. (2012) detected a negative relationship between competition and profit efficiency, in line with the quiet life hypothesis. Using unadjusted Lerner indices and based on data from German savings banks over the 1996 to 2006 period, earlier evidence provided by Koetter and Vins (2008) supported the quiet life hypothesis for both cost and profit efficiency. In contrast, abandoning the assumption of a profit function that is linearly homogeneous in input prices but otherwise using the study of Koetter et al. (2012) as the benchmark, Restrepo-Tobón and Kumbhakar (2014), pointed to a positive relationship between market power and efficiency, rejecting the quiet life hypothesis.

Empire-Building Theory

In line with the managerial theories of the firm (e.g., Baumol, 1959, 1962; Marris, 1964; Williamson, 1966), the **empire-building theory** is based on the assumption that instead of maximizing profits, managers might pursue their own objectives, i.e., maximize their own utility function. This utility function may depend on the manager's income, market power, prestige, and reputation, among other factors. Following this reasoning, to increase his utility, a manager must seek an increase in the level of these factors. If there is a positive relationship between firm size and the level of compensation, power, social prestige, etc., both monetary and non-monetary incentives may induce managers to build "empires" through consolidations (Mueller, 1969). Indeed, a number of empirical studies have shown that management compensation appears to depend on both bank and deal size (e.g., Bliss/Rosen, 2001; Boyd/Graham, 1991; Grinstein/Hribar, 2004),¹⁷⁵ which may be due to (higher) salaries, bonuses, restricted stock, or stock options that managers receive as the firm grows larger. But also in terms of future returns, it could be fruitful for top managers to create large institutions, as rewards in the form of golden

¹⁷⁵ Counterevidence was provided by Lewellen and Huntsman (1970), among others, who showed that rather than being correlated with a firm's sales volume managers' compensation is correlated with its profit margin. Similarly, Anderson et al. (2004) indicated that post-merger CEO total compensation is positively related to expected merger profits rather than to asset size, which they interpreted as counterevidence to the empire-building theory.

parachutes, i.e., severance pay, could be granted in case of failure when leaving the troubled bank (Evans et al., 1997).

This would imply that, because of the potentially positive effects of consolidation decisions on their careers, managers use M&As strategically, first and foremost, to maximize their own utility rather than to exploit economies of scale or scope. Using data on publicly traded U.S. BHCs from 1992 through 1994, Hughes et al. (2003) suggested that at least some M&As indeed appeared to be associated with empire building, based on the grounds that the banks' performance deteriorated post-consolidation. However, if the management pursues its own objectives rather than those of the bank's stakeholders – who do not extensively monitor management decisions due to high information costs – mergers would be subject to the typical **principal-agent problem** (Jensen, 1986), the result of which would be x-inefficiencies.

Interests of Politicians

Among other things, in advocating or rejecting certain regulations, politicians may be **politically motivated** rather than deciding based on economic welfare considerations. For example, it could well be imagined that EDIS is politically desired, i.e., sought with the sole aim of deepening European integration. It could be considered, too, that politicians would try to prevent the adoption of legislation enshrining the principle of proportionality in order to promote the consolidation process and support the creation of (domestically owned) national champions while preventing competition with foreign banks (Boot, 1999, pp. 610 f.; OECD, 2009). At the European level, the incentive might be to promote European champions that can compete in the global marketplace (OECD, 2009).

On the other hand, the **personal interests of politicians** might also play a role in the regulatory decision-making process. In particular, it is conceivable that major banks exert influence on politicians by lobbying for regulations that prevent new entries and disproportionately burden smaller institutions. Since politicians may want to be reelected, they need to secure a sufficiently large number of votes so that the public, too, can affect bank regulatory decisions. Moreover, politicians could be personally influenced due to revolving door practices, potentially leading to regulatory capture.

Personal Interests of Regulators: Own Private Goals and Regulatory Capture

Finally, as was laid down in chapter 2.2.2 on the interest group theories, banking regulators may also not always act in the public interest but rather in their own interest or – if they have been captured by the industry – in the industry's interest. As Hardy (2006) suggested, particularly in the banking industry, regulators are susceptible to capture due partly to the prevalence

of various forms of informational asymmetries, high industry concentration, and the complexity of financial regulation. This means that, in line with the interest group theories, different kinds of regulatory capture may have an effect on the regulatory outcome and, thus, the consolidation process. Among others, revolving door practices could certainly impact regulators' activities, for example, through the incentive of offers of lucrative post-agency employment in the industry as a reward for promoting industry interests. Also direct payments in the form of outright bribes and the use of coercion on regulators, such as threats of reputational harm, could incentivize regulators to advocate on behalf of the sources of influence. Less problematic would be the provision of information by interest groups that could change regulators' attitudes toward particular policies.

Consistent with the ongoing strengthening of the regulatory regime in the banking industry, Hardy (2006) noted that through any of these means, regulators may be incentivized by (a dominant group of) banks to impose more costly and restrictive supervision than would be necessary from a welfare perspective, while institutions with diverging interests and less power of influence, including potential new entrants, bear a relatively larger proportion of the costs, which could discourage entry and force smaller-scale incumbents to consolidate.¹⁷⁶

However, regulators may have a vested interest themselves even in fostering the consolidation process through complicated, untailored, and ever-expanding regulations that impose more costs than benefits.¹⁷⁷ For one thing, regulators may be motivated to keep issuing new, complex rules and regulations to increase the **value of their expertise**¹⁷⁸ and show off that they work hard. On the other hand, the prospect of **economies of scale in supervision** may give them an additional incentive to promote overly complex and proportionate regulation.¹⁷⁹ These can be achieved because, *ceteris paribus*, less effort might be involved on the side of the regulators when institutions are larger but fewer in number. Indeed, heterogeneous business models and sizes of institutions potentially hinder the positive effects that centralized and harmonized regulation, such as the SSM and the single rulebook, could have on systemic inefficiencies in the regulatory process, while, for example, credit risk models that favor large banks because they

¹⁷⁶ Contrary to the market power hypotheses, however, Hardy (2006) suggested that banks' motivation to push for strict regulations stems from their recognition of the consequences of risk spillovers on their own institution rather than from restrictions in competition.

¹⁷⁷ As Marsh and Norman (2013a) noted: "Dodd-Frank continues the historical trend of regulating small, traditional banks and large, complex financial institutions under the same rubric and will have an impact on shaping the market in ways that are counterproductive to the goals of Dodd-Frank and which are against our common interests."

¹⁷⁸ As Igan and Lambert (2019, p. 10) pointed out: "Note that having complex rules and regulations does not necessarily mean having strict rules and regulations. Adding complexity may hurt firms by increasing compliance costs but helps the regulator in increasing the value of her expertise."

¹⁷⁹ For example, Eisenbach et al. (2016) derive from their model that supervisory hours increase less than proportionally with bank size, which they view as evidence of technological economies of scale in supervision.

are able to adapt them, could contribute to a more homogeneous market structure, facilitating supervision. Economies of scale in supervision could be particularly relevant for regulators if their compensation is linked to their monitoring performance or reputation.

5.4 Interim Conclusion

The analysis of the potential rationales behind the consolidation process highlighted the complexity of the subject, pointing to the various factors at play in banks' consolidation decisions. The increasing trend of consolidation in the banking sector could be caused by incentives to reduce inefficiencies or risks, the desire to increase market power, or personal motives of bank managers, politicians, and regulators, among other factors. It is probably reasonable to assume that no general statements can be made about which factor dominates, as the degrees of influence may vary across different consolidations, depending on bank size and type, business model and strategy, the country, the economic cycle, or even individual interests of the interest groups involved.

The welfare effects of consolidations are thus strongly influenced by the motives of the various stakeholders behind the M&As and the consolidation process in general, as well as by their ability to exert influence. While regulators may justify increasingly complex regulation on the grounds of positive welfare effects, the actual motives may differ. For example, “a regulator [...] could offer risk reduction as a rationale for [the regulatory] choice in an effort to camouflage the fact that the regulator actually has been captured by the industry” (VanHoose, 2017, p. 247). The industry may, in especially, be represented by large banks that do have the capacity to offer regulators (implicit or explicit) rewards to capture them. Large banks are likely to be in a better position to advance their interests than smaller banks because they are a group of relatively few but homogeneous institutions with a high market share and a good financial position, whose organizational competencies exceed those of smaller institutions, which are not only much larger in number but also more heterogeneous with diverging interests. Also, since lobbying costs are relatively lower for large banks, they would be more willing to bear these costs than smaller banks.¹⁸⁰

Certainly, large banks might favor more (homogeneous) regulatory pressures that increase the fixed costs of doing business, while small banks might oppose them. This is because regulation,

¹⁸⁰ Indeed, Bombardini (2008) showed that in the presence of fixed costs for channeling political contributions, larger firms tend to contribute more than smaller ones, leading her to conclude that the size distribution of firms in the industry has an impact on the level of political protection. Also Drutman (2015), based on interviews with 60 corporate and trade association lobbyists and the full lobbying history of all companies in the S&P 500, pointed in a similar direction.

as a market entry barrier, protects large banks from (potential) new entrants, while the increase in optimal bank size, due to the increase in fixed costs, eliminates small competitors through consolidation pressures (Elliehausen, 1998, p. 25; McCord and Prescott, 2014). This creates the preconditions for a positive profit margin for large banks. Since both large banks and regulators have a (private) interest in seeking more regulatory pressure – with no intention of bringing about welfare or stability gains – they may have an incentive to (tacitly) collude in this regard. Therefore, this study hypothesizes that the regulatory effect on the consolidation process is not only intended or tolerated by regulators but is a means to an end. Put differently, (extensive and dynamic) regulation is used as a strategy to force certain business models or bank groups out of the market to shape the banking market's structure rather than generating welfare gains. Since, however, no firm (constitutional economic) conclusions can yet be drawn from this, there is a need for a fundamental empirical analysis of the factors that may contribute to changes in market structure in general and to consolidation in particular. It must be assumed that the process of consolidation is the aggregate result of a number of determinants and interdependencies, a selection of which has been presented in figure 41 (see p. 142). However, while the study focuses on the costs, it does not address the benefits of regulation, as this is beyond the scope of this thesis.

6 EMPIRICAL ANALYSIS

Do regulators encourage the creation of ever-larger banks by taking a one-size-fits-all approach, or do they allow for diversity in size? Is it economically optimal to create larger and more homogeneous banks? Is consolidation the primary goal of regulators, or is it a “byproduct”? If consolidation is the goal, do regulators indeed want to impose an efficient scale of production on banks, or are they pursuing their own interests? The following chapter aims to approach these questions also empirically. Therefore, first of all, the research models and hypotheses derived from the analyses above are presented, while afterward, the procedures employed in this thesis to collect the necessary data are described. The methodology is explained in detail in the third section of this chapter. In particular, the empirical models are specified, and the choice of regression method is presented. In the next step, the empirical results, i.e., the descriptive statistics and the regression results, are shown before finally the results are discussed in detail.

6.1 Research Model and Hypotheses

To address the above-mentioned questions, two main research models were developed. These models are primarily aimed to shed light on the **regulation-consolidation nexus**, on the one hand, and the **regulation-welfare nexus**, on the other. To this end, various channels through which regulation may affect consolidation and welfare, respectively, as well as other factors that may have an impact, were considered. As noted earlier, one (main) channel through which regulation can promote consolidation processes is by increasing banks’ regulatory and compliance costs. This is because regulatory costs are, due to the one-size-fits-all approach, assumed to be predominantly fixed, meaning that banks must bear these costs regardless of their size, so economies of scale in regulation can be achieved through consolidation. Unfortunately, however, the **general lack of comprehensive data** on regulatory costs does not allow for direct conclusions but requires further reflection on the nature of regulatory costs in order to be able to approach the amount of regulatory costs in other ways. An approximation of a bank’s regulatory costs may be given by an estimation of the amount of fixed costs not directly related to the generation of output, which may be based on an aggregation of administrative cost items. Accordingly, the idea behind **research model 1** is to shed light on the relationship between the increase in extensive and dynamic regulatory requirements and the development of an approximation of scaled regulatory (fixed) costs. Taking into account the theoretical considerations in section 5, it is hypothesized that extensive and dynamic regulatory requirements posed on banks generate increasingly higher scaled administrative costs, with the increase being higher for

smaller banks.¹⁸¹ Figure 44 illustrates potential mechanisms through which regulation can affect these costs. In particular, regulation can induce changes in the allocation of production factors and the composition of expenditures. For example, regulatory requirements could force a bank to **reallocate employees** to the compliance sector or hire more employees¹⁸², which, all else being equal, would increase scaled administrative costs. But also capital resources may be diverted from output production to compliance if, for example, **regulatory-specific IT** is needed.¹⁸³ Investments in the IT infrastructure are then reflected in scaled administrative costs as well. When monetary resources are limited, regulation may, however, demand a bank to **crowd out IT investments** other than those related to regulatory compliance, which would result in no considerable change in the investments in IT infrastructure overall. While it is reasonable to assume that an increase in regulatory-specific IT investments would lead to an increase in scaled administrative costs, an increase in general IT investments may be associated with higher employee productivity, which might negatively impact total scaled administrative costs, making the overall effect of IT investments on costs uncertain. Furthermore, as also suggested by Cyree (2016), an increase in the regulatory burden could lead to an increase in the average employee compensation, as **specialized compliance staff** is likely to require a higher salary. On the other hand, an increase in the average salary per employee may result from the **replacement of lower-paid employees with IT**. An increase in the average pay could then be associated with an increase in scaled administrative costs if it is caused by the hiring of compliance staff, but could also be associated with a decrease in costs if productivity is increased. In addition, regulation may induce changes in the business model and strategy, for example, by affecting a **bank's risk exposure**, which in turn can impact the ratio of administrative costs to total assets. Lastly, changes in scaled administrative costs can result from changes in the **macroeconomic environment**, such as the rate of inflation. Although scaled administrative expenses may additionally be driven by the performance related to compliance, the study by Dahl et al. (2016) suggested that the evidence does not indicate significant performance differences. Because furthermore, there are no data allowing for the generation of variables accounting for

¹⁸¹ This would be in line with the community bank surveys conducted by the Federal Reserve Bank of Kansas City (2011, 2014), among others, which found that in 2011 and 2013, the vast majority of community depository institutions with less than one billion U.S. dollars in total assets, i.e., 79% and 83% of the 322 and 179 institutions surveyed, respectively, considered compliance with regulatory requirements to be most challenging, compared with 66% of 375 in 2008 and only 42% of 327 in 2004.

¹⁸² As Dahl et al. (2016, pp. 6 f.) remarked: "Personnel expenses are perhaps the most pervasive and will increase with the hiring of new employees in compliance as well as, presumably, the redirection of existing employee efforts toward compliance." And also the Federal Reserve Bank of Kansas City (2011, 2014) revealed that the community depository institutions it surveyed expected an increase in the number of full-time equivalent employees dedicated to compliance, as well as an increase in staff training costs.

¹⁸³ The community bank survey by the Federal Reserve Bank of Kansas City (2011, 2014) indicated, among other things, that the participating banks expected an increase in technology software updates.

different levels of compliance performance, no such variable is included in the model. Thus, **constant compliance performance across bank size categories** was implicitly assumed.

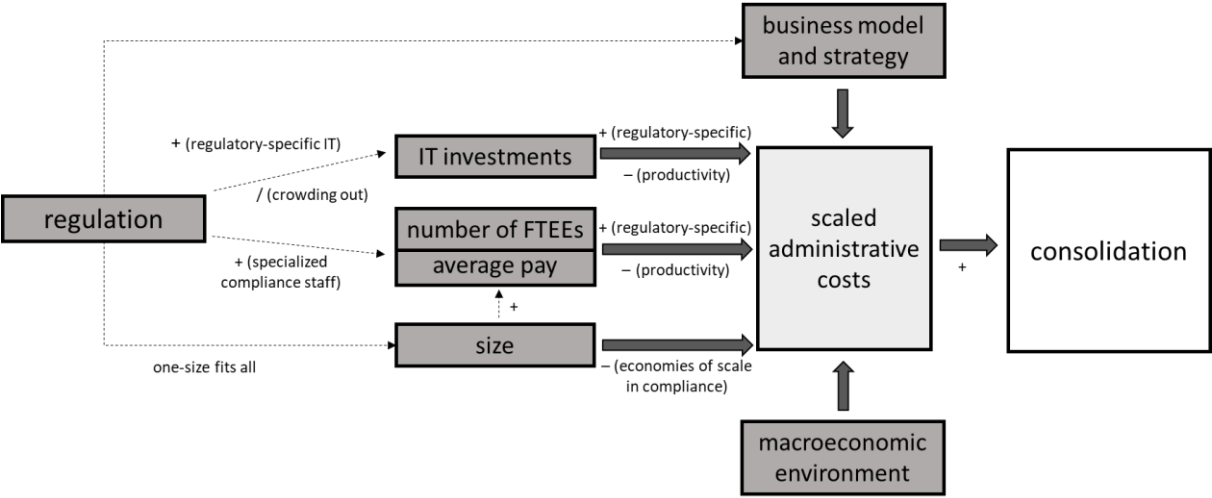


Figure 44: Overview of Research Model 1

Source: Own representation.

Overall thus, it is hypothesized that U.S. banks, on average, faced significantly higher scaled administrative expenses in the period following the introduction of the Dodd-Frank Act. If this is indeed the case, regulation may have strongly impacted the consolidation process in the banking sector. If additionally, it could be shown that regulation provides a barrier to productivity, this could either be an indication of an intended or tolerated **regulatory effect on the consolidation process** or an indication of the regulators’ incompetence to induce positive welfare effects. In the first case – the intended effect – comprehensive and dynamic, one-size-fits-all regulation might be used as a strategy to drive certain business models or banking groups out of the market, with the goal of shaping the structure of the banking market for reasons other than inducing welfare gains. In particular, the intention might be to redistribute wealth from smaller to larger banks. Second, regulatory costs in the form of higher inefficiencies could also be tolerated to achieve stability gains. This case would be welfare-enhancing if the regulatory gains outweighed the costs. But this would imply that the positive productivity and stability effects of (one-size-fits-all) regulation as such more than offset the regulatory costs in the form of potentially arising inefficiencies as well as compliance costs, costs for supervision, etc. Overall, then, evidence that **regulation is a barrier to productivity** may be indicative of the influence of private interests on the regulatory process or of inefficiencies in bank regulation, especially since previous studies generally do not support the concentration-stability hypothesis.

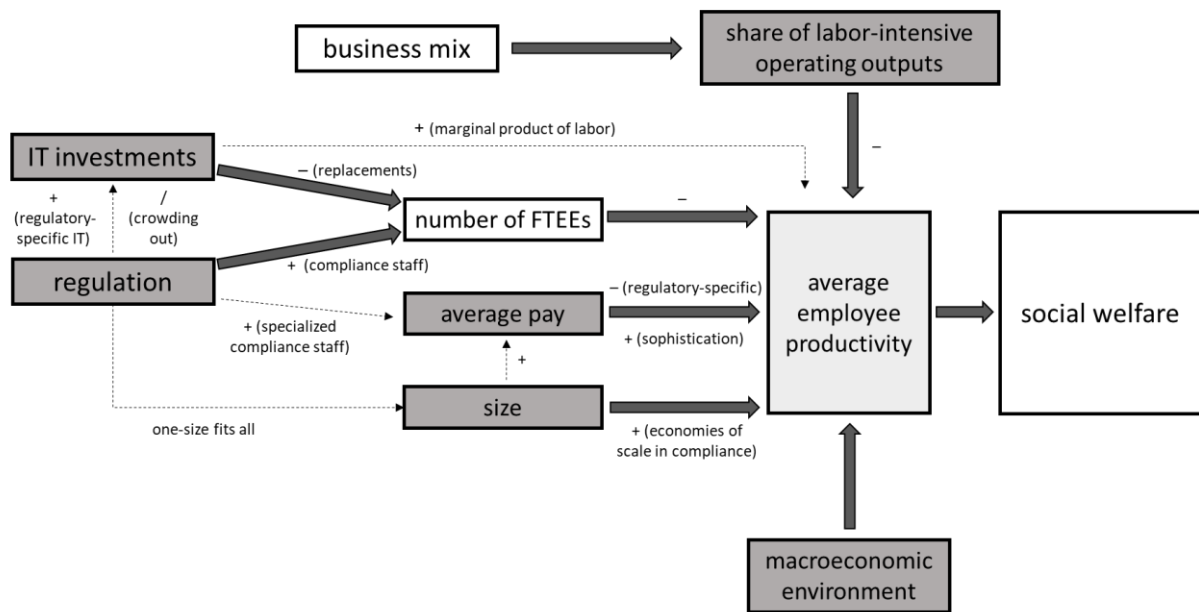


Figure 45: Overview of Research Model 2

Source: Own representation.

Figure 45 illustrates the mechanisms through which regulation may affect average employee productivity, and thus the idea behind **research model 2**. In fact, an increase in the regulatory burden may lead to a decrease in the amount of output generated by the same number of employees or, alternatively, to an increase in the number of employees without a change in the amount of output generated, ceteris paribus. This relationship may hold particularly if **more employees** must be hired to perform additional regulatory and compliance functions, as these employees may not be used for producing output. A one-size-fits-all regulatory approach might require smaller banks to hire relatively more compliance staff than larger banks so that their (small) size would have a negative impact on employee productivity. While this mechanism relates to the allocation of production factors, regulatory-induced changes in the expenditure composition may also indicate changes in average employee productivity. Among other things, an increased need for **more sophisticated and above-average paid compliance staff** would, ceteris paribus, positively affect average employee compensation, which would subsequently be negatively associated with average employee productivity. If, however, average compensation increases for output-producing staff, this could positively affect average employee productivity, as a higher salary might be an indication of a higher level of sophistication. For example, as was discussed above, an increase in average compensation per employee may be due to lower-paid employees being replaced by IT, which may lead to an increase in the marginal product of labor. As was also elaborated upon above, the need for a **regulatory-specific increase in IT investments** could, however, crowd out regular IT expenditures to save costs. In

this case, a regulatory-induced increase in IT investments would prevent an increase in employee productivity. Furthermore, the **business mix** in general could have an effect on employee productivity, as the traditional banking business, for example, is likely to be more labor-intensive than the commission-based business. Finally, changes in the **macroeconomic environment** may impact average employee productivity as well.

To gain empirical insights into these theoretical considerations, regression analysis seems to be a suitable tool. However, before performing the regressions, it is necessary to focus on the relevant data. The following section describes the procedures employed in this thesis to collect the data used for the regression analysis.

6.2 Source of Data

Due to the lack of access to long-time series banking data for European banks, the study had to rely on **U.S. bank data**. In particular, the U.S. state **North Dakota** was randomly chosen as the basis for the investigation, as it is characterized by especially rural structures and a fairly homogeneous financial sector distinguishing itself through a large number of community banks with similar business models and strategies. To control for a structural break caused by the introduction of the **Dodd-Frank Act of 2010**, annual data were processed for the observation period **2001–2021**. As the underlying data, balance sheets and income statements were used, obtained from Consolidated Reports of Condition and Income, i.e., **Call Reports, by the FDIC**. Changes in the number of institutions in the sample over time occurred due to consolidations – within the state and across the border –, entries, and headquarter relocations. Several institutions also changed their names during the period under investigation. To ensure that name changes did not cause breaks in the time series of the banks concerned, it was ensured that a bank that changed its name was still listed as the same institution over the entire period considered.

Using the influence statistic $DFBETA$ ¹⁸⁴ and added variable plots, **influential observations** were detected (see figures 47 to 50 in the appendix), of which some – those for which it was entirely justified – were deleted from the dataset. In particular, the First Financial Bank, the former First State Bank of Sharon, was excluded from the data pool since it appeared to be an outlier and strongly influenced the results. The abnormality in the data could be attributed to the 2010 observation, which deviated strongly from those of the other years. As it seemed that the 2010 data were not reasonable, and since this observation was in the middle of the time

¹⁸⁴ The abbreviation stands for “difference in beta values”. For further details on $DFBETA$, see Hamilton (1992, pp. 125 ff.).

series, it was decided to drop all the observations from that bank. Besides, also the 2004 observation from Visionbank and the 2007 observation from the Turtle Mountain State Bank were dropped since these two banks had their foundations in the respective years, causing the data to not be representative of them. In fact, the two observations appeared to be influential points, strongly deviating from the observations of the other years. Lastly, the 2013 observation from the Great Plains National Bank was excluded since the bank did not report anything in its income statement in 2013. However, only the 2013 observation was dropped because, due to the fact that the Great Plains National Bank was acquired in 2014, the time series as such was not disrupted.

6.3 Econometric Specifications

The theoretical models proposed in chapter 6.1 were used to develop the regressions presented in the following. While first of all, the regression based on research model 1 is specified and the variables included are described, the same is done for research model 2 afterward.

Model 1: Regulation as a Driver of Scaled Non-Output-Related Costs

Regression

To determine the relevant drivers of scaled non-output related costs, a multiple linear regression model using Stata is applied. Model 1, in line with the theoretical research model 1, can be written as follows:

$$(1) \quad \ln NIE_{FAE_{it}} = \beta_0 + \beta_1 \ln TA_{it} + \beta_2 \ln PAY_{it} + \beta_3 \ln FAE_{it} + \beta_4 CD_{it} + \beta_5 CL_{it} + \beta_6 NCD_{it} + \beta_7 \ln NLA_{it} + \beta_8 S_{it} + \epsilon_{it}$$

where $\ln NIE_{FAE_{it}}$ represents the natural logarithm of noninterest expenses excluding expenses of premises and fixed assets, divided by total assets for bank i in period t , $\ln TA$ is the inflation-adjusted natural logarithm of total assets, $\ln PAY$ stands for the natural logarithm of the sum of inflation-adjusted salaries and employee benefits per FTEE, $\ln FAE$ represents the natural logarithm of expenses for premises and fixed assets, net of rental income, divided by total assets, CD stands for consumer deposits¹⁸⁵ as a share of total assets, CL is the ratio of customer loans¹⁸⁶

¹⁸⁵ Consumer deposits include deposits from individuals, partnerships, and businesses.

¹⁸⁶ Customer loans include loans secured by real estate; loans to finance agricultural production and other loans to farmers; C&I loans; loans to individuals for household, family, and other personal expenditures (i.e., consumer loans); loans to foreign governments and official institutions, including foreign banks; and obligations, other than securities and leases, of states and political subdivisions in the United States.

to total assets, NCD represents the ratio of non-consumer deposits¹⁸⁷ to total assets, $\ln NLA$ describes the natural logarithm of the proportion of non-loan assets¹⁸⁸ to total assets, and S represents securities as a share of total assets, while ε is an error term (see also table 11).

Variable Descriptions and Preliminary Expectations

The **dependent variable** $\ln NIE_FAE$ of model 1, i.e., the natural logarithm of noninterest expenses excluding expenses of premises and fixed assets, in relation to total assets, is intended to serve as a proxy for scaled regulatory (fixed) costs. It is reasonable to assume that a large portion of the actual scaled regulatory costs is noninterest expenses, and especially personnel costs. This point is supported, among others, by the study of Elliehausen and Kurtz (1988), which attributed almost two thirds of the compliance costs of U.S. commercial banks to personnel expenses. But also, for example, the FFIEC (1992) and, more recently, Dahl et al. (2016) pointed to the high labor intensity of compliance activities. Expenses for premises and fixed assets, in contrast, were excluded in order to allow for an investigation of the effect of these costs on the residual part of noninterest expenses. The residual portion comprises staff and material expenses such as salaries and employee benefits, as well as other noninterest expenses. From 2001 to 2007, the category “other noninterest expenses” is not further subdivided, whereas, since 2008, other noninterest expenses have been broken down into various categories, including data processing expenses, directors’ fees, legal fees and expenses, accounting and auditing expenses, and consulting and advisory expenses for both compliance and non-compliance activities.¹⁸⁹

Since it has been conjectured that increased regulatory pressure would lead to increasingly higher fixed costs for banks, resulting in an increase in the (minimum) efficient scale of production, it is presumed that, due to the fixed costs nature of regulatory costs, the expected negative effect of bank size on scaled administrative expenses is more pronounced in the period following the introduction of Dodd-Frank. To capture this effect, the periods 2001–2010 and 2011–2021 are tested separately, and a **bank size** variable ($\ln TA$) is incorporated into the model. Following the above reasoning, an increase in the absolute value of the $\ln TA$ coefficient from

¹⁸⁷ Non-consumer deposits were calculated by subtracting the dollar amount of consumer deposits from the amount of total deposits.

¹⁸⁸ Non-loan assets are the sum of total trading assets, premises and fixed assets, other real estate owned, investments in unconsolidated subsidiaries and associated companies, customers’ liability to this bank on acceptances outstanding, intangible assets, and other assets.

¹⁸⁹ Additionally, space was provided for banks to report other, self-chosen expense components. However, banks were required to report these write-in items only if their amounts exceeded 10% of total other noninterest expenses, while standardized items were required to be reported if their amounts exceeded 25,000 U.S. dollars or 3% of total other noninterest expenses. This means that banks reporting a value of zero for certain items may have incurred expenses in that category but did not meet the reporting threshold.

the first to the second period would be consistent with increased regulatory fixed costs that banks must cope with since the start of the implementation phase of Dodd-Frank.

Table 11: Definition of Model 1 Variables and Preliminary Expectations of the Coefficients

Variable	Symbol	Description	Expected Sign	Expected Change
dependent variable				
scaled administrative costs	lnNIE_FAE	natural logarithm of noninterest expenses excluding expenses of premises and fixed assets, divided by total assets		
independent variables				
size	lnTA	inflation-adjusted natural logarithm of total assets	–	↑
average payment	lnPAY	natural logarithm of the sum of inflation-adjusted salaries and employee benefits divided by the number of full-time equivalent employees	+/-	↑
IT investments	lnFAE	natural logarithm of expenses of premises and fixed assets, net of rental income, divided by total assets	–	↑
control variables				
share of customer deposits	CD	sum of deposits of individuals, partnerships, and corporations (total of transaction and non-transaction accounts), divided by total assets	?	?
share of customer loans	CL	sum of loans secured by real estate, loans to finance agricultural production and other loans to farmers, C&I loans, consumer loans, loans to foreign governments and official institutions, and obligations (other than securities and leases) of states and political subdivisions in the United States, divided by total assets	+	?
share of non-consumer deposits	NCD	total deposits less consumer deposits, divided by total assets	?	?
share of non-loan assets	lnNLA	natural logarithm of the sum of total trading assets, premises and fixed assets, other real estate owned, investments in unconsolidated subsidiaries and associated companies, customers' liability to this bank on acceptances outstanding, intangible assets, and other assets, divided by total assets	?	?
share of securities	S	sum of total securities divided by total assets	–	?

The effect of regulation on the labor force may alternatively be captured by the **average employee salary** variable (*lnPAY*). In particular, as suggested by Cyree (2016), among others, the

increased regulatory burden could lead to an increase in the average payment per FTEE due to the fact that additionally hired compliance specialists are likely to require a higher salary. In contrast, employing more productive output-producing employees who also require a higher salary might not change the ratio at all, as the higher personnel costs should pay off in the form of higher productivity. This implies that an increase in the variable's coefficient over time might suggest that more non-output-producing compliance staff are needed, while a decrease might be an indication of (gross) productivity improvements that do not translate into higher salaries. Finally, capital, and **(information) technology investments** in particular, proxied by the natural logarithm of expenses of premises and fixed assets ($\ln FAE$), might affect the dependent variable $\ln NIE_FAE$. In general, it would be expected that investments in the IT infrastructure would lead to productivity gains, primarily through the replacement of employees and an associated increase in the marginal product of labor, which, all else equal, could reduce the ratio of administrative expenses to total assets. However, with increasing regulatory-specific IT requirements, i.e., in the absence of productivity gains, an increase in the $\ln FAE$ variable may not be associated with a decrease in scaled non-operating expenses unless the IT infrastructure created for regulatory purposes is useful for other purposes as well and translates into cost advantages. This also holds in the event that a “crowding out” effect occurs due to regulation, meaning that higher regulatory-induced IT costs may necessitate savings in productivity-driven IT investments. Thus, as was also suggested by Cyree (2016), the regulatory burden may cause resources to be diverted from technology to labor, i.e., to employ specialized compliance personnel. The latter two effects would thus lead to an increase in the $\ln FAE$ coefficient over time since setting up an IT infrastructure for regulatory purposes typically requires non-operating-output-producing staff, staff training, etc., which increases non-operating expenses, holding total assets constant.

An institution's **business model** may also affect the dependent variable. To control for variations in banks' business models, a selection of key bank-specific revenue and funding source variables is used, such as the ratios of securities (S), customer loans (CL), the natural logarithm of non-loan assets ($\ln NLA$), consumer deposits (CD), and non-consumer deposits (NCD) to total assets. These variables are assumed to incorporate the effect of different business models, for example, that of the traditional loan and deposit business. Banks with a high share of labor-intensive products, such as consumer loans, are expected, ceteris paribus, to have a higher share of personnel expenses to total assets. Thus, if a bank revises its business model, tending to use a lower share of labor-intensive products, administrative expenses might decrease. If the change

were internally pushed forward or driven by market forces such as the low-interest rate environment, the resulting change in administrative costs would not be caused by changes in regulation. It might also be conceivable, however, that regulation causes banks to adjust their business models and restructure their balance sheets, as suggested by Llewellyn (2016), for example. This is because compliance costs vary with banks' product portfolios, thereby causing changes in the revenue and funding source variables' coefficients, making some product groups more attractive than others. This point is supported by Marsh and Norman (2013b, p. 7), who noted that "Dodd-Frank (...) encourages financial product standardization (...)"

Model 2: Regulation as a Barrier to Productivity

Regression

The second multiple regression model aims to derive the amount of resources diverted from output production to compliance. The idea behind this approach, following Cyree (2016), is that, when input factors are used to comply with an increasing number of regulations instead of producing outputs, employee productivity is negatively affected. For example, if an increasing number of (specialized) compliance employees are required, keeping all other factors equal, they are unproductive in the sense that they do not produce operating output, so more inputs are used to produce the same amount of output. Thus, if indeed input factors, i.e., employees, are diverted from output-producing functions to regulatory compliance, the same number of employees will holding all else constant, produce less output. And even if new compliance specialists are employed to cope with the more extensive regulations, while the number of employees producing outputs is kept constant, the ratio would fall because the numerator will not change if all else is held constant. Both shifts would thus negatively affect employee productivity. Starting from this idea, a model was developed in the following two versions:

$$(2a) \quad \ln TEOUT_{it} = \beta_0 + \beta_1 \ln TA_{it} + \beta_2 \ln PAY_{it} + \beta_3 \ln FAE_{it} + \beta_4 LIO_{it} + \epsilon_{it}$$

$$(2b) \quad \ln EOOUT_{it} = \beta_0 + \beta_1 \ln TA_{it} + \beta_2 \ln PAY_{it} + \beta_3 \ln FAE_{it} + \beta_4 LIO_{it} + \epsilon_{it}$$

where $\ln TEOUT_{it}$ represents the natural logarithm of inflation-adjusted total assets, divided by the number of full-time equivalent employees for bank i in period t , $\ln EOOUT$ represents the natural logarithm of inflation-adjusted "operating" outputs, i.e., the sum of securities, customer loans, non-loan assets, and deposits, divided by the number of full-time equivalent employees, $\ln PAY$ again stands for the natural logarithm of the sum of inflation-adjusted salaries and employee benefits per FTEE, $\ln FAE$ again represents the natural logarithm of expenses of premises and fixed assets, net of rental income, divided by total assets, and LIO stands for the monetary

amount of customer loans, divided by the sum of customer loans and securities, while ε is an error term (see also table 12).

Variable Descriptions and Preliminary Expectations

The dependent variable $\ln EOUT$ or, alternatively, $\ln TEOUT$ is used as a proxy for employee productivity. When $\ln TEOUT$ is used as the dependent variable, total assets and thus all types of balance sheet items are considered as output. Therefore, the production approach (Benston, 1965; Dewatripont/Tirole, 1994; Berger/Humphrey, 1997) is followed in this case rather than the intermediation approach (Sealey/Lindley, 1977), under which deposits and other liabilities are regarded as outputs, and only standard input factors such as labor and capital are considered as such.¹⁹⁰ Of course, the result is only a rough estimate of employee productivity. Nonetheless, the incorporation of changes in output when the number of employees is kept constant or, conversely, of changes in the number of employees when bank size, as measured by total assets, is kept constant, may show the **effects of regulation on operating employee productivity**, i.e., when it is taken into account that compliance work does not contribute to the production of outputs. Since there is reason to believe that more extensive regulation requires the employment of a higher number of non-productive compliance officers, it might be expected, *ceteris paribus*, that values are lower in the second period. At the same time, cost pressures induced by regulation or other factors might positively affect employee productivity in general. If the effect of increased productivity outweighs the effect of hiring non-productive employees due to more extensive regulation, the variable's value might, however, also increase in the second period.

Also in model 2, the **bank size** variable $\ln TA$ is used as a predictor. This is because it can provide information on the existence of (dis-)economies of scale in banking. If economies of scale prevail, the size coefficient should be positive, implying that smaller bank size is associated with lower productivity and vice versa. However, the focus of this model should be to investigate whether increasing regulation affects the dependent variable of differently-sized banks to different degrees. Therefore, the period is again divided into two parts, pre-2011 and post-2011, to capture the effects of the implementation of the Dodd-Frank Act. Since economies of scale are presumed to prevail in complying with regulatory requirements, a *ceteris paribus* increase in the variable's coefficient is expected.

¹⁹⁰ However, total assets are expressed in monetary units, whereas the production approach would usually require quantifying the level of production in terms of the number of deposit and credit accounts, the number of transactions per account, or the like.

Table 12: Definition of Model 2 Variables

Variable	Symbol	Description	Expected Sign	Expected Change
dependent variable				
employee productivity	lnTEOUT	natural logarithm of inflation-adjusted total assets, divided by the number of full-time equivalent employees		
	lnEOUT	natural logarithm of the inflation-adjusted sum of securities, non-loan assets, customer loans, and deposits, divided by the number of full-time equivalent employees		
independent variables				
size	lnTA	inflation-adjusted natural logarithm of total assets	+	↑
average payment	lnPAY	natural logarithm of the sum of inflation-adjusted salaries and employee benefits divided by the number of full-time equivalent employees	+	↓
IT investments	lnFAE	natural logarithm of expenses of premises and fixed assets, net of rental income, divided by total assets	+/-	↓
control variables				
share of customer loans	LIO	monetary amount of customer loans divided by the sum of customer loans and securities	-	↓

Another factor that potentially affects employee productivity is the **average salary**, which is captured by the *lnPAY* variable. More particularly, a higher salary should be associated with higher productivity, leading to the assumption of a positive *lnPAY* coefficient. As for the evolution from the first to the second period, it might be expected that the coefficient decreases as more highly skilled, highly paid employees are assigned to compliance as regulatory requirements increase, and compliance officers do not contribute to the production of outputs. Thus, by diverting resources from their most productive uses to compliance-focused activities, the positive effect of higher average salaries on average employee productivity should decrease.

The third independent variable is *lnFAE*, a proxy measure of the amount of **investments in IT**. It would be expected that the variable's coefficient is positive if IT investments contribute to an increase in the marginal product of labor and if the effect of an increase in labor productivity is not offset by any negative effects. Contrasting this view, Beccalli (2007), among others, indicated that an increase in IT investments might not result in a higher ROA despite possible

savings in labor costs.¹⁹¹ This could be partly due to the fact that the digitalization process requires investments in information technology that may not pay off in terms of employee productivity, but only help maintain competitiveness. Similarly, IT investments could simply be necessary from a regulatory perspective, with regulatory-driven spending possibly even crowding out planned spending on IT infrastructure to save costs. The latter effects may thus lead to a ceteris paribus decrease in the average output generated per employee unless the regulatory-specific IT infrastructure can also be used to contribute to output, so the overall effect is uncertain. Over time, the *lnFAE* coefficient is expected to decline if the increase in regulatory-induced IT investments resulting from implementing Dodd-Frank outweighs any productivity-driven investments in information technology.

A variable reflecting banks' **share of labor-intensive operating outputs** (*LIO*) also needs to be included in the model, as a high share of "labor-intensive" products might, due to their very nature, negatively affect the dependent variable. Customer loans were chosen to represent labor-intensive outputs because they are assumed to be more labor-intensive than securities, for example, and thus would result in a lower output amount generated per employee. That is why the coefficient for *LIO* is expected to be negative. A contrary indication is the fact that a loan, for example, may be subject to more complex regulatory and disclosure requirements.

However, the resulting figures, especially those for the coefficients and standard errors, should be relied upon only if some core assumptions hold. These comprise the assumptions of linearity, homoscedasticity, non-autocorrelation, normally distributed errors, multicollinearity, and model specification.¹⁹² To verify that these assumptions are met, plots were created, and tests were performed, the results of which are presented in the appendix (figures 51 to 65; tables 24 to 31).

¹⁹¹ To acknowledge that the positive effect of IT investments on productivity should not be taken for granted, see Brynjolfsson (1993) for a discussion of the "productivity paradox of information technology" in the 1970s and 1980s.

¹⁹² Depending on the textbook, the number and categorization of assumptions may differ from the approach used in this thesis. In most cases, however, this is simply because the assumptions have either been broken down into component parts or merged. This thesis followed the categorization of Meulemann et al. (2014) but still deviated a bit.

6.4 Results

6.4.1 Descriptive Statistics

Table 13 provides an overview of the descriptive statistics for the dependent and independent variables used in this thesis, which, to allow for a better interpretation, are reported in their non-logarithmized, i.e., their original form. Mean, standard deviation, and minimum and maximum values are given for all banks in the sample. Monetary values for the variables *TEOUT*, *EOUT*, *TA*, and *PAY* are in thousands of U.S. dollars.

Table 13: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
NIE_FAE	1818	.0238715	.0076434	.0026637	.0773244
TEOUT	1818	4648.217	1615.435	1372.063	19741.03
EOUT	1818	8023.424	2691.29	2105.91	29737.99
_TA	1818	292670.5	719945.8	7325	9729918
PAY	1818	69.60207	16.04994	15.00824	147.2925
FAE	1818	.0031695	.0016552	.0001328	.0179264
CD	1818	.7618592	.0948384	.0072477	.9389597
CL	1818	.6338278	.1598782	.0598655	.9853712
NCD	1818	.0912865	.0646708	0	.8175697
NLA	1818	.0427012	.020195	.0028548	.2137951
S	1818	.2060639	.1381473	0	.7455477
LIO	1818	.7561325	.1578643	.1142453	1

To also allow for obtaining an idea about the distribution of bank sizes within the sample, table 14 displays some quantiles for the non-logarithmized total assets variable.

Table 14: Bank Size Distribution

total assets				
Percentiles	Smallest			
1%	13819	7325		
5%	22481	7475		
10%	28607	7945	Obs	1818
25%	44066	8126	Sum of Wgt.	1818
50%	77746.5		Mean	292670.5
		Largest	Std. Dev.	719945.8
75%	196961	6217663		
90%	653119	6492180	Variance	5.18e+11
95%	1310231	8771234	Skewness	6.092761
99%	3900290	9729918	Kurtosis	52.0342

6.4.2 Regression Results

In order to be able to control for individual bank heterogeneity, random and fixed effects models were considered for the analysis of the panel data. The respective choice of the model depended on whether or not the Hausman test rejected the null hypothesis that the random effects model is preferable to the fixed effects model, i.e., whether it can be assumed that the variation across the banks is random or that the banks' error terms are correlated with the regressors. For both models, the null hypothesis can be rejected (see tables 29 to 31 in the appendix), which is why the **fixed effects** model was used to perform the regression calculations.

Model 1: Regulation as a Driver of Scaled Non-Output-Related Costs

Table 15 shows the regression results of model 1 for the **entire period** under investigation, i.e., 2001 to 2021. The performance of the overall regression is good. The within R^2 value of 0.3955 suggests that the independent variables account for almost 40% of the variation in administrative costs occurring within the individual banks. The F Test value of 25.94 and the p-value of less than 0.1% indicate that the regression model fits the data well.

Table 15: Regression Results, Model 1, Entire Period

```

Fixed-effects (within) regression                Number of obs    =    1818
Group variable: INST                          Number of groups =    112

R-sq:  within = 0.3955                        Obs per group:  min =    1
        between = 0.0064                       avg =    16.2
        overall = 0.0424                       max =    21

                                                F(8,111)         =    25.94
corr(u_i, Xb) = -0.6219                       Prob > F         =    0.0000

```

(Std. Err. adjusted for 112 clusters in INST)

lnNIE_FAE	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnTA	-.1987136	.0300789	-6.61	0.000***	-.2583171	-.1391102
lnPAY	.5411154	.0537331	10.07	0.000***	.4346783	.6476297
lnFAE	.1804118	.0309097	5.84	0.000***	.1191622	.2416615
CD	.3050049	.1678845	1.82	0.072	-.0276695	.6376794
CL	.119214	.0550206	2.17	0.032*	.0101871	.228241
NCD	.3546861	.1542164	2.30	0.023*	.049096	.6602761
lnNLA	.1274604	.0282011	4.52	0.000***	.0715781	.1833427
S	.0704009	.0631697	1.11	0.267	-.0547741	.195576
_cons	-2.622153	.3377427	-7.76	0.000***	-3.291413	-1.952894
sigma_u	.37397012					
sigma_e	.15594078					
rho	.85187701	(fraction of variance due to u_i)				

* p<0.05, ** p<0.01, *** p<0.001

The regression results suggest that four of the eight explanatory variables can, at the 0.1% significance level, explain the variation in scaled administrative costs. In fact, there is a **statistically significant relationship** between scaled administrative costs and banks' asset size, average compensation per employee, expenditures for premises and fixed assets scaled by total assets, as well as with the natural logarithm of scaled non-loan assets. The relationship between scaled administrative costs and the share of both customer loans and non-consumer deposits is significant at the 5% level of significance and with scaled customer deposits only at the 10% significance level. There is, however, no statistically significant correlation between scaled securities and administrative costs.

The **estimated coefficients** on the variable $\ln TA$ show the ceteris paribus percentage change in relative administrative costs associated with a one percent increase in banks' assets. The negative coefficient suggests that an increase in banks' asset size goes along with a decrease in relative administrative costs, consistent with economies of scale. Furthermore, also the $\ln PAY$ coefficient meets the expectations, with the positive value implying that an increase in the average payment per employee comes along with an increase in scaled administrative costs. This is in line with the hypothesis that an increase in average compensation may be associated with the hiring of more regulatory-specific employees who require a higher salary for a given balance sheet total, thereby increasing administrative costs but not affecting operating output, i.e., total assets. The positive $\ln FAE$ coefficient indicates that an increase in IT investments is associated with an increase in scaled administrative costs (excluding expenditures on premises and fixed assets), which might suggest that IT is used for purposes other than producing output and replacing labor. This would be supportive of the view that capital resources are being diverted from output production to compliance, i.e., that the need for regulatory-specific IT investments not only comes along with additional staff (training) but also with the crowding out of regular IT investments. The positive values of the coefficients CD , CL , NCD , and $\ln NLA$ indicate that an increase in the proportion of the outputs included is associated with a relatively higher administrative burden.

Tables 16 and 17 report the estimation results separated into the **pre- and post-Dodd-Frank periods**, i.e., the periods from 2001 to 2010 and 2011 to 2021, respectively. The estimated regression models are statistically significant for both sub-periods at the 0.1% level. For the 2001 to 2010 sub-period, the within R^2 value is 0.2421, while the respective R^2 value for the sub-period after the financial crisis is much higher, assuming 0.4940, suggesting that the second-period predictors can explain a larger share of the variation in administrative cost within the individual banks as compared to the first sub-period.

Table 16: Regression Results, Model 1, 2001 to 2010

Fixed-effects (within) regression
 Group variable: INST

Number of obs = 957
 Number of groups = 109

R-sq: within = 0.2421
 between = 0.0029
 overall = 0.0153

Obs per group: min = 1
 avg = 8.8
 max = 10

corr(u_i, Xb) = -0.6210

F(8,108) = 12.64
 Prob > F = 0.0000

(Std. Err. adjusted for 109 clusters in INST)

lnNIE_FAE	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnTA	-.1525041	.04638	-3.29	0.001**	-.2444373	-.060571
lnPAY	.5048271	.0782014	6.46	0.000***	.3498184	.6598357
lnFAE	.142369	.0357883	3.98	0.000***	.0714303	.2133076
CD	.4583272	.1888271	2.43	0.017*	.0840392	.8326153
CL	.0293872	.0438013	0.67	0.504	-.0574345	.1162089
NCD	.2057966	.1576714	1.31	0.195	-.1067354	.5183286
lnNLA	.0630398	.0376676	1.67	0.097	-.011624	.1377035
S	-.0324976	.046274	-0.70	0.484	-.1242207	.0592255
_cons	-3.435086	.5343115	-6.43	0.000***	-4.494184	-2.375988
sigma_u	.32284027					
sigma_e	.14553541					
rho	.83110467	(fraction of variance due to u_i)				

* p<0.05, ** p<0.01, *** p<0.001

Comparing the 2001 to 2010 regression results with those for the 2011 to 2021 period, it is noticeable that the absolute value of the still significant *lnTA* coefficient has increased, implying that bank size may have had a greater impact on the ratio of administrative costs to total assets in the second period. In fact, this is indicative of a **higher regulatory fixed cost burden** since the implementation of the Dodd-Frank Act and thus a higher potential for exploiting economies of scale (in regulation). The coefficient on *lnPAY* is also still found to be significant at the 0.1% level and shows the same sign as in the regression for the first sub-period but has increased. This may indicate that changes in the average payment contributed more to changes in scaled administrative costs in the second sub-period. This is consistent with the expectations, as it was assumed that relative administrative costs would increase if more non-output producing compliance staff were needed, while, ceteris paribus, there would be no increase in total assets. The *lnFAE* coefficient also remains significant at the 0.1% level. The coefficient's increase, suggesting that IT investments had a greater impact on scaled administrative costs after Dodd-Frank was implemented, is in line with the expectations. In especially, it was considered that a "crowding out" effect may occur due to regulation, meaning that higher regulatory-induced IT

costs may necessitate savings on productivity-driven IT investments so that resources would be diverted from technology to labor in order to employ specialized, non-output-producing compliance staff. Finally, the business model variables' coefficients all show p-values above 0.1% in the first sub-period, except for the *lnNLA* coefficient with a value just below the 10% level. However, in the second sub-period, all coefficients show values that are significant even at the 5% level. This might imply that the type of business model strategy pursued by a bank (more) significantly affected (scaled) administrative costs after the Dodd-Frank Act was introduced. Overall, it might be inferred from the regression results that there were changes in the relative importance of the independent variables for relative administrative costs to which Dodd-Frank potentially has contributed.

Table 17: Regression Results, Model 1, 2011 to 2021

```

Fixed-effects (within) regression      Number of obs      =      861
Group variable: INST                  Number of groups   =      90

R-sq:  within = 0.4940                Obs per group: min =      2
      between = 0.0204                avg =      9.6
      overall = 0.0366                max =      11

corr(u_i, Xb) = -0.6148                F(8,89)           =      38.31
                                          Prob > F           =      0.0000

```

(Std. Err. adjusted for 90 clusters in INST)

lnNIE_FAE	Robust		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
lnTA	-.2280132	.0532607	-4.28	0.000***	-.3338411	-.1221852
lnPAY	.6709267	.0600898	11.17	0.000***	.5515295	.7903238
lnFAE	.1644796	.0435412	3.78	0.000***	.0779641	.2509951
CD	.4590151	.2145092	2.14	0.035*	.0327899	.8852402
CL	.2410432	.1157332	2.08	0.040*	.0110838	.4710026
NCD	.8218364	.3171082	2.59	0.011*	.191749	1.451924
lnNLA	.1532636	.0345924	4.43	0.000***	.0845293	.221998
S	.2955463	.1180599	2.50	0.014*	.0609637	.5301288
_cons	-3.143069	.7729077	-4.07	0.000***	-4.67882	-1.607317
sigma_u	.45033687					
sigma_e	.13185398					
rho	.92104287	(fraction of variance due to u_i)				

* p<0.05, ** p<0.01, *** p<0.001

Model 2a: Regulation as a Barrier to Productivity

Table 18 shows the 2001 to 2021 regression results for model 2a. The **overall regression** performs well. The within R^2 value of 0.6590 suggests that the explanatory variables account for almost 66% of the variation in employee productivity within the institutions, and even the overall R^2 value of 0.3011 is fairly high. The F Test value of almost 150 and the p-value of less than 0.1% suggest that the regression model fits the data well.

Table 18: Regression Results, Model 2a, Entire Period

```

Fixed-effects (within) regression           Number of obs   =       1818
Group variable: INST                      Number of groups =        112

R-sq:  within = 0.6590                    Obs per group:  min =         1
        between = 0.2277                  avg =        16.2
        overall = 0.3011                  max =         21

                                           F(4,111)       =       147.59
corr(u_i, Xb) = -0.5188                   Prob > F        =       0.0000

```

(Std. Err. adjusted for 112 clusters in INST)

lnTEOUT	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnTA	.1898298	.0378526	5.01	0.000***	.1148223	.2648373
lnPAY	.4202835	.0551538	7.62	0.000***	.3109925	.5295744
lnFAE	-.2638556	.0368259	-7.16	0.000***	-.3368286	-.1908825
LIO	-.1332504	.0694903	-1.92	0.058	-.2709501	.0044492
_cons	2.954441	.3302598	8.95	0.000***	2.30001	3.608873
sigma_u	.28812905					
sigma_e	.13445526					
rho	.82117871	(fraction of variance due to u_i)				

* p<0.05, ** p<0.01, *** p<0.001

A look at the estimation results reveals that all of the independent variables included in the regression can significantly explain the cross-bank variation in employee output, except for the share of customer loans, which is significant only at the 10% level. More specifically, there is a **statistically significant positive relationship** between changes in bank size, average employee payment, and expenses of premise and fixed assets with the amendment of the *lnTEOUT* variable, even at the 0.1% level of significance.

More particularly, the *lnTA* coefficient is positive, as expected, suggesting that an increase in bank size is associated with an increase in the ratio of total assets to the number of full-time equivalent employees. This could be indicative of **economies of scale in banking**. The *lnPAY* coefficient shows a positive value, implying that an increase in average pay per employee comes along with an increase in employee productivity. This makes sense if higher payment

for output-producing employees is associated with higher sophistication and if this effect offsets the negative effects of hiring highly-paid, non-productive compliance staff. The negative *lnFAE* coefficient indicates that an increase in IT investments is associated with a decrease in employee productivity, which might suggest that additional IT equipment does not increase the marginal product of labor but is counterproductive. This would support the view that resources were diverted from the generation of output to regulatory compliance, i.e., that regulatory-specific IT investments may have crowded out regular IT investments – which would have increased the marginal product of labor and may have also come along with additional staff (training). Lastly, the negative sign of the *LIO* coefficient is consistent with the expectation that customer loans are more labor-intensive than securities so that a relatively larger share is associated with lower labor productivity, as measured by total assets divided by the number of FTEEs.

Tables 19 and 20 show the regression results for the **periods before and after the introduction of Dodd-Frank**, respectively. For both sub-periods, the estimated regression models are statistically significant at the 0.1% level. The results of the sub-period from 2001 to 2010 show a within R^2 value of 0.4924 and an overall R^2 value of 0.2211, the respective R^2 values for the second sub-period assume 0.5364 and 0.0783, suggesting a relatively high explanatory power.

Table 19: Regression Results, Model 2a, 2001 to 2010

```
Fixed-effects (within) regression      Number of obs      =      957
Group variable: INST                  Number of groups   =      109

R-sq:  within = 0.4924                Obs per group: min =      1
      between = 0.2396                  avg   =      8.8
      overall  = 0.2211                 max   =     10

                                     F(4,108)          =     62.77
corr(u_i, Xb) = -0.5418                Prob > F          =     0.0000
```

(Std. Err. adjusted for 109 clusters in INST)

lnTEOUT	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnTA	.2153818	.053492	4.03	0.000***	.1093514	.3214123
lnPAY	.4469579	.0676033	6.61	0.000***	.3129563	.5809594
lnFAE	-.1757963	.0407063	-4.32	0.000***	-.2564832	-.0951094
LIO	-.0695963	.0440252	-1.58	0.117	-.1568619	.0176694
_cons	3.002404	.4657937	6.45	0.000***	2.07912	3.925688
sigma_u	.27971117					
sigma_e	.09803017					
rho	.89060779	(fraction of variance due to u_i)				

* p<0.05, ** p<0.01, *** p<0.001

The 2001 to 2010 regression results show significant values at the 0.1% level of significance for all the chosen predictors, except for the *LIO* coefficient, which is not even significant at the

10% level of significance. The coefficients' signs are the same as in the overall regression. For the second sub-period (see table 20), all variables are significant at the 5% level.

Table 20: Regression Results, Model 2a, 2011 to 2021

Fixed-effects (within) regression	Number of obs	=	861
Group variable: INST	Number of groups	=	90
R-sq: within = 0.5364	Obs per group: min =		2
between = 0.0706	avg =		9.6
overall = 0.0783	max =		11
	F(4, 89)	=	19.14
corr(u_i, Xb) = -0.6904	Prob > F	=	0.0000

(Std. Err. adjusted for 90 clusters in INST)

lnTEOUT	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnTA	.2390084	.0786398	3.04	0.003**	.0827527	.3952641
lnPAY	.3235584	.0530312	6.10	0.000***	.2181864	.4289303
lnFAE	-.2279677	.0512629	-4.45	0.000***	-.329826	-.1261094
LIO	-.2664508	.1221077	-2.18	0.032*	-.5090762	-.0238255
_cons	3.111492	.9053969	3.44	0.001***	1.312488	4.910496
sigma_u	.38835798					
sigma_e	.10347424					
rho	.93371512	(fraction of variance due to u_i)				

* p<0.05, ** p<0.01, *** p<0.001

Comparing the *lnTA* coefficient of the two sub-periods, it can be noticed that the value of the coefficient increased, which may indicate that the impact of bank size on the *lnTEOUT* variable was larger in the second sub-period. This is consistent with the expectation of **higher fixed regulatory costs** after the implementation of the Dodd-Frank Act, disproportionately affecting small banks by increasing the potential for exploiting economies of scale (in regulation). Also consistent with the expectations, the *lnPAY* coefficient is lower in the second sub-period, suggesting that the positive effects of an increase in average compensation per employee are smaller after Dodd-Frank was introduced. This may imply that the increasing need for highly-paid, non-productive compliance staff had a stronger (negative) impact on the normally prevailing positive relationship between average compensation and employee productivity. Looking at the *lnFAE* coefficient, it is apparent that the absolute value is higher in the second period, suggesting that the negative impact of IT investments on employee productivity is even higher than in the first sub-period. This is in line with the expectation that due to the increased need for regulatory-specific IT investments, the crowding-out effect is even stronger after the implementation of Dodd-Frank and may also be associated with more staff (training). The absolute value of the coefficient of the *LIO* control variable is higher in the second period, which could

be indicative of the fact that banks with more traditional business models were more strongly affected by the decrease in output per employee after Dodd-Frank was introduced. However, the coefficient was not significant in the first sub-period.

Model 2b: Regulation as a Barrier to Productivity

Table 21 shows the 2001 to 2021 regression results for model 2a. The **overall regression** performs well. The within R^2 value of 0.6359 suggests that the explanatory variable accounts for way above 60% of the variation in employee productivity within the institutions, and even the overall R^2 value of 0.3213 is reasonably high. The F Test value of 167 and the p-value of less than 0.1% suggest that the regression model fits the data well.

Table 21: Regression Results, Model 2b, Entire Period

Fixed-effects (within) regression	Number of obs	=	1818
Group variable: INST	Number of groups	=	112
R-sq: within = 0.6359	Obs per group: min	=	1
between = 0.2323	avg	=	16.2
overall = 0.3213	max	=	21
	F(4,111)	=	167.32
corr(u _i , X _b) = -0.4951	Prob > F	=	0.0000

(Std. Err. adjusted for 112 clusters in INST)

lnEOUT	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnTA	.1876876	.038172	4.92	0.000***	.1120472	.263328
lnPAY	.4168733	.0563131	7.40	0.000***	.3052851	.5284614
lnFAE	-.2386979	.0369944	-6.45	0.000***	-.3120047	-.165391
LIO	-.3149235	.0761552	-4.14	0.000***	-.46583	-.1640169
_cons	3.82625	.3252593	11.76	0.000***	3.181727	4.470773
sigma_u	.28048396					
sigma_e	.13888913					
rho	.80308385	(fraction of variance due to u _i)				

* p<0.05, ** p<0.01, *** p<0.001

A look at the estimation results reveals that all independent variables included in the regression can significantly explain the cross-bank variation in employee output. In particular, there is a **statistically significant positive relationship** between changes in bank size, average employee payment, expenses of premise and fixed assets, and the share of customer loans with changes in the *lnTEOUT* variable, even at the 0.1% level of significance.

More particularly, the *lnTA* coefficient is, consistent with the expectations, positive, suggesting that an increase in bank size is associated with an increase in the ratio of total assets to the

number of full-time equivalent employees. Consistent with the results of model 2a, the positive coefficient may indicate **economies of scale in banking**. Also in accordance to model 2a, the *lnPAY* value is positive, implying that an increase in the average payment per FTEE comes along with an increase in employee productivity. Again, this is plausible given that a higher payment for output-producing employees may be associated with higher levels of sophistication and this effect may offset the negative impact of the hiring of highly-paid, non-productive compliance staff. The negative *lnFAE* coefficient, as in model 2b, indicates that an increase in the expenditure on IT is associated with a decrease in employee productivity, which might suggest that additional IT equipment is counterproductive for labor productivity. This would again support the view that with increased regulation due to Dodd-Frank, resources have been diverted from the generation of output to regulatory compliance, i.e., that regulatory-specific IT investments may have crowded out regular IT investments. Lastly, the negative sign of the *LIO* coefficient is consistent with model 2a and thus with the expectation that customer loans are more labor-intensive than securities, so that a relatively larger share is associated with a lower ratio of total assets to the number of employees.

Table 22: Regression Results, Model 2b, 2001 to 2010

```

Fixed-effects (within) regression                Number of obs    =    957
Group variable: INST                           Number of groups =    109

R-sq:  within = 0.3862                          Obs per group:  min =    1
        between = 0.2241                          avg =    8.8
        overall = 0.1995                          max =    10

                                                F(4,108)         =    55.27
corr(u_i, Xb) = -0.4626                          Prob > F         =    0.0000

```

(Std. Err. adjusted for 109 clusters in INST)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnEOUT						
lnTA	.1904137	.0557616	3.41	0.001***	.0798845	.3009429
lnPAY	.3975892	.073746	5.39	0.000***	.2514119	.5437666
lnFAE	-.1524083	.0430575	-3.54	0.001***	-.2377558	-.0670608
LIO	-.3689768	.0573034	-6.44	0.000***	-.4825622	-.2553915
_cons	4.400333	.519486	8.47	0.000***	3.370622	5.430045
sigma_u	.26419055					
sigma_e	.11743545					
rho	.83501067	(fraction of variance due to u_i)				

* p<0.05, ** p<0.01, *** p<0.001

Tables 22 and 23 show the regression results for the **periods before and after the introduction of the Dodd-Frank Act**, respectively. For both sub-periods, the estimated regression models

are statistically significant at the 0.1% level. The sub-period from 2001 to 2010 shows a within R^2 value of 0.7595 and an overall R^2 value of 0.4932; the respective R^2 values for the second sub-period assume 0.6554 and 0.2632, suggesting a relatively high explanatory power.

The 2001 to 2010 regression results (table 22) still show highly significant values for all the chosen predictors. Even the *LIO* variable, which was only significant at the 5% level in model 2a, is significant at the 0.1% significance level. The coefficients' signs are the same as in the overall regression. For the second sub-period (table 23), all variables are significant at the 1% level.

Table 23: Regression Results, Model 2b, 2011 to 2021

```

Fixed-effects (within) regression                Number of obs    =      861
Group variable: INST                           Number of groups =       90

R-sq:  within = 0.5219                          Obs per group:  min =        2
        between = 0.1001                          avg =           9.6
        overall = 0.1368                          max =          11

                                                F(4, 89)         =      24.74
corr(u_i, Xb) = -0.6383                          Prob > F         =      0.0000

```

(Std. Err. adjusted for 90 clusters in INST)

lnEOUT	Robust					[95% Conf. Interval]	
	Coef.	Std. Err.	t	P> t			
lnTA	.225479	.0710217	3.17	0.002**	.0843603	.3665976	
lnPAY	.3133112	.0548004	5.72	0.000***	.204424	.4221983	
lnFAE	-.1969571	.0424452	-4.64	0.000***	-.2812949	-.1126194	
LIO	-.3505383	.1034535	-3.39	0.001**	-.5560982	-.1449785	
_cons	4.114478	.7820171	5.26	0.000***	2.560627	5.66833	
sigma_u	.35597917						
sigma_e	.0996601						
rho	.92731873	(fraction of variance due to u_i)					

* p<0.05, ** p<0.01, *** p<0.001

The comparison of the *lnTA* coefficients of the two sub-periods reveals that, in line with the model 2a results, the coefficient's value has slightly increased, which might indicate that the impact of bank size on the *lnTEOUT* variable is higher in the second sub-period. This would again be consistent with the expectation of **higher fixed regulatory costs** following the implementation of the Dodd-Frank Act, disproportionately affecting small banks by increasing the potential for the exploitation of economies of scale (in regulation). Also consistent with the expectations and with model 2a, the *lnPAY* coefficient is lower in the second sub-period, suggesting a smaller positive impact of an increase in the average payment per FTEE after the introduction of Dodd-Frank. Again, this may imply that the assumed increasing need for highly

paid, but non-productive compliance staff has a negative effect on the positive relationship between average payment and employee productivity. Looking at the *lnFAE* coefficients, it is apparent, as it was in model 2a, that the negative impact of “IT investments” on employee productivity is even higher than in the first sub-period. This is consistent with the expectation that due to the increase in the need for regulatory-specific IT investments, the crowding-out effect is even stronger after the implementation of the Dodd-Frank Act and may also be associated with more staff (training). Finally, the absolute value of the *LIO* coefficient is, unlike in model 2a, lower in the second period, indicating that a higher share of customer loans affected employee productivity less from 2011 to 2021 than in the first sub-period. However, because the change in the coefficient is of a minor extent only, the change should be interpreted cautiously. Furthermore, the change was insignificant in the first sub-period of model 2a.

7 DISCUSSION

In the following, the empirical findings are summarized and conclusions are drawn. Furthermore, the implications for practice derived from the empirical results, the contribution and limitations of this research work, as well as recommendations for future research projects are discussed.

7.1.1 Summary of the Empirical Results

Using bank-level data from the U.S. state of North Dakota, covering the 2001 to 2021 period, the empirical investigation aimed at identifying regulatory effects on the consolidation process with the aid of two regressions reproducing the relationship between variables potentially affected by an increase in the amount of regulation and banks' (fixed) costs and employee productivity, respectively.

As a basis for the analysis, initially, the entire period under review was considered. The regression results indicated that an increase in banks' asset size generally comes along with a decrease in relative administration costs and an increase in employee productivity, consistent with economies of scale in complying with regulations. The results also implied that an increase in the average payment per employee is associated with an increase in relative administrative costs but also with an increase in employee productivity, a result that can occur when higher compensation of output-producing employees is associated with a higher sophistication of these and when this effect offsets the negative effects of hiring highly-paid, non-productive compliance staff. The results further indicated that an increase in IT investments goes along with an increase in scaled administrative costs, excluding expenditures on premises and fixed assets, and a decrease in employee productivity, which may suggest that IT is used for regulatory purposes rather than for producing output and replacing labor.

The subsequent comparison of the 2001 to 2010 regression results with those for the 2011 to 2021 period indicated that bank size might have more significantly affected both the share of administrative costs to total assets and employee productivity in the second sub-period. This is indicative of a higher regulatory fixed cost burden since the implementation of the Dodd-Frank Act and thus a higher potential for exploiting economies of scale in regulation. The regression results also implied that changes in the average payment per employee more strongly contributed to changes in scaled administrative costs in the second sub-period, consistent with the assumption that more non-output-producing compliance staff were needed as the amount of regulation increased after the implementation of Dodd-Frank. This is also in line with the ob-

servation that the positive relationship between the average payment per employee and employee productivity appeared to be less strong after Dodd-Frank was introduced. Furthermore, the negative impact of IT investments on both scaled administrative costs and employee productivity was detected to be higher after the introduction of Dodd-Frank than in the first sub-period, consistent with the idea that an increased need for regulatory-specific IT investments led to an even stronger crowding-out effect after the implementation of the Dodd-Frank Act and may have also been associated with more staff (training).

7.1.2 Implications of the Analysis

Although there could be other explanatory approaches, these statistical relations might be an indication of the impact of private interests on the regulatory process or the inefficiency of banking regulation, especially since previous studies did not generally support the concentration-stability hypothesis. In particular, extensive and dynamic, one-size-fits-all regulation might be used to drive certain business models or banking groups out of the market, with the aim of shaping the structure of the banking market for reasons other than inducing welfare gains. For example, heterogeneous business models and sizes of the institutions potentially hinder the positive effects of centralized and harmonized regulation on regulatory economies of scale. However, it could also be that increased inefficiencies due to a rise in regulatory costs are tolerated to realize stability gains or achieve an efficient market structure, which, to not reach a research scope beyond a bearable level, has not been further examined in this thesis though.

Either way, banking regulation, as it currently exists in Europe and the United States, and the way it is evolving, might lead banks to engage in increasingly complex and, at the same time, increasingly risky business operations to escape regulation and remain competitive. Those banks that are too small to cope with the rising tide of regulation will be forced to consolidate or go out of business, potentially negatively impacting small communities and businesses that rely on these banks' products and services.

7.1.3 Contribution of Research

The literature reviews provided in the course of this thesis have shown that a number of studies examined different aspects of the motives behind regulation as well as its consequences. However, there are few studies on compliance costs for banks, and it seems that none of the previous studies aimed at bringing both sides – motives and effects – together by interpreting empirical results on regulatory effects taking into consideration also the theories of economic regulation. Furthermore, due to the lack of compliance cost data in banks' balance sheets, the vast majority

of empirical evidence on bank compliance cost to date comprises case studies and surveys, which may not give objective and reliable results due to misaligned incentive structures and the incapability of bankers themselves to quantify all types of indirect costs induced by regulatory requirements. Few studies conducted econometric analyses based on cost estimates to derive information on cost changes after regulatory events and regulatory economies of scale in banking. The present thesis aims to contribute to this strand of the literature by attempting to fill multiple gaps.

First, the study extends the comprehensive research on understanding regulatory effects on banks, i.e., through a simplified presentation of process structures and an ensuing econometric investigation of the relationships between variables affected by regulation and approximations of (regulatory) fixed costs and employee productivity. Although also Dolar and Shughart (2007), Cyree (2016), and Poshakwale et al. (2020) used panel regression analysis to infer information on the effects of regulation on the costs of banks of different sizes, this thesis represented the underlying dynamics differently, so that the model is based on a different composition of dependent and independent variables. These variables are simply the result of the development of the process structures that were used to identify the variables that are most likely affected by regulation, and that may, at the same time, drive banks to consolidate, and that this thesis aimed to translate into a corresponding regression model. Unlike most other works, it was tried not to inflate the regressions with too many (meaningless) variables to avoid collinearity problems, not to overfit the model, and to preserve the simplicity of the approach. In particular, only variables that helped explain the variance in the dependent variables in line with the developed process structures were included. Finally, the employment of recent data allowed for a more proper investigation of current regulatory effects and thus provided the relevant informational basis for policy development.

7.1.4 Limitations of Research

While this thesis has been able to provide some new insights into how banks are affected by an increasing amount of regulation, the study also has some limitations, especially regarding data precision and scope. First of all, because banks are not required to report any data on compliance costs, approximations had to be used for the analysis. Although collecting a large amount of data on direct and indirect compliance costs may not be plausible, higher-quality results could be obtained if more precise data were used. Furthermore, sufficiently accurate data were only gathered for the U.S. state of North Dakota, which is due to the enormous amount of work required to prepare the data for analysis and the fact that no such data are available for European banks. Certainly, more valuable insights could be gained by extending the data scope to include

more U.S. states. Furthermore, while this study focused on the costs part, it did not address the benefits of regulation, such as (positive) stability effects, as this would have gone beyond the scope of this thesis. However, more reliable conclusions about the economic rationale behind the consolidation process can only be drawn if stability issues are also investigated.

7.1.5 Recommendations for Future Research

Given the limitations stated above, future research works on the issues dealt with in this thesis could provide more valuable insights even if they incorporated a more extensive data sample, including data from other U.S. states and from European countries, and if they also considered the stability effects and other potential benefits of regulation. Furthermore, in order to be able to assess regulation in terms of its effects on the structure of banking markets and to make economic policy recommendations, several additional pieces of information would be required. For example, it would be necessary to know whether the optimal bank size is the same for all banks, regardless of the business model and functions they fulfill, and whether all countries have the same optimal banking sector structure. In other words, one would need to have an idea of whether commercial banks have the same optimal bank size as cooperative banks and whether differences in the banking structure (developments) in different countries arise because optimal structures differ, because some countries are simply closer to the optimal structure than others, or because regulation (adversely or positively) affects the structure differently in different countries.

8 SUMMARY OF RESULTS AND CONCLUSION

8.1 Motivation

As one of the most heavily regulated sectors, the banking sector is subject to a seemingly endless array of regulations. Rules increased in both their number and complexity. As a result of the one-size-fits-all regulatory approach generally applied in EU and U.S. banking regulation, small banks with traditional business models are affected to a comparatively ever greater extent. Therefore, they are increasingly under pressure to consolidate or go out of business.

In the traditional literature, regulatory reforms are rarely seriously questioned; it is taken for granted that they are justified by the existence of market failures. However, even if regulatory intervention is justified in principle, regulatory costs must be more than offset by regulatory gains to produce a preferential allocation. This weighing of costs and benefits must include the acknowledgment that one-size-fits-all regulation seems to foster consolidation processes. Certainly, it could be argued that consolidation processes are beneficial, e.g., because economies of scale and scope can be exploited, risk diversification can be improved, and excess capacity in the industry can be reduced.

However, these rationales could only serve as reasonable justifications for regulatory action, while the true explanation may lie in the private interests of regulators that prevent them from acting for the common good. Among other things, a banking sector with more homogeneous and larger banks might allow regulators to take greater advantage of economies of scale in supervising institutions. In addition, though, regulators could be captured by various stakeholders that may have an even keener interest in promoting the consolidation process. In especially, large banks that have the capacity to offer (implicit or explicit) rewards to regulators may favor more (homogeneous) regulatory pressure that increases the fixed costs of doing business and serves as a market entry barrier, thereby improving their competitive position vis-à-vis smaller banks. And politicians, too, could be incentivized to support the creation of large banks, i.e., national or European champions, through consolidations. In the European context, it could be imagined that the effect of the introduction of the European Banking Union on the consolidation process is aimed at deepening European integration.

With a view to providing insights into the economic rationale behind the consolidation processes, this thesis looked at the regulatory and structural developments of the U.S. and EU banking markets, as well as at the impact of regulation on both banks' (fixed) costs and the consolidation process, by acknowledging the fact that regulators might not always act in the public interest.

8.2 Findings from the Existing Theoretical and Empirical Literature

To provide a theoretical basis for the analysis, chapter 2 discussed the theories of economic regulation. With these opposing theories in hand, chapters 3 and 4 dealt with the development of banking regulation and consolidation, respectively, in the EU and the U.S., while chapter 5 combined the contents of the previous three chapters by addressing the economic rationale behind the consolidation trend, thereby taking into account the economic theories of regulation. In the final step, chapter 6 developed a methodological framework for econometric analysis of regulatory effects. The analysis and synthesis of the results of the preceding sections led to the conclusions presented below.

8.2.1 The Theories of Economic Regulation

As described in the Public Interest Theory, the usual explanation for government intervention lies in the existence of sources of market failure; government intervention is regarded as necessary to ensure the protection of the public interest. However, not only might regulation fail to increase social welfare, but social welfare might not even be its ultimate goal if the arguments of the private interest theories of economic regulation are followed. Indeed, recent literature increasingly recognizes the potential influence of private interests on the regulatory process, and real-world examples also suggest that regulators do not always pursue public goals. In other words, there is a growing realization that it may be wrong to assume hastily that the Public Interest Theory explains much of what goes on in regulatory practice. Therefore, it was concluded that there may be a number of forces that bring about reforms in the regulatory and supervisory system. A literature review of studies investigating the relationship between bank regulation and economic performance and stability was intended to convey a first impression but yielded somewhat ambiguous results.

8.2.2 Evolutionary Process of EU and U.S. Banking Regulation and Supervision

The examination of the regulatory and supervisory environments in EU and U.S. banking underlined the patchwork system of financial regulation and banking supervision currently persisting in the United States, meaning that just at the federal level, jurisdictions overlap, and financial firms may be subject to multiple regulators. In contrast, the European Central Bank is the designated single primary bank supervisory body at the EU level. Furthermore, it should be pointed out that, unlike the EU, the United States have only partially adopted the Basel II requirements, although both jurisdictions have implemented the third Basel Accord. However, the United States actually went beyond the Basel III standards by subjecting its largest and most complex institutions to stricter leverage ratios and by also stipulating a shorter transition period,

among other things. It can be noted, however, that efforts have been and are being made in the United States to introduce a more tailored regulatory regime, compared to the insufficient regard in the EU for a change of the one-size-fits-all approach applied to date.

8.2.3 Consolidation and Concentration

Chapter 4 found that the structural developments in the two banking systems were primarily driven by a consolidation trend. In all countries considered, large international universal banks dominate the banking systems, most of which have maintained their long-standing dominance through mega M&A transactions. It was also pointed out that the consolidation process of major banks and financial conglomerates contributed to an increasing degree of concentration. As a result, most banking systems in Europe and the United States are now clearly dominated by an ever-dwindling number of very large banks that are increasingly universal and international in scope.

8.2.4 The Economic Rationale behind the Consolidation Processes

Examining the economic rationale behind the consolidation processes revealed the sheer number of factors playing a role in banks' consolidation decisions. Accordingly, consolidations may be driven by banks' incentives to reduce inefficiencies or risks, by their desire to increase market power, or by personal motives of bank managers, politicians, and regulators, which in turn influence banks' decision-making processes. The welfare effects of consolidations are thus strongly affected by the different stakeholders' motivation behind the M&As and the consolidation process in general, as well as by their ability to influence them. While regulators may justify increasingly complex regulation on the grounds of positive welfare effects, the actual motives may differ. Among others, they may be captured by the industry, i.e., large banks that have the capacities to offer (implicit or explicit) rewards to regulators in order to capture them. Certainly, large banks may favor more (homogeneous) regulatory pressure that increases the fixed costs of doing business, while small banks may oppose it. This is because regulation as a market entry barrier protects large banks from (potential) new entrants, while the increase in optimal bank size due to the increase in fixed costs eliminates small competitors through consolidation pressure. This creates the preconditions for a positive profit margin for large banks. Since both large banks and regulators have a (private) interest in seeking more regulatory pressure – with no intention of achieving welfare or stability gains – they may have an incentive to (tacitly) collude in this regard. Therefore, it was hypothesized that the regulatory effect on the consolidation process may be intended, or at least tolerated, by regulators. Expressed in a more extreme form, (extensive and dynamic) regulation may be used as a strategy to force certain

business models or banking groups out of the market, aiming to shape the structure of the banking market rather than generate welfare gains.

8.3 Empirical Research Findings

Finally, the presentation of the methodological framework for the economic analysis aimed to identify factors that potentially contribute(d) to changes in the market structure in general, and consolidation in particular, and to create corresponding process structures. The findings of the empirical analysis suggest that regulatory costs disproportionately burden smaller banks, consistent with economies of scale in complying with regulations and that the regulatory fixed cost burden was higher even in the period after the implementation of the Dodd-Frank Act. The regression results were also in line with the expectation that as regulation increased after Dodd-Frank, more non-output-producing compliance staff were needed. Furthermore, it was indicated that regulatory-specific IT investments may have crowded out regular IT investments, an effect that appeared to be even stronger after the implementation of the Dodd-Frank Act.

8.4 Conclusions and Policy Recommendations

It can be concluded that U.S. banks seem to have faced significantly higher regulatory fixed costs in the period following the introduction of the Dodd-Frank Act, i.e., since 2011, than in the period between 2001 and 2010, and that regulation, thereby, provided an obstacle to the competitiveness of small banks. In particular, it can be surmised that regulatory-specific fixed asset investments and staffing requirements crowd out essential investments to promote digitalization or other modernization processes, particularly preventing small banks with comparatively higher regulatory fixed costs from remaining competitive. Among others, the frequent amendment and addition of regulations may have contributed significantly to increased regulatory costs by leading to a permanent build-up of one-off costs.

Therefore, less complex and more sustainable regulation, and thus a reduction in the pace of change, could help reduce regulatory costs for all banks. However, it is no less important to take more seriously the approach of tailoring regulations for different bank sizes and types to their specific business models. This is because regulatory costs should not distort markets or adversely affect specific groups of banks. In particular, the mere existence of regulation should not lead certain groups of banks to become less competitive. This does not mean, of course, that small banks, for example, should generally be subject to less stringent requirements, but only that less complex rules might be a better fit for their less complex business models.

To put into realization a more sustainable, tailored, and less complex regulatory environment, it might be helpful to develop a clear regulatory roadmap that brings together the essential objectives in a (significantly more) transparent way and then align the organization of regulatory processes with these objectives. In particular, the roadmap should include objectives referring to both efficiency, or welfare, and stability aspects, but should also address distributional issues. One principle to be followed should be the precedence of regulatory efficiency over regulatory complexity, i.e., that regulatory costs are carefully weighed against regulatory gains. For example, to reduce costs for both banks and regulators and increase benefits, e.g., through risk mitigation, the use of new technologies to automate regulatory compliance (“regtech”) could be a promising approach if aligned and integrated into a broader strategy that addresses the needs of all parties concerned. Among other things, the potentially improved, perhaps even real-time, transparency for the involved stakeholders could contribute to more dynamic and flexible regulation, depending on, i.a., current developments in the financial sector as well as the business model and complexity of institutions, while eliminating much of the duplication of effort would improve the use of available resources.

Of course, the problem remains that regulators can be privately influenced in their decisions. To ensure that regulators are incentivized to set the “right” objectives and then pursue them, they must be judged on the basis of their decisions and, subsequently, on the basis of how well they are being met. An oversight apparatus consisting of, for example, independent academics or a body with a balanced representation of various stakeholders, while certainly adding another layer of regulation and gobbling up more public resources, would help to set and implement rules in line with the public interest.

8.5 Outlook and Closing Remarks

The scope of the topic covered did not allow for an inclusive investigation, leaving unanswered questions that will need to be addressed in future research. While this thesis focused on the creation of process structures and the subsequent econometric analysis of the effects of regulation on both fixed costs and productivity of banks from North Dakota over the 2001 to 2021 period, future research could add to the contribution of this thesis by incorporating a larger data sample, including data from also European countries, and by considering the stability effects of regulation.

Adding to the current stand of research on regulatory costs in the banking sector, the analysis revealed that small banks bear a disproportionately high regulatory burden, with disparities even increasing. To preserve the heterogeneous nature of banking industries, which is essential

to satisfy also local needs in the long run, a more sustainable, less complex, and more tailored approach and a clear roadmap for bank regulation are essential.

9 LIST OF CITED LITERATURE

- Abel, A. B., Mankiw, N. G., Summers, L. H., & Zeckhauser, R. J. (1989). Assessing Dynamic Efficiency: Theory and Evidence. *The Review of Economic Studies*, 56(1), 1–19.
- ABN AMRO Bank. (n.d.). *History*. Retrieved October 19, 2022, from <https://www.abnamro.com/en/about-abn-amro/product/our-history>.
- ABN AMRO Group. (2016). *Annual Report 2015: Long-Term Stakeholder Value: The Heart of Our Story* [PDF file]. Retrieved October 19, 2022, from https://downloads.ctfassets.net/1u811bvgvthc/78RFGMsOQYq8AFxGPtlv64/d40162018eaeb04f869e8f2ba6e29cef/ABN_AMRO_Annual_Report_2015.pdf.
- ABN AMRO Holding. (2003). *Annual Report 2002* [PDF file]. Retrieved October 19, 2022, from <https://ddd.uab.cat/pub/infanu/24550/iaABNAMROa2002ieng.pdf>.
- ABN AMRO Holding. (2008). *Annual Report 2007* [PDF file]. Retrieved May 14, 2020, from https://www.abnamro.com/nl/images/010_About_ABN_AMRO/050_Reports_and_reviews/Files/2007_Annual_Report_English_pdf.pdf.
- Acharya, V. V. (2009). A Theory of Systemic Risk and Design of Prudential Bank Regulation. *Journal of Financial Stability*, 5(3), 224–255.
- Adams, R., & Gramlich, J. (2016). Where Are All the New Banks? The Role of Regulatory Burden in New Bank Formation. *Review of Industrial Organization*, 48(2), 181–208.
- Aggarwal, R., & Jacques, K. T. (2001). The Impact of FDICIA and Prompt Corrective Action on Bank Capital and Risk: Estimates Using a Simultaneous Equations Model. *Journal of Banking & Finance*, 25(6), 1139–1160.
- Aghion, P., Antonin, C., & Simon, B. (2021). *The Power of Creative Destruction: Economic Upheaval and the Wealth of Nations*. Cambridge, MA: Harvard University Press.
- Aguirregabiria, V., Clark, C. R., & Wang, H. (2016). Diversification of Geographic Risk in Retail Bank Networks: Evidence from Bank Expansion after the Riegle-Neal Act. *RAND Journal of Economics*, 47(3), 529–572.
- Aharony, J., Saunders, A., & Swary, I. (1985). The Effects of the International Banking Act on Domestic Bank Profitability and Risk. *Journal of Money, Credit and Banking*, 17(4), 493–506.

- Akhavein, J. D., Berger, A. N., & Humphrey, D. B. (1997). The Effects of Megamergers on Efficiency and Prices: Evidence from a Bank Profit Function. *Review of Industrial Organization*, 12(1), 95–139.
- Albæk, S. (2013). Consumer Welfare in EU Competition Policy. In C. Heide-Jørgensen, C. Bergqvist, U. Neergaard, & S. T. Poulsen (Eds.), *Aims and Values in Competition Law* (pp. 67–88). Copenhagen: DJØF Publishing.
- Allen, F., & Gale, D. (2000). Financial Contagion. *Journal of Political Economy*, 108(1), 1–33.
- Allen, L., & Jagtiani, J. (2000). The Risk Effects of Combining Banking, Securities, and Insurance Activities. *Journal of Economics and Business*, 52(6), 485–497.
- Allen, L., & Rai, A. (1996). Operational Efficiency in Banking: An International Comparison. *Journal of Banking & Finance*, 20(4), 655–672.
- Allen, R. F., & Hagin, A. S. (1989). Scale Related Efficiencies as a (Minor) Source of the Profits-Market Share Relationship. *The Review of Economics and Statistics*, 71(3), 523–526.
- Altunbaş, Y., Gardener, E. P. M., Molyneux, P., & Moore, B. (2001). Efficiency in European Banking. *European Economic Review*, 45(10), 1931–1955.
- Aly, H. Y., Grabowski, R., Pasurka, C., & Rangan, N. (1990). Technical, Scale, and Allocative Efficiencies in US Banking: An Empirical Investigation. *The Review of Economics and Statistics*, 72(2), 211–218.
- Anderson, C. W., Becher, D. A., & Campbell II, T. L. (2004). Bank Mergers, the Market for Bank CEOs, and Managerial Incentives. *Journal of Financial Intermediation*, 13(1), 6–27.
- Andreeva, D., Grodzicki, M., Mór , C., & Reghezza, A. (2019). Euro Area Bank Profitability: Where Can Consolidation Help?. *Financial Stability Review*, November 2019, 107–118.
- Andreoli, J. (2020). *Angela Merkel bat Guttenberg um Argumentationshilfe zu Wirecard*. Retrieved October 19, 2022, from <https://www.abgeordnetenwatch.de/blog/lobbyismus/angela-merkel-bat-guttenberg-um-argumentationshilfe-zu-wirecard>.
- Aparicio, J., Pastor, J. T., & Zofio, J. L. (2017). Can Farrell’s Allocative Efficiency be Generalized by the Directional Distance Function Approach?. *European Journal of Operational Research*, 257(1), 345–351.
- APAS (Abschlussprüferaufsichtsstelle). (2020). *Stellungnahme zur Berichterstattung im Fall Wirecard*. Retrieved October 19, 2022, from https://www.apasbafa.bund.de/SharedDocs/Kurzmeldungen/APAS/DE/20200918_stellungnahme.html.

- Arnoldt, J. (2021). *Die Sparkassenorganisation in Spanien*. Berlin: Deutscher Sparkassen- und Giroverband.
- Arrow, K. J. (1985). The Potentials and Limits of the Market in Resource Allocation. In G. R. Feiwel, *Issues in Contemporary Microeconomics and Welfare* (pp. 107–124). London: Palgrave Macmillan.
- Arrow, K. J., Sen, A., & Suzumura, K. (2010). *Handbook of Social Choice and Welfare* (2nd ed.). Amsterdam: Elsevier.
- Austen-Smith, D. (1995). Campaign Contributions and Access. *American Political Science Review*, 89(3), 566–581.
- Austen-Smith, D., & Wright, J. R. (1992). Competitive Lobbying for a Legislator's Vote. *Social Choice and Welfare*, 9(3), 229–257.
- Ayadi, R., & Pujals, G. (2004). *Banking Consolidation in the EU: Overview and Prospects* (CEPS Research Report in Finance and Banking No. 34). Brussels: Centre for European Policy Studies.
- Ayadi, R., & Pujals, G. (2005). *Banking Mergers and Acquisitions in the EU: Overview, Assessment and Prospects* (SUERF Studies, No. 2005/3). Vienna: SUERF – The European Money and Finance Forum.
- BAFA (Bundesamt für Wirtschaft und Ausfuhrkontrolle). (n.d.). *Abschlussprüferaufsichtsstelle APAS*. Retrieved October 19, 2022, from https://www.bafa.de/DE/Abschlussprueferaufsichtsstelle/abschlussprueferaufsichtsstelle_node.html.
- BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht). (2019). *Allgemeinverfügung der Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)*. Retrieved October 19, 2022, from https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Aufsichtsrecht/Verfuegung/vf_190218_leerverkaufsmassnahme.html.
- BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht). (2020a). *Aufgaben & Geschichte der BaFin*. Retrieved October 19, 2022, from https://www.bafin.de/DE/DieBaFin/AufgabenGeschichte/aufgabengeschichte_node.html.
- BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht). (2020b). *Financial Reporting Enforcement*. Retrieved October 19, 2022, from https://www.bafin.de/EN/Aufsicht/BoersenMaerkte/Transparenz/Bilanzkontrolle/bilanzkontrolle_node_en.html.

- BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht). (2020c). *Klarstellung der BaFin zu Aussagen im Finanzausschuss* [Press release]. Retrieved October 19, 2022, from https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Pressemitteilung/2020/pm_200625_wirecard_klarstellung.html.
- BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht). (2021a). *Bericht zur Sonderauswertung Mitarbeitergeschäfte mit Bezug zu Wirecard von BaFin-Beschäftigten* [PDF file]. Retrieved October 19, 2022, from https://www.bafin.de/SharedDocs/Downloads/DE/Bericht/dl_bafin-bericht_zur_sonderauswertung_mitarbeitergeschaefte.html.
- BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht). (2021b). *Moderne Aufsicht: Die neue Bilanzkontrolle*. Retrieved October 24, 2022, from https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Fachartikel/2021/fa_bj_2112_Bilanzkontrolle.html.
- BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht). (2021c). *Wertpapieraufsicht*. Retrieved October 19, 2022, from https://www.bafin.de/DE/DieBaFin/AufgabenGeschichte/Wertpapieraufsicht/wertpapieraufsicht_node.html.
- Bagehot, W. (1873). *Lombard Street: A Description of the Money Market*. New York, NY: Scribner, Armstrong & Co.
- Bain, J. S. (1950). Workable Competition in Oligopoly: Theoretical Considerations and Some Empirical Evidence. *American Economic Review*, 40(2), 35–47.
- Bain, J. S. (1951). Relation of Profit Rate to Industry Concentration: American Manufacturing, 1936-1940. *The Quarterly Journal of Economics*, 65(3), 293–324.
- Bair, S. C. (2012). *Bull by the Horns: Fighting to Save Main Street from Wall Street and Wall Street from Itself*. New York, NY: Simon & Schuster.
- Bair, S. C. (2006). *Statement of Sheila C. Bair, Chairman, Federal Deposit Insurance Corporation, on the Interagency Proposal Regarding the Basel Capital Accord before the Committee on Banking, Housing and Urban Affairs U.S. Senate* [PDF file]. Retrieved October 19, 2022, from <https://www.banking.senate.gov/imo/media/doc/ACF4A61.pdf>.
- Ball, R. (1995). Interest Groups, Influence and Welfare. *Economics and Politics*, 7(2), 119–146.
- Banca Monte dei Paschi di Siena. (2001). *Annual Report as at December 31, 2000* [PDF file]. Retrieved October 19, 2022, from https://www.gruppomps.it/static/upload/archivio/18558/Individual_Annual_Report.pdf.

- Banca Monte dei Paschi di Siena. (2019). *€50,000,000,000: Debt Issuance Programme* [PDF file]. Retrieved October 19, 2022, from https://www.gruppompms.it/static/upload/bmp/bmps_emtn_2019_update_-_base_prospectus_final.pdf.
- Banca Popolare di Milano. (2008a). *Agreement with Fondazione Cassa di Risparmio di Alessandria* [Press release]. Retrieved October 19, 2022, from https://gruppo.bancobpm.it/media/storico-documenti-ante-fusione/2011_07_05_cs_eng.pdf.
- Banca Popolare di Milano. (2008b). *BPM Acquires a 56.99% Stake in Banca Popolare di Mantova SpA* [PDF file]. Retrieved October 19, 2022, from https://gruppo.bancobpm.it/media/storico-documenti-ante-fusione/2008_12_22_BP_Mantova_eng.pdf.
- Banco de España. (2010). *Memoria de la Supervisión Bancaria en España: 2009* [PDF file]. Retrieved October 19, 2022, from https://www.bde.es/f/webbde/Secciones/Publicaciones/PublicacionesAnuales/MemoriaServicioReclamaciones/09/Fic/0_DOCUMENTO_COMPL ETO_2009.pdf
- Banco de España. (2022). *Memoria de Supervisión: 2021* [PDF file]. Retrieved October 19, 2022, from <https://www.bde.es/f/webbde/Secciones/Publicaciones/PublicacionesAnuales/MemoriaSup ervisionBancaria/21/MemoriaSupervision2021.pdf>.
- Banco Popolare & Banca Popolare di Milano. (2016). *Creation of the Third Largest Italian Banking Group: Leader in the Wealthiest Areas of Italy* [Joint Press Release]. Retrieved October 19, 2022, from https://gruppo.bancobpm.it/media/storico-documenti-ante-fusione/2016_03_23_Joint_Press_Release_BP_BPM-Merger-project.pdf.
- Banco Popolare di Verona e Novara & Banca Popolare Italiana. (2007). *Prospectus in Accordance With Article 70, paragraph 4, of the Regulations Approved by Consob Resolution No. 11971 of 14 May 1999, As Amended, Concerning the Merger of Banco Popolare di Verona e Novara Limited Liability Cooperative Company and Banca Popolare Italiana – Banca Popolare di Lodi Cooperative Company by Incorporation of Banco Popolare Cooperative Company* [PDF file]. Retrieved October 19, 2022, from https://gruppo.bancobpm.it/media/storico-documenti-ante-fusione/2007_06-Prospectus-concerning-the-merger.pdf.
- Banco Popolare. (2010). *Annual Report: 2009* [PDF file]. Retrieved October 19, 2022, from <https://gruppo.bancobpm.it/media/storico-documenti-ante-fusione/Financial-2009-01.pdf>.
- Banco Sabadell Group. (2002). *Informe Annual: 10º Ejercicio: 2001* [PDF file]. Retrieved October 19, 2022, from <https://ddd.uab.cat/pub/infanu/18884/iaBANSABa2001ispa.pdf>.

Banco Sabadell Group. (2012). *Banco Sabadell: Informe Annual 2011: 130° Ejercicio* [PDF file]. Retrieved October 19, 2022, from https://www.grupbancsabadell.com/corp/files/1433948984315/4_5_2_es_informeanual2011_bs_infoan-2011_cast.pdf.

Banco Sabadell Group. (2017). *Triple Plan* [PDF file]. Retrieved October 19, 2022, from <https://www.grupbancsabadell.com/memoria2016/pdf/en/banco-sabadell-group/triple-plan.pdf>.

Bank of America. (1999). *1998 Summary Annual Report*. Retrieved October 19, 2022, from https://www.annualreports.com/HostedData/AnnualReportArchive/b/NYSE_BAC_1998.pdf.

Bank of America. (2008). *2007 Annual Report*. Retrieved October 19, 2022, from https://www.annualreports.com/HostedData/AnnualReportArchive/b/NYSE_BAC_2007.pdf.

Bank of America. (2010). *2009 Annual Report*. Retrieved October 19, 2022, from https://www.annualreports.com/HostedData/AnnualReportArchive/b/NYSE_BAC_2009.pdf.

Bank of America. (2012). *2011 Annual Report*. Retrieved October 19, 2022, from https://www.annualreports.com/HostedData/AnnualReportArchive/b/NYSE_BAC_2011.pdf.

Bank of America. (2015). *2014 Annual Report*. Retrieved October 19, 2022, from https://www.annualreports.com/HostedData/AnnualReportArchive/b/NYSE_BAC_2014.pdf.

Bank of America. (2019). *What Would You Like the Power To Do?: 2018 Annual Report*. Retrieved October 19, 2022, from https://d1io3yog0oux5.cloudfront.net/_895a41a9a2f31a659cd57b135e29a9c9/bankofamerica/db/867/7067/annual_report/2018_ar.pdf.

Bank of America. (2022). *Driving Responsible Growth: Now and Going Forward*. Retrieved October 19, 2022, from https://d1io3yog0oux5.cloudfront.net/_8868a4474fcb64259e965af7a13242a5/bankofamerica/db/867/9640/annual_report/BAC_AR21_Full_Report_030122+%281%29.pdf.

Bank of International Settlements. (2022). *Basel Committee Membership*. Retrieved October 19, 2022, from <https://www.bis.org/bcbs/membership.htm>.

Bank of International Settlements. (n.d.). *History of the Basel Committee*. Retrieved October 19, 2022, from <https://www.bis.org/bcbs/history.htm>.

Bank of Italy. (2016). *Financial Stability Report* [PDF file]. Retrieved October 19, 2022, from https://www.bancaditalia.it/pubblicazioni/rapporto-stabilita/2016-1/en-FSR-1-2016.pdf?language_id=1.

- Bank of Italy. (2018). *Italian Banking Association Annual Meeting: Speech by the Governor of the Bank of Italy Ignazio Visco* [Speech]. Retrieved October 19, 2022, from https://www.bancaditalia.it/pubblicazioni/interventi-governatore/integov2018/en_Visco_10072018.pdf?language_id=1.
- Bankia. (2012). *Bankia, S.A.: Financial Statements for the Year ended 31 December 2011* [PDF file]. Retrieved October 19, 2022, from <https://multimedia.caixabank.es/lacaixa/ondemand/criteria/bankia/statics/docs/en/financial-reports/2011/annual/annual-report-2011.pdf>.
- Barefoot, M. & Associates, Inc., Thakor, A. V., & Beltz, J. C. (1993). *Common Ground: Increasing Consumer Benefits and Reducing Regulatory Costs in Banking*. Madison, WI: Herbert V. Prochnow Educational Foundations.
- Barker, A. (2012). Brussels Shelved Bank Deposit Scheme. *Financial Times*. Retrieved March 18, 2021, from <https://www.ft.com/content/e2dd12ec-fdbe-11e1-9901-00144feabdc0>.
- Bartel, A. P., & Thomas, L. G. (1987). Predation through Regulation: The Wage and Profit Effects of the Occupational Safety and Health Administration and the Environmental Protection Agency. *The Journal of Law & Economics*, 30(2), 239–264.
- Barth, J. R. (1983). The Effect of Government Regulations on Personal Loan Markets: A Tobit Estimation of a Microeconomic Model. *Journal of Finance*, 38(4), 1233–1251.
- Barth, J. R. (1991). *The Great Savings and Loan Debacle*. Washington, DC: American Enterprise Institute.
- Barth, J. R., Caprio Jr, G., & Levine, R. (2004). Bank Regulation and Supervision: What Works Best?. *Journal of Financial Intermediation*, 13(2), 205–248.
- Barth, J. R., Caprio, G. J., & Levine, R. (2008). Bank Regulations are Changing: For Better or Worse?. *Comparative Economic Studies*, 50, 537–563.
- Barth, J. R., Caprio, G., & Levine, R. (2001). Banking Systems Around the Globe: Do Regulations and Ownership Affect Performance and Stability?. In F. S. Mishkin (Ed.), *Prudential Supervision: What Works and What Doesn't* (pp. 31–88). Chicago, IL: University of Chicago Press.
- Barth, J. R., Dopico, L. G., Nolle, D. E., & Wilcox, J. A. (2002). Bank Safety and Soundness and the Structure of Bank Supervision: A Cross-Country Analysis. *International Review of Finance*, 3(3–4), 163–188.

- Barth, J. R., Lin, C., Ma, Y., Seade, J., & Song, F. M. (2013). Do Bank Regulation, Supervision and Monitoring Enhance or Impede Bank Efficiency?. *Journal of Banking & Finance*, 37(8), 2879–2892.
- Barth, J. R., Nolle, D. E., Phumiwasana, T., & Yago, G. (2003). A Cross-Country Analysis of the Bank Supervisory Framework and Bank Performance. *Financial Markets, Institutions & Instruments*, 12(2), 67–120.
- Bartholomew, Philip, F. (1991). *The Cost of Forbearance during the Thrift Crisis*. Washington, DC: Congressional Budget Office.
- Bartholomew, Philip, F. (1993). *Resolving the Thrift Crisis*. Washington, DC: Congressional Budget Office.
- Bartz, T. (2021). Wie Frau Roegele um ein Leerverkaufsverbot für Wirecard-Aktien rang. *Spiegel*. Retrieved October 19, 2022, from <https://www.spiegel.de/wirtschaft/unternehmen/wirecard-aktien-wie-frau-roegele-um-ein-leerverkaufsverbot-rang-a-03dfd090-8f05-47a3-870b-0a5bd6d3ce40>.
- Bartz, T., Böcking, D., Hesse, M., & Traufetter, G. (2021a). Regierung wollte noch kurz vor der Pleite Millionen bei Wirecard nachschießen. *Spiegel*. Retrieved October 19, 2022, from <https://www.spiegel.de/wirtschaft/unternehmen/wirecard-staatssekretaer-joerg-kukies-schluss-noch-kurz-vor-insolvenz-kredit-der-kfw-tochter-ipex-vor-a-9e917a6b-0980-4808-9efb-9f11aae22618>.
- Bartz, T., Böcking, D., Hesse, M., & Traufetter, G. (2021b). Wie Guttenberg mit Wirecard um Millionen feilschte. *Spiegel*. Retrieved October 19, 2022, from <https://www.spiegel.de/wirtschaft/unternehmen/wirecard-lobbyist-karl-theodor-zu-guttenbergs-falsche-bescheidenheit-a-96d9f92e-c7bc-4b64-bc5b-d07569d43906>.
- Bartz, T., Seith, A., & Traufetter, G. (2020). Finanzministerium sprach mit Wirecard-Chef über brisante Sonderprüfung. *Spiegel*. Retrieved October 19, 2022, from <https://www.spiegel.de/wirtschaft/unternehmen/wirecard-joerg-kukies-sprach-mit-ex-chef-markus-braun-ueber-kpmg-sonderpruefung-a-7023277d-8113-45f3-80f7-f71676868d18>.
- Bator, F. M. (1958). The Anatomy of Market Failure. *The Quarterly Journal of Economics*, 72(3), 351–379.
- Bauer, K. J., Miles, L. L., & Nishikawa, T. (2009). The Effect of Mergers on Credit Union Performance. *Journal of Banking & Finance*, 33(12), 2267–2274.

- Baumol, W. J. (1952). *Welfare Economics and the Theory of the State*. London: The London School of Economics and Political Science.
- Baumol, W. J. (1959). *Business Behavior, Value and Growth*. New York, NY: Macmillan.
- Baumol, W. J. (1962). On the Theory of Expansion of the Firm. *The American Economic Review*, 52(5), 1078–1087.
- Baumol, W. J. (1982). Contestable Markets: An Uprising in the Theory of Industry Structure. *The American Economic Review*, 72(1), 1–15.
- Baumol, W. J. (2004). Welfare Economics and the Theory of the State. In C. K. Rowley, & F. Schneider (Eds.), *The Encyclopedia of Public Choice* (pp. 937–940). Boston, MA: Springer.
- Baumol, W. J., Panzar, J. C., & Willig, R. D. (1988). *Contestable Markets and the Theory of Industry Structure*. San Diego: Harcourt Brace Jovanovich.
- Bayerische Hypo- und Vereinsbank. (2001). *Geschäftsbericht 2000: Jahresabschluss AG* [PDF file]. Retrieved October 19, 2022, from <http://businessinformation.de/documents/HVB%20AG-ar2000de.pdf>.
- Bayerischer Landtag. (2020a). *Hilfe der Wirecard AG bei Anträgen für das Corona-Soforthilfe-Programm* [PDF file]. Retrieved October 19, 2022, from <https://bayernspd-landtag.de/workspace/media/static/brief-an-wirtschaftsminister-a-5f71e2e93ed49.pdf>.
- Bayerischer Landtag. (2020b). *Schriftliche Anfrage des Abgeordneten Dr. Helmut Kaltenhauser FDP vom 28.07.2020* [PDF file]. Retrieved October 19, 2022, from http://www1.bayern.landtag.de/www/ElanTextAblage_WP18/Drucksachen/Schriftliche%20Anfragen/18_0010003.pdf.
- Bayerischer Landtag. (2020c). *Schriftliche Anfrage des Abgeordneten Dr. Martin Runge BÜNDNIS 90/DIE GRÜNEN vom 28.07.2020* [PDF file]. Retrieved October 19, 2022, from http://www1.bayern.landtag.de/www/ElanTextAblage_WP18/Drucksachen/Schriftliche%20Anfragen/18_0010120.pdf.
- Bayerischer Landtag. (2020d). *Zuständigkeit für die Wirecard AG nach Geldwäschegesetz (GwG)* [PDF file]. Retrieved October 19, 2022, from <https://bayernspd-landtag.de/workspace/media/static/brief-herrmann-5f71e25c84b89.pdf>.

- Bayerischer Landtag. (2021). *Schriftliche Anfrage des Abgeordneten Dr. Helmut Kaltenhauser FDP vom 05.10.2020* [PDF file]. Retrieved October 19, 2022, from http://www1.bayern.landtag.de/www/ElanTextAblage_WP18/Drucksachen/Schriftliche%20Anfragen/18_0012115.pdf.
- Bayerisches Staatsministerium der Justiz. (2020). *Weitere Festnahmen in Sachen Wirecard, Ausweitung der Ermittlungen auf gewerbsmäßigen Bandenbetrug über ca. 3,2 Mrd. Euro* [Press release]. Retrieved October 19, 2022, from <https://www.justiz.bayern.de/gerichte-und-behoerden/staatsanwaltschaft/muenchen-1/presse/2020/5.php>.
- BBVA (Banco Bilbao Vizcaya Argentaria). (2003). *Annual Report 2002* [PDF file]. Retrieved October 19, 2022, from https://shareholdersandinvestors.bbva.com/wp-content/uploads/2017/06/InfAnualCompleto_2002_Eng_tcm927-346334.pdf.
- BBVA (Banco Bilbao Vizcaya Argentaria). (2012). *Annual Report 2011*. Retrieved October 19, 2022, from <https://shareholdersandinvestors.bbva.com/microsites/informes2011/en/Consolidatedfinancialstatements/Consolidatedbalancesheets.html>.
- BCBS (Basel Committee on Banking Supervision). (1988). *International Convergence of Capital Measurement and Capital Standards* [PDF file]. Basel: Basel Committee on Banking Supervision. Retrieved October 19, 2022, from <https://www.bis.org/publ/bcbs04a.pdf>.
- BCBS (Basel Committee on Banking Supervision). (1999). *A New Capital Adequacy Framework: Consultative Paper Issued by the Basel Committee on Banking Supervision* [PDF file]. Basel: Bank for International Settlements. Retrieved October 19, 2022, from <https://www.bis.org/publ/bcbs50.pdf>.
- BCBS (Basel Committee on Banking Supervision). (2004). *International Convergence of Capital Measurement and Capital Standards: A Revised Framework* [PDF file]. Basel: Basel Committee on Banking Supervision. Retrieved October 19, 2022, from <https://www.bis.org/publ/bcbs107.pdf>.
- BCBS (Basel Committee on Banking Supervision). (2009a). *Consultative Document: Strengthening the Resilience of the Banking Sector* [PDF file]. Retrieved October 19, 2022, from <https://www.bis.org/publ/bcbs164.pdf>.
- BCBS (Basel Committee on Banking Supervision). (2009b). *Enhancements to the Basel II Framework* [PDF file]. Retrieved October 19, 2022, from <https://www.bis.org/publ/bcbs157.pdf>.

- BCBS (Basel Committee on Banking Supervision). (2009c). *Revisions to the Basel II Market Risk Framework* [PDF file]. Retrieved October 19, 2022, from <https://www.bis.org/publ/bcbs158.pdf>.
- BCBS (Basel Committee on Banking Supervision). (2010a). *An Assessment of the Long-term Economic Impact of Stronger Capital and Liquidity Requirements* [PDF file]. Retrieved October 19, 2022, from <https://www.bis.org/publ/bcbs173.pdf>.
- BCBS (Basel Committee on Banking Supervision). (2010b). *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems* [PDF file]. Retrieved October 19, 2022, from https://www.bis.org/publ/bcbs189_dec2010.pdf.
- BCBS (Basel Committee on Banking Supervision). (2010c). *Basel III: International Framework for Liquidity Risk Measurement, Standards and Monitoring* [PDF file]. Retrieved from <https://www.bis.org/publ/bcbs188.pdf>.
- BCBS (Basel Committee on Banking Supervision). (2010d). *Group of Governors and Heads of Supervision Announces Higher Global Minimum Capital Standards* [Press Release]. Retrieved October 19, 2022, from <https://www.bis.org/press/p100912.pdf>.
- BCBS (Basel Committee on Banking Supervision). (2010e). *The Group of Governors and Heads of Supervision Reach Broad Agreement on Basel Committee Capital and Liquidity Reform Package* [Press release]. Retrieved October 19, 2022, from <https://www.bis.org/press/p100726.htm>.
- BCBS (Basel Committee on Banking Supervision). (2012). *Basel III Regulatory Consistency Assessment (Level 2): Preliminary Report: United States of America* [PDF file]. Retrieved October 19, 2022, from https://www.true-sale-international.de/fileadmin/tsi_downloads/ABS_Research/Finanzmarktstabilisierung/bcbs_implementation_l2_us.pdf.
- BCBS (Basel Committee on Banking Supervision). (2017). *Basel III: Finalising Post-Crisis Reforms* [PDF file]. Retrieved October 19, 2022, from <https://www.bis.org/bcbs/publ/d424.pdf>.
- BCBS (Basel Committee on Banking Supervision). (2020). *Implementation of Basel Standards: A Report to G20 Leaders on Implementation of the Basel III Regulatory Reforms* [PDF file]. Retrieved October 19, 2022, from <https://www.bis.org/bcbs/publ/d510.pdf>.
- Beccalli, E. (2007). Does IT Investment Improve Bank Performance? Evidence from Europe. *Journal of Banking & Finance*, 31(7), 2205–2230.

- Beccalli, E., & Frantz, P. (2009). M&A Operations and Performance in Banking. *Journal of Financial Services Research*, 36(2), 203–226.
- Beccalli, E., Anolli, M., & Borello, G. (2015). Are European Banks Too Big? Evidence on Economies of Scale. *Journal of Banking & Finance*, 58(C), 232–246
- Becher, D. A., & Campbell, T. L. (2005). Interstate Banking Deregulation and the Changing Nature of Bank Mergers. *Journal of Financial Research*, 28(1), 1–20.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2006). Bank Concentration, Competition, and Crises: First Results. *Journal of Banking & Finance*, 30(5), 1581–1603.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Bank Concentration and Fragility: Impact and Mechanics. In M. Carey, & R. M. Stulz (Eds.), *The Risks of Financial Institutions* (pp. 193–234). Chicago, IL: University of Chicago Press.
- Becker, G. S. (1983). A Theory of Competition Among Pressure Groups for Political Influence. *The Quarterly Journal of Economics*, 98(3), 371–400.
- Becker, G. S. (1986). The Public Interest Hypothesis Revisited: A New Test of Peltzman's Theory of Regulation. *Public Choice*, 49(3), 223–234.
- Becker, S., Buschmann, R., Gebauer, M., Naber, N., Traufetter, G., Winterbach, C., & Wulzinger, M. (2020). Auch Ex-Geheimdienstbeauftragter Fritsche lobbyierte im Kanzleramt. *Spiegel*. Retrieved October 20, 2022, from <https://www.spiegel.de/politik/deutschland/wirecard-und-klaus-dieter-fritsche-kanzleramt-muss-weitere-kontakte-einraeumen-a-4fe5ce20-e882-4b6c-adad-547dd4af10d9>.
- Becker, S., Buschmann, R., Naber, N., Traufetter, G., Winterbach, C., & Wulzinger, M. (2020). Kanzleramt setzte sich für Wirecard ein. *Spiegel*. Retrieved October 20, 2022, from <https://www.spiegel.de/politik/deutschland/wirecard-kanzleramt-setzte-sich-fuer-finanzdienstleister-ein-a-e5b50a9f-128d-4bda-b7d5-907e2fea9f7c>.
- Becker, S., Hesse, M., & Seith, A. (2020). Die drei Wirecard-Probleme des Felix Hufeld. *Spiegel*. Retrieved October 20, 2022, from <https://www.spiegel.de/wirtschaft/unternehmen/wirecard-die-drei-probleme-von-bafin-chef-felix-hufeld-a-e24bb8ff-f03c-4e5b-93fb-b70e7c55af9f>.
- Becker, S., Lehmann, T., Naber, N., & Traufetter, G. (2020). Stunde der Wahrheit für Olaf Scholz. *Spiegel*. Retrieved October 20, 2022, from <https://www.spiegel.de/politik/deutschland/wirecard-skandal-was-olaf-scholz-und-peter-altmaier-im-finanzausschuss-erwartet-a-8fe34a4a-352d-4d14-a72e-6bd420af2cb4>.

- Beitel, P., & Schiereck, D. (2001). *Value Creation at the Ongoing Consolidation of the European Banking Markets* (IMA Working Paper No. 05/01) [PDF file]. Institute for Mergers and Acquisitions. Retrieved October 20, 2022, from https://web.archive.org/web/20030803132547id_/http://www.economia.uniroma2.it:80/ceis/conferenze_convegni/banking2001/papers/venerdi/beitel-Ven.pdf.
- Beitel, P., Schiereck, D., & Wahrenburg, M. (2004). Explaining M&A Success in European Banks. *European Financial Management*, 10(1), 109–139.
- Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression Diagnostics*. New York: John Wiley & Sons.
- Benston, G. J. (1964). Interest Payments on Demand Deposits and Bank Investment Behavior. *Journal of Political Economy*, 72(5), 431–449.
- Benston, G. J. (1965). Branch Banking and Economies of Scale. *Journal of Finance*, 20(2), 312–331.
- Benston, G. J. (2000). Consumer Protection as Justification for Regulating Financial-Services Firms and Products. *Journal of Financial Services Research*, 17(3), 277–301.
- Benston, G. J., & Harland, J. (1990). *Separation of Commercial and Investment Banking: The Glass-Steagall Act Revisited and Reconsidered*. London: Macmillan.
- Benston, G. J., & Kaufman, G. G. (1996). The Appropriate Role of Bank Regulation. *Economic Journal*, 106(436), 688–697.
- Benston, G. J., & Kaufman, G. G. (1997). FDICIA after Five Years. *Journal of Economic Perspectives*, 11(3), 139–158.
- Benston, G. J., Eisenbeis, R., Horvitz, P., Kane, E. J., & Kaufman, G. (1988). Perspectives on Safe and Sound Banking: Past, Present, and Future. *Journal of Banking & Finance*, 12(4), 604–608.
- Bentley, A. F. (1908). *The Process of Government: A Study of Social Pressures*. Chicago, IL: University of Chicago Press.
- Berger, A. N. (1995). The Profit-Structure Relationship in Banking: Tests of Market-Power and Efficient-Structure Hypotheses. *Journal of Money, Credit and Banking*, 27(2), 404–431.
- Berger, A. N. (1998). The Efficiency Effects of Bank Mergers and Acquisition: A Preliminary Look at the 1990s Data. In Y. Amihud, & G. Miller (Eds.), *Bank Mergers & Acquisitions* (pp. 79–111). Boston, MA: Springer.

- Berger, A. N. (2003). The Economic Effects of Technological Progress: Evidence from the Banking Industry. *Journal of Money, Credit, and Banking*, 35(2), 141–176.
- Berger, A. N., & DeYoung, R. (1997). Problem Loans and Cost Efficiency in Commercial Banks. *Journal of Banking & Finance*, 21(6), 849–870.
- Berger, A. N., & Hannan, T. H. (1989). The Price-Concentration Relationship in Banking. *The Review of Economics and Statistics*, 71(2), 291–99.
- Berger, A. N., & Hannan, T. H. (1997). Using Efficiency Measures to Distinguish Among Alternative Explanations of the Structure-Performance Relationship in Banking. *Managerial Finance*, 23(1), 6–31.
- Berger, A. N., & Hannan, T. H. (1998). The Efficiency Cost of Market Power in the Banking Industry: A Test of the “Quiet Life” and Related Hypotheses. *Review of Economics and Statistics*, 80(3), 454–465.
- Berger, A. N., & Humphrey, D. B. (1991). The Dominance of Inefficiencies over Scale and Product Mix Economies in Banking. *Journal of Monetary Economics*, 28(1), 117–148.
- Berger, A. N., & Humphrey, D. B. (1992). Megamergers in Banking and the Use of Cost Efficiency as an Antitrust Defense. *Antitrust Bulletin*, 37(3), 541–600.
- Berger, A. N., & Humphrey, D. B. (1997). Efficiency of Financial Institutions: International Survey and Directions for Future Research. *European Journal of Operational Research*, 98(2), 175–212.
- Berger, A. N., & Mester, L. J. (1997). Inside the Black Box: What Explains Differences in the Efficiencies of Financial Institutions?. *Journal of Banking & Finance*, 21(7), 895–947.
- Berger, A. N., Demsetz, R. S., & Strahan, P. E. (1999). The Consolidation of the Financial Services Industry: Causes, Consequences, and Implications for the Future. *Journal of Banking and Finance*, 23(2–4), 135–194.
- Berger, A. N., Hunter, W. C., & Timme, S. G. (1993). The Efficiency of Financial Institutions: A Review and Preview of Research Past, Present and Future. *Journal of Banking & Finance*, 17(2–3), 221–249.
- Berger, A. N., Klapper, L. F., & Turk-Ariss, R. (2017). Bank Competition and Financial Stability. In J. A. Bikker, & L. Spierdijk (Eds.), *Handbook of Competition in Banking and Finance* (pp. 185–204). Cheltenham: Edward Elgar Publishing.

- Bernheim, B. D., & Whinston, M. D. (1986). Menu Auctions, Resource Allocation, and Economic Influence. *The Quarterly Journal of Economics*, *101*(1), 1–31.
- Bernstein, M. H. (1955). *Regulating Business by Independent Commission*. Princeton, NJ: Princeton University Press.
- Bertrand, M., Bombardini, M., & Trebbi, F. (2014). Is It Whom You Know or What You Know? An Empirical Assessment of the Lobbying Process. *American Economic Review*, *104*(12), 3885–3920.
- Besley, T., & Coate, S. (2003). Elected Versus Appointed Regulators: Theory and Evidence. *Journal of the European Economic Association*, *1*(5), 1176–1206.
- Betz, T., & Meyer-Fünffinger, A. (2020). Peinlicher Lobbyismus?. *tagesschau*. Retrieved December 17, 2020, from <https://www.tagesschau.de/wirtschaft/unternehmen/wirecard-zu-guttenberg-lobbyismus-101.html>.
- BFCM (Banque Fédérative Crédit Mutuel). (2009). *Annual Report 2008: BFCM Consolidated Accounts* [PDF file]. Retrieved October 20, 2022, from https://www.bfcm.creditmutuel.fr/partage/fr/CC/BFCM/telechargements/information-financiere/BFCM_DEC_2008_consolidated_accounts.pdf.
- Bikker, J. A., & Bos, J. W. (2005). *Trends in Competition and Profitability in the Banking Industry: A Basic Framework*. Vienna: SUEFR.
- Bikker, J. A., & Bos, J. W. (2008). *Bank Performance: A Theoretical and Empirical Framework for the Analysis of Profitability, Competition and Efficiency*. New York, NY: Routledge.
- Bikker, J. A., & Groeneveld, J. M. (1998). *Competition and Concentration in the EU Banking Industry* (Research Series Supervision No. 8). Amsterdam: De Nederlandsche Bank.
- Bikker, J. A., & Haaf, K. (2002). Competition, Concentration and their Relationship: An Empirical Analysis of the Banking Industry. *Journal of Banking & Finance*, *26* (11), 2191-2214.
- Bikker, J. A., Spierdijk, L., & Finnie, P. (2006). *The Impact of Bank Size on Market Power* (DNB Working Papers No. 120). Netherlands Central Bank, Research Department.
- Birindelli, G., & Ferretti, P. (2018). Italian Banks' Ownership, Governance and Performance: The Evolving Role of Foundations. In B. Díaz Díaz, S. Idowu, & P. Molyneux (Eds.), *Corporate Governance in Banking and Investor Protection* (pp. 255–270). Cham: Springer.
- Bishop, J. D. (1995). Adam Smith's Invisible Hand Argument. *Journal of Business Ethics*, *14*(3), 165–180.

- Blaug, M. (2001). Is Competition Such a Good Thing? Static Efficiency versus Dynamic Efficiency. *Review of Industrial Organization*, 1(19), 37–48.
- Bliss, R. T., & Rosen, R. J. (2001). CEO Compensation and Bank Mergers. *Journal of Financial Economics*, 61(1), 107–138.
- BMF (Bundesministerium der Finanzen). (2020a). *Aufzeichnung für den Finanzausschuss des Deutschen Bundestags: Sachstandsbericht und Chronologie Wirecard*. Retrieved October 20, 2022, from https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Internationales_Finanzmarkt/Finanzmarktpolitik/2020-07-17-Sachstandsbericht-Wirecard.pdf?__blob=publicationFile&v=3.
- BMF (Bundesministerium der Finanzen). (2020b). *Olaf Scholz: Wir müssen den Moment für Reformen nutzen*. Retrieved March 15, 2021, from <https://www.bundesfinanzministerium.de/Content/DE/Interviews/2020/2020-07-23-zeit-interview.html>.
- BMJ (Bundesministerium der Justiz). (2022). *Gesetz über die Bundesanstalt für Finanzdienstleistungsaufsicht (Finanzdienstleistungsaufsichtsgesetz - FinDAG)*. Retrieved October 19, 2022, from <https://www.gesetze-im-internet.de/findag/BJNR131010002.html>.
- BMJV (Bundesministeriums der Justiz und für Verbraucherschutz). (2021). *Antwort der Bundesregierung auf die Kleine Anfrage der Abgeordneten Fabio De Masi, Jörg Cezanne, Klaus Ernst u. a. und der Fraktion DIE LINKE: „Corporate Governance bei DAX-Unternehmen“* [PDF file]. Retrieved October 20, 2022, from <https://www.fabio-de-masi.de/kontext/controllers/document.php/482.f/9/b49117.pdf>.
- BMWi (Bundesministerium für Wirtschaft und Energie). (2016). *Jahreswirtschaftsbericht 2016: Zukunftsfähigkeit sichern – Die Chancen des digitalen Wandels nutzen* [PDF file]. Retrieved October 20, 2022, from https://www.bmwi.de/Redaktion/DE/Downloads/J-L/jahreswirtschaftsbericht-2016.pdf?__blob=publicationFile&v=4.
- BNP Paribas. (2000). *Banque Nationale de Paris: Combined Ordinary and Extraordinary Meeting of the Shareholders Paris: May 23, 2000* [Press release]. Retrieved October 20, 2022, from <https://group.bnpparibas/en/press-release/banque-nationale-de-paris-combined-ordinary-extraordinary-meeting-shareholders-paris-23-2000#:~:text=Resolutions%20adopted%20by%20the%20Extraordinary,toward%20forming%20the%20new%20group>.
- BNP Paribas. (2001). *2000: Annual Report* [PDF file]. Retrieved October 20, 2022, from <https://invest.bnpparibas/en/document/annual-report-2000>.

- BNP Paribas. (2007). *Annual Report 2006: The Bank for a Changing World* [PDF file]. Retrieved October 20, 2022, from [https://cdn-actus.bnpparibas.com/files/archives/wcorporate/wCorporate/wCorporate.nsf/docsByCode/EJOA-738E4R/\\$FILE/BNPP-RA-GBcomplet.pdf](https://cdn-actus.bnpparibas.com/files/archives/wcorporate/wCorporate/wCorporate.nsf/docsByCode/EJOA-738E4R/$FILE/BNPP-RA-GBcomplet.pdf).
- BNP Paribas. (2016). *History: Two Centuries of Banking*. Retrieved October 20, 2022, from <https://group.bnpparibas/en/group/history-centuries-banking>.
- Board of Governors of the Federal Reserve System. (1977). *The Impact of the Payment of Interest on Demand Deposits: A Study of the Staff of the Board of Governors of the Federal Reserve System* [PDF file]. Retrieved October 20, 2022, from https://fraser.stlouisfed.org/files/docs/publications/books/ipidd_bog_19770131.pdf.
- Board of Governors of the Federal Reserve System. (1982). Announcements. *Federal Reserve Bulletin*, 68(1), 1–75.
- Board of Governors of the Federal Reserve System. (1989). Bank Holding Companies and Change in Bank Control; Acquisition and Operation of Savings Associations by Bank Holding Companies. *Federal Register*, 54(173), 37297–37302.
- Board of Governors of the Federal Reserve System. (2008). *Term Asset-Backed Securities Loan Facility (TALF): Terms and Conditions* [PDF file]. Retrieved October 20, 2022, from <https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20081125a1.pdf>.
- Board of Governors of the Federal Reserve System. (2009). *The Supervisory Capital Assessment Program: Design and Implementation* [PDF file]. Retrieved October 20, 2022, from <https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20090424a1.pdf>.
- Board of Governors of the Federal Reserve System. (2014). Extensions of Credit by Federal Reserve Banks. *Federal Register*, 79(3), 615–620.
- Board of Governors of the Federal Reserve System. (2015). Extensions of Credit by Federal Reserve Banks. *Federal Register*, 80(243), 78959–78967.
- Board of Governors of the Federal Reserve System. (2016a). *Agencies Propose Net Stable Funding Ratio Rule* [Press release]. Retrieved October 20, 2022, from <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20160503a.htm>.
- Board of Governors of the Federal Reserve System. (2016b). *The Federal Reserve System Purposes & Functions*. Washington, DC: Federal Reserve System Publication. Retrieved October 20, 2022, from https://www.federalreserve.gov/aboutthefed/files/pf_complete.pdf.

- Board of Governors of the Federal Reserve System. (2018). *Responding to widespread Consumer Abuses and Compliance Breakdowns by Wells Fargo, Federal Reserve Restricts Wells' Growth until Firm Improves Governance and Controls. Concurrent with Fed Action, Wells to Replace Three Directors by April, One by Year End* [Press release]. Retrieved October 20, 2022, from <https://www.federalreserve.gov/newsevents/pressreleases/enforcement20180202a.htm>.
- Böcking, D. (2020). „Wir hatten nur dieses eine Unternehmen“. *Spiegel*. Retrieved October 20, 2022, from <https://www.spiegel.de/wirtschaft/unternehmen/wirecard-wieso-die-politik-den-konzern-so-lange-unterstuetzte-a-e52ca6e9-eb26-4b75-861b-73ff0e277e96>.
- Böcking, D. (2021). Hat Guttenberg den Wirecard-Ausschuss belogen?. *Spiegel*. Retrieved October 20, 2022, from <https://www.spiegel.de/wirtschaft/unternehmen/wirecard-karl-theodor-zu-guttenberg-soll-untersuchungsausschuss-belogen-haben-a-6f3f7a4a-0200-4ba7-98d8-2f583464f73a>.
- Böcking, H.-J., & Gros, M. (2020). *Verhältnis von BaFin und DPR im zweistufigen Enforcementverfahren* [PDF file]. Retrieved October 20, 2022, from https://www.accounting.uni-frankfurt.de/fileadmin/user_upload/dateien_abteilungen/abt_rec/LS_Boecking/Dokumente/Kurz-Zusammenfassung_Gutachten_Boecking_Gros.pdf.
- Bombardini, M. (2008). Firm Heterogeneity and Lobby Participation, *Journal of International Economics* 75(2), 329–348.
- Bond, P., & Glode, V. (2014). The Labor Market for Bankers and Regulators. *The Review of Financial Studies*, 27(9), 2539–2579.
- Boonstra, W. W. (2010). Banking in Times of Crisis: The Case of Rabobank. In M. Balling, J. M. Berk, & M.-O. Strauss-Kahn (Eds.), *The Quest for Stability: The View of Financial Institutions* (pp. 31–56). Vienna: SUEF-The European Money and Finance Forum.
- Boot, A. W. A. (1999). European Lessons on Consolidation in Banking. *Journal of Banking & Finance*, 23(2–4), 609–613.
- Bordo, Michael D., & Wheelock, D. C. (2013). The Promise and Performance of the Federal Reserve as Lender of Last Resort 1914-1933. In M. D. Bordo, & William Roberds (Eds.), *The Origins, History, and Future of the Federal Reserve: A Return to Jekyll Island* (pp. 59–98), Cambridge: Cambridge University Press.

- Borio, C. (2003). Towards a Macroprudential Framework for Financial Supervision and Regulation?. *CESifo Economic Studies*, 49(2), 181–215.
- Borio, C. (2011). Implementing a Macroprudential Framework: Blending Boldness and Realism. *Capitalism and Society*, 6(1), 1–25.
- Boss, M., Lederer, G., Mujic, N., & Schwaiger, M. (2018). Proportionality in Banking Regulation. *Monetary Policy & The Economy*, (Q2/18), 51–70.
- Bossone, B., & Lee, J. K. (2004). In Finance, Size Matters: The “Systemic Scale Economies” Hypothesis. *IMF Staff Papers*, 51(1), 19–46.
- Boyd, J. H., & De Nicolò, G. (2005). The Theory of Bank Risk Taking and Competition Revisited. *The Journal of Finance*, 60(3), 1329–1343.
- Boyd, J. H., & Graham, S. L. (1991). Investigating the Banking Consolidation Trend. *Federal Reserve Bank of Minneapolis: Quarterly Review*, 15(2), 3–15.
- Boyd, J. H., De Nicolò, G., & Jalal, A. M. (2006). *Bank Risk-Taking and Competition Revisited: New Theory and New Evidence* (IMF Working Papers, No. 06-297). International Monetary Fund.
- Boyer, P. C., & Ponce, J. (2012). Regulatory Capture and Banking Supervision Reform. *Journal of Financial Stability*, 8(3), 206–217.
- Boyes, W. J., & McDowell, J. M. (1989). The Selection of Public Utility Commissioners: A Reexamination of the Importance of Institutional Setting. *Public Choice*, 61(1), 1–13.
- BPCE. (2010). *2009 Annual Results* [PDF file]. Retrieved October 20, 2022, from https://groupebpce.com/en/content/download/7967/file/slideshow_annual_results_2009_en.pdf.
- BPER Banca. (2009). *Bilancio Consolidato 2008* [PDF file]. Retrieved October 20, 2022, from <https://istituzionale.bper.it/documents/133577364/133965858/Bilancio+consolidato+2008.pdf/07b7ec06-966b-6276-262a-58f88ed6f3e8?version=1.0&t=1528819502349&download=true>.
- BPER Banca. (n.d.). *Main Operations*. Retrieved October 20, 2022, from <https://istituzionale.bper.it/en/investor-relations/main-operations>.
- Brady, H. M., & Purpura, M. V. (1998). The Riegle-Neal Amendments Act of 1997: The Impact of Interstate Branching on the Dual Banking System. *North Carolina Banking Institute*, 2(1), 230–263.

- Bretschger, L., Kappel, V., & Werner, T. (2012). Market Concentration and the Likelihood of Financial Crises. *Journal of Banking & Finance*, 36(12), 3336–3345.
- Brewer, E., Jackson, W. E., Jagtiani, J. A., & Nguyen, T. (2000). The Price of Bank Mergers in the 1990s. *Economic Perspectives*, 24(1), 2–23.
- Broaddus, J. A. (1978). Automatic Transfers from Savings to Checking: Perspective and Prospects. *Economic Review* (Federal Reserve Bank of Richmond), 64(6), 3–13.
- Broome, L. L. (2011). The Dodd-Frank Act: Tarp Bailout Backlash and Too Big To Fail. *North Carolina Banking Institute*, 15(1), 69–82.
- Broome, L. L., & Markham, J. W. (2000). Banking and Insurance: Before and after the Gramm-Leach-Bliley Act. *Journal of Corporation Law*, 25(4), 723–785.
- Brozen, Y. (1982). *Concentration, Mergers, and Public Policy*. New York, NY: Macmillan Publishers.
- Bruckmann, G. (2020). Konzentrationsmessung. In J. Bley Müller, & R. Weißbach (Eds.), *Statistik für Wirtschaftswissenschaftler* (18th ed., pp. 243–251). München: Verlag Franz Vahlen.
- Brüser, S., & Schöning, S. (2006). Internationaler Vergleich der Erfolgssituation von Kreditinstituten. *Zeitschrift für das gesamte Kreditwesen*, 59(3), 116–121.
- Brynjolfsson, E. (1993). The Productivity Paradox of Information Technology. *Communications of the ACM*, 36(12), 66–77.
- Buch, C. M., & DeLong, G. (2008). Do Weak Supervisory Systems Encourage Bank Risk-Taking?. *Journal of Financial Stability*, 4(1), 23–39.
- Buono, A. F. & Bowditch, J. L. (2003). *The Human Side of Mergers and Acquisitions: Managing Collisions between People, Cultures, and Organizations*. Washington, DC: Beard Books. (Original work published 1989).
- Butler, H. N., & Macey, J. R. (1987). Myth of Competition in the Dual Banking System. *Cornell Law Review*, 73(4), 677–718.
- Button, K. J., & Weyman-Jones, T. G. (1994). X-Efficiency and Technical Efficiency. *Public Choice*, 80(1–2), 83-104.

- CaixaBank. (2012a). *2011: CaixaBank Group: 2011 Management Report and Annual Financial Statements* [PDF file]. Retrieved October 20, 2022, from https://www.caixabank.com/deployedfiles/caixabank/Estaticos/PDFs/Informacion_accionistas_inversores/Informacion_Economica_Financiera/2011_statutory_documentation.pdf.
- CaixaBank. (2012b). *Integrated Corporate Report: 2011: Making the Difference* [PDF file]. Retrieved October 20, 2022, from https://www.caixabank.com/deployedfiles/caixabank/Estaticos/PDFs/Info_corporativa/integrated_corporate_report.pdf.
- CaixaBank. (2013). *Integrated Corporate Report [2012]* [PDF file]. Retrieved October 20, 2022, from https://www.caixabank.com/deployedfiles/caixabank/Estaticos/PDFs/Informacion_accionistas_inversores/Informacion_Economica_Financiera/CaixaBank2012_en.pdf.
- CaixaBank. (2014). *Integrated Corporate Report [2013]: Being True to Your Values is What Makes You Big* [PDF file]. Retrieved October 20, 2022, from https://www.caixabank.com/deployedfiles/caixabank/Estaticos/PDFs/Informacion_accionistas_inversores/Informacion_Economica_Financiera/CaixaBank_Memoria13_en.pdf.
- CaixaBank. (2021). *About Bankia*. Retrieved October 20, 2022, from <https://multimedia.caixabank.es/lacaixa/ondemand/criteria/bankia/en/about-bankia.html>.
- CaixaBank. (2022). *CaixaBank Group Financial Statements: 2021* [PDF file]. Retrieved October 20, 2022, from https://www.caixabank.com/deployedfiles/caixabank_com/Estaticos/PDFs/Accionistasinversores/Informacion_economico_financiera/CCAA_GRUPCAIXABANK_2021_ING.pdf.
- Calice, P., Leonida, L., & Muzzupappa, E. (2021). Concentration-Stability or Concentration-Fragility? Maybe Both: Cross-Country Evidence. *Journal of International Financial Markets, Institutions and Money*, 74, 1–23.
- Calomiris, C. W., & Gorton, G. (1991). The Origins of Banking Panics: Models, Facts, and Bank Regulation. In R. G. Hubbard (Ed.), *Financial Markets and Financial Crises* (pp. 109–174). Chicago, IL and London: University of Chicago Press.
- Calomiris, C. W., & Karceski, J. (2000). Is the Bank Merger Wave of the 1990s Efficient? Lessons from Nine Case Studies. In S. N. Kaplan (Ed.), *Mergers and Productivity* (pp. 93–178). Chicago, IL and London: University of Chicago Press.
- Calvert, R. L. (1985). The Value of Biased Information: A Rational Choice Model of Political Advice. *The Journal of Politics*, 47(2), 530–555.

- Cambridge Dictionary. (2019). *Consolidation*. Retrieved October 20, 2022, from <https://dictionary.cambridge.org/de/worterbuch/englisch/consolidation>.
- Campa, J. M., & Hernando, I. (2006). M&As Performance in the European Financial Industry. *Journal of Banking & Finance*, *30*(12), 3367–3392.
- Carbó Valverde, S., & Humphrey, D. B. (2004). Predicted and Actual Costs from Individual Bank Mergers. *Journal of Economics and Business*, *56*(2), 137–157.
- Carbó Valverde, S., Gardener, E. P. M., & Williams, J. (2002). Efficiency in Banking: Empirical Evidence from the Savings Banks Sector. *Manchester School*, *70*(2), 204–228.
- Carbó Valverde, S., Humphrey, D., Maudos, J., & Molyneux, P. (2009). Cross-Country Comparisons of Competition and Pricing Power in European Banking. *Journal of International Money and Finance*, *28*(1), 115–134.
- Carletti, E. (2008). Competition and Regulation in Banking. In A. V. Thakor, & A. W. Boot, (Eds.), *Handbook of Financial Intermediation and Banking* (pp. 449–482). Amsterdam: Elsevier.
- Cartwright, S. & Cooper, C. L. (1992). *Mergers and Acquisitions: The Human Factor*. Oxford: Butterworth-Heinemann.
- Carvalho, A. P. C., Hohl, S., Raskopf, R., & Ruhnau, S. (2017). *Proportionality in Banking Regulation: A Cross-Country Comparison* [PDF file]. Bank for International Settlements, Financial Stability Institute. Retrieved October 20, 2022, from <https://www.bis.org/fsi/publ/insights1.pdf>.
- Casado, A. B., Sellers, R., & Más, F. J. (2004). *Third-Party Complaints and Firm Performance: An Application in Spanish Banking* (WP-EC 2004-01). Instituto Valenciano de Investigaciones Económicas. Retrieved October 20, 2022, from https://rua.ua.es/dspace/bitstream/10045/25116/1/2004_Casado_Sellers_Mas_WP_EC.pdf.
- Casellina, S., Pandolfo, G., & Quagliariello, M. (2020). Applying the Pre-Commitment Approach to Bottom-Up Stress Tests: A New Old Story. *Journal of Economics and Business*, *112*(C).
- Cassa Depositi e Prestiti. (2022). *2021 Annual Report: The Results of Cassa Depositi e Prestiti* [PDF file]. Retrieved October 20, 2022, from https://www.cdp.it/resources/cms/documents/RFA_2021_Gruppo_CDP_ENG.pdf.
- Casu, B., & Girardone, C. (2009). Testing the Relationship between Competition and Efficiency in Banking: A Panel Data Analysis. *Economics Letters*, *105*(1), 134–137.

- CDP (Cassa Depositi e Prestiti). (2006). *Report and Financial Statements at 31 December 2005* [PDF file]. Retrieved October 20, 2022, from https://www.cdp.it/resources/cms/documents/Cdp_Report_Financial_Statements_2005.pdf.
- CDP (Cassa Depositi e Prestiti). (2018). *Annual Report 2018* [PDF file]. Retrieved October 20, 2022, from <https://www.cdp.it/resources/cms/documents/CDP%20RFA%202018%20UK.pdf>.
- CDP (Cassa Depositi e Prestiti). (2021). *Annual Report 2020* [PDF file]. Retrieved October 20, 2022, from https://www.cdp.it/resources/cms/documents/CDP-Annual-Report-2020_ENG.pdf.
- CECA (Confederación Española de Cajas de Ahorros). (n.d.). *Who We Represent*. Retrieved October 20, 2022, from <https://www.ceca.es/eng/a-quien-representamos/>.
- Cecchetti, S. G. (1999). Future of Financial Intermediation and Regulation: An Overview. *Current Issues in Economics and Finance*, 5(8), 1–6.
- CECEI (Comité des Établissements de Crédit et des Entreprises d'Investissement). (2009). *2008: Rapport Annuel du Comité des Établissements de Crédit et des Entreprises d'Investissement* [PDF file]. Retrieved October 20, 2022, from https://www.banque-france.fr/fileadmin/user_upload/banque_de_france/archipel/publications/cecei_ra/cecei_ra_2008.pdf.
- CFPB (Consumer Financial Protection Bureau). (2013). *Understanding the Effects of Certain Deposit Regulations on Financial Institutions' Operations: Findings on Relative Costs for Systems, Personnel, and Processes at Seven Institutions* [PDF file]. Retrieved October 20, 2022, from https://files.consumerfinance.gov/f/201311_cfpb_report_findings-relative-costs.pdf.
- CFTC (Commodity Futures Trading Commission). (2014). Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds. *Federal Register*, 79(21), 5808–6075.
- Che, Y. K. (1995). Revolving Doors and the Optimal Tolerance for Agency Collusion. *RAND Journal of Economics*, 26(3), 378–397.
- Chen, Y., & Hasan, I. (2006). The Transparency of the Banking System and the Efficiency of Information-Based Bank Runs. *Journal of Financial Intermediation*, 15(3), 307–331.
- Cheung, S. N. (1978). *The Myth of Social Cost*. San Francisco, CA: Cato Institute.

- Citigroup. (2001). *2000 Annual Report: Lead. By Example* [PDF file]. Retrieved October 20, 2022, from <https://www.citigroup.com/southafrica/homepage/data/ap20ar.pdf>.
- Citigroup. (2003). *Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the Fiscal Year Ended December 31, 2002* [PDF file]. Retrieved October 20, 2022, from <https://www.citigroup.com/citi/investor/data/k02c.pdf>.
- Citigroup. (2008). *Citi Successfully Completes Sale of German Retail Banking Operation to Crédit Mutuel-CIC: Citi Receives All-Cash Consideration of Euro 5.2 Billion* [PDF file]. Retrieved October 20, 2022, from <https://www.citigroup.com/citi/news/2008/081205a.pdf>.
- Citigroup. (2012). *Citigroup Announces Repositioning Actions to Further Reduce Expenses and Improve Efficiency* [Press release]. Retrieved October 20, 2022, from <https://www.citigroup.com/citi/news/2012/121205a.htm>.
- Citigroup. (2014). *2013 Annual Report* [PDF file]. Retrieved October 20, 2022, from https://www.citigroup.com/citi/investor/quarterly/2014/ar13c_en.pdf.
- Citigroup. (2019). *2018 Annual Report*. Retrieved October 20, 2022, from <https://www.citigroup.com/citi/investor/quarterly/2019/annual-report/>.
- Citigroup. (2020). *Citi Timeline*. Retrieved October 20, 2022, from <https://www.citigroup.com/citi/about/timeline/>.
- Citigroup. (2021). *2020 Annual Report* [PDF file]. Retrieved October 20, 2022, from https://www.citigroup.com/citi/investor/quarterly/2021/ar20_en.pdf?ieNocache=516.
- Clark, J. M. (1940). Toward a Concept of Workable Competition. *American Economic Review*, 30(2), 241–256.
- Clarkson, K. W., Miller, R. L., & Cross, F. B. (2010). *Business Law: Text and Cases: Legal, Ethical, Global, and Corporate Environment* (12th ed.). Mason, OH: Cengage Learning.
- Coccoresse, P., & Pellicchia, A. (2010). Testing the “Quiet Life” Hypothesis in the Italian Banking Industry. *Economic Notes*, 39(3), 173–202.
- Cohen, J. E. (1986). The Dynamics of the “Revolving Door” on the FCC. *American Journal of Political Science*, 30(4), 689–708.
- Commerzbank. (1921). *Einundfünfzigster Jahresbericht der Commerz- und Privat-Bank Aktiengesellschaft Hamburg-Berlin für das Geschäftsjahr 1920* [PDF file]. Retrieved October 20, 2022, from https://www.commerzbank.de/media/konzern_1/geschichte/download_8/1920_Geschaeftsbericht.pdf.

- Commerzbank. (1930). *Jahres-Bericht über das 60. Geschäftsjahr 1929* [PDF file]. Retrieved October 20, 2022, from https://www.commerzbank.de/media/konzern_1/geschichte/download_8/1929_Geschaeftsbericht.pdf.
- Commerzbank. (2001). *Geschäftsbericht 2000* [PDF file]. Retrieved October 20, 2022, from https://www.commerzbank.de/media/aktionaere/service/archive/konzern/2011_2/GB_2010.pdf.
- Commerzbank. (2008). *Commerzbank übernimmt Dresdner Bank und wird führende Bank für Privat- und Firmenkunden in Deutschland* [Press release]. Retrieved October 20, 2022, from https://www.commerzbank.de/de/hauptnavigation/presse/pressemitteilungen/archiv1/2008/quartal_08_03/presse_archiv_detail_08_03_4539.html.
- Commerzbank. (2009a). *Die neue Commerzbank: “Roadmap 2012”: Focus, Optimization, Downsizing* [PDF file]. Retrieved October 20, 2022, from https://www.commerzbank.com/media/aktionaere/vortrag_1/2009_3/090508_Blessing_englisch_final_Internet.pdf.
- Commerzbank. (2009b). *Q3: Interim Report* [PDF file]. Retrieved July 7, 2020, from https://www.commerzbank.de/media/aktionaere/service/archive/konzern/2009_2/Q3_2009_Zwischenbericht_EN.pdf.
- Commerzbank. (2011). *Geschäftsbericht 2010* [PDF file]. Retrieved October 20, 2022, from https://www.commerzbank.de/media/aktionaere/service/archive/konzern/2011_2/GB_2010.pdf.
- Commerzbank. (2020). *Commerzbank’s History*. Retrieved October 20, 2022, from https://www.commerzbank.de/en/hauptnavigation/konzern/geschichte/1990_bis_heute/1990_bis_heute.html.
- Commission of the European Communities. (1970). Report to the Council and the Commission on the Realisation by Stages of Economic and Monetary Union in the Community: ‘Werner Report’: (Definitive Text). *Bulletin of the European Communities*, Supplement 11/1970.
- Commission of the European Communities. (1989). European Council: Madrid 26 and 27 June. *Bulletin of the European Communities*, 22(6), 8–17.
- Commission of the European Communities. (1992). Treaty on European Union. *Official Journal of the European Communities*, C 191, 29.7.1992, 1–112.
- Commission of the European Communities. (1999). *Communication from the Commission: Implementing the Framework for Financial Markets: Action Plan* [PDF file]. Brussels: European Commission. Retrieved October 20, 2022, from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:51999DC0232&from=RO>.

Commission of the European Communities. (2001a). Commission Decision of 6 June 2001 Establishing the Committee of European Securities Regulators. *Official Journal of the European Communities*, L 191, 13.7.2001, 43–44.

Commission of the European Communities. (2001b). Commission Decision of 6 June 2001 Establishing the Committee of European Securities Regulators. *Official Journal of the European Communities*, L 191, 13.7.2001, 45–46.

Commission of the European Communities. (2003a). Commission Decision of 5 November 2003 Amending Decision 2001/527/EC Establishing the Committee of European Securities Regulators. *Official Journal of the European Communities*, L 3, 7.1.2004, 32–32.

Commission of the European Communities. (2003b). Commission Decision of 5 November 2003 Amending Decision 2001/528/EC Establishing the European Securities Committee. *Official Journal of the European Communities*, L 3, 7.1.2004, 33–33.

Commission of the European Communities. (2003c). Commission Decision of 5 November 2003 Establishing the Committee of European Banking Supervisors. *Official Journal of the European Communities*, L 3, 7.1.2004, 28–29.

Commission of the European Communities. (2003d). Commission Decision of 5 November 2003 Establishing the Committee of European Insurance and Occupational Pensions Supervisors. *Official Journal of the European Communities*, L 3, 7.1.2004, 30–31.

Commission of the European Communities. (2003e). Commission Decision of 5 November 2003 Establishing the European Banking Committee. *Official Journal of the European Communities*, L 3, 7.1.2004, 36–37.

Commission of the European Communities. (2003f). Commission Decision of 5 November 2003 establishing the European Insurance and Occupational Pensions Committee. *Official Journal of the European Communities*, L 3, 7.1.2004, 34–35.

Commission of the European Communities. (2005). *White Paper: Financial Services Policy 2005-2010* [PDF file]. Brussels: European Commission. Retrieved October 20, 2022, from [http://www.europarl.europa.eu/meetdocs/2004_2009/documents/com/com_com\(2005\)0629_/com_com\(2005\)0629_en.pdf](http://www.europarl.europa.eu/meetdocs/2004_2009/documents/com/com_com(2005)0629_/com_com(2005)0629_en.pdf).

- Commission of the European Communities. (2008). *Proposal for a Directive of the European Parliament and of the Council Amending Directives 2006/48/EC and 2006/49/EC as Regards Banks Affiliated to Central Institutions, Certain Own Funds Items, Large Exposures, Supervisory Arrangements, and Crisis Management* [PDF file]. Brussels: European Commission. Retrieved October 20, 2022, from <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0602:FIN:EN:PDF>.
- Commission of the European Communities. (2009a). *Commission Staff Working Document: Accompanying Document to the Communication from the Commission: European Financial Supervision: Impact Assessment* [PDF file]. Brussels: European Commission. Retrieved October 20, 2022, from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009SC0715&from=EN>.
- Commission of the European Communities. (2009b). *Communication for the Spring European Council: Driving European Recovery: Volume 1* [PDF file]. Brussels: European Commission. Retrieved October 20, 2022, from <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0114:FIN:EN:PDF>.
- Commission of the European Communities. (2009c). *Communication from the Commission: European Financial Supervision* [PDF file]. Brussels: European Commission. Retrieved June 6, 2019, from <http://ec.europa.eu/transparency/regdoc/rep/1/2009/EN/1-2009-252-EN-F1-1.Pdf>.
- Commission of the European Communities. (2009d). *Proposal for a Directive of the European Parliament and of the Council Amending Directives 2006/48/EC and 2006/49/EC as Regards Capital Requirements for the Trading Book and for Re-Securitisations, and the Supervisory Review of Remuneration Policies* [PDF file]. Brussels: European Commission. Retrieved October 20, 2022, from [http://www.europarl.europa.eu/meetdocs/2009_2014/documents/com/com_com\(2009\)0362_/com_com\(2009\)0362_en.pdf](http://www.europarl.europa.eu/meetdocs/2009_2014/documents/com/com_com(2009)0362_/com_com(2009)0362_en.pdf).
- Committee for the Study of Economic and Monetary Union. (1989). *Report on Economic and Monetary Union in the European Community*. Luxembourg: Office for Official Publications of the European Communities.
- Committee of Wise Men. (2001). *Final Report of the Committee of Wise Men on the Regulation of European Securities Markets* [PDF file]. Brussels: European Securities and Markets Authority. Retrieved October 20, 2022, from https://www.esma.europa.eu/system/files_force/library/2015/11/lamfalussy_report.pdf?download=1.

- Committee on Banking, Housing, and Urban Affairs. (2010). *Prohibiting Certain High-Risk Investment Activities by Banks and Bank Holding Companies: Hearing Before the Committee on Banking, Housing, and Urban Affairs: United States Senate: One Hundred Eleventh Congress, Second Session on Examining Recent Restrictions Placed on Commercial Banks and Bank Holding Companies' High-Risk Investment Activities* [PDF file]. Washington, DC: Government Printing Office. Retrieved October 20, 2022, from <https://www.govinfo.gov/content/pkg/CHRG-111shrg57709/pdf/CHRG-111shrg57709.pdf>.
- Committee on Financial Services (2014). *Assessing the Impact of the Dodd-Frank Act Four Years Later: Hearing before the Committee on Financial Services: U.S. House of Representatives: One Hundred Thirteenth Congress: Second Session* [PDF file]. Washington, DC: Government Printing Office. Retrieved October 20, 2022, from <https://www.govinfo.gov/content/pkg/CHRG-113hhr91158/pdf/CHRG-113hhr91158.pdf>.
- Commodities Futures Trading Commission and the Securities and Exchange Commission. (2012). Further Definition of “Swap Dealer,” “Security-Based Swap Dealer,” “Major Swap Participant,” “Major Security-Based Swap Participant” and “Eligible Contract Participant;” Final Rules. *Federal Register*, 77(100), 30596–30764
- Cook, T. (1978). Regulation Q and the Behavior of Savings and Small Time Deposits at Commercial Banks and the Thrift Institutions. *FRB Richmond Economic Review*, 64(6), 14–28.
- Copeland, T. E., & Weston, J. F. (2014). *Financial Theory and Corporate Policy*. Edinburgh Gate: Pearson Education Limited.
- Corvoisier, S., & Gropp, R. (2002). Bank Concentration and Retail Interest Rates. *Journal of Banking & Finance*, 26(11), 2155–2189.
- Cosma, S., Salvadori, G., & Schwizer, P. G. (2013). Too Small To Be Compliant? Size and Scale Economies in the Compliance Cost structure of Italian Banks. In A. Carretta, & G. Mattarocci (Eds.), *Financial Systems in Troubled Waters: Information, Strategies, and Governance to Enhance Performances in Risky Times* (pp. 219–240). London: Routledge.
- Council of the European Union. (1997a). Council Regulation (EC) No 1103/97 of 17 June 1997 on Certain Provisions Relating to the Introduction of the Euro. *Official Journal of the European Communities*, L 162, 19.6.1997, 1–3.

- Council of the European Union. (1997b). Council Regulation (EC) No 1466/97 of 7 July 1997 on the Strengthening of the Surveillance of Budgetary Positions and the Surveillance and Coordination of Economic Policies. *Official Journal of the European Communities*, L 209, 2.8.1997, 1–5.
- Council of the European Union. (1997c). Council Regulation (EC) No 1467/97 of 7 July 1997 on Speeding Up and Clarifying the Implementation of the Excessive Deficit Procedure. *Official Journal of the European Communities*, L 209, 2.8.1997, 6–11.
- Council of the European Union. (1998). Council Decision of 3 May 1998 in accordance with Article 109j(4) of the Treaty. *Official Journal of the European Communities*, L 139, 11.5.1998, 30–35.
- Council of the European Union. (2002). *2471st Council Meeting: Economic and Financial Affairs: Brussels, 3 December 2002* [Press release]. Retrieved October 20, 2022, from http://europa.eu/rapid/press-release_PRES-02-361_en.htm?locale=en#file.tmp.
- Council of the European Union. (2010a). Council Regulation (EU) No 1096/2010 of 17 November 2010 conferring specific tasks upon the European Central Bank concerning the functioning of the European Systemic Risk Board. *Official Journal of the European Communities*, L 331, 15.12.2010, 162–164.
- Council of the European Union. (2010b). Council Regulation (EU) No 407/2010 of 11 May 2010 Establishing a European Financial Stabilisation Mechanism. *Official Journal of the European Communities*, L 118, 12.5.2010, 1–4.
- Council of the European Union. (2013a). Council Regulation (EU) No 1024/2013 of 15 October 2013 Conferring Specific Tasks on the European Central Bank Concerning Policies Relating to the Prudential Supervision of Credit Institutions. *Official Journal of the European Communities*, L 287, 29.10.2013, 63–89.
- Council of the European Union. (2013b). *Revised Capital Requirements Rules (CRD IV) [First Reading]: Proposal for a Directive of the European Parliament and of the Council on the Access to the Activity of Credit Institutions and the Prudential Supervision of Credit Institutions and Investment Firms and Amending Directive 2002/87/EC of the European Parliament and of the Council on the Supplementary Supervision of Credit Institutions, Insurance Undertakings and Investment Firms in a Financial Conglomerate* [PDF file]. Retrieved October 20, 2022, from <https://register.consilium.europa.eu/doc/srv?l=EN&f=ST%207746%202013%20INIT>.

- Council of the European Union. (2013c). *Revised Capital Requirements Rules (CRD IV) [First Reading] - Proposal for a Regulation of the European Parliament and of the Council on Prudential Requirements for Credit Institutions and Investment Firms* [PDF file]. Retrieved October 20, 2022, from <https://register.consilium.europa.eu/doc/srv?l=EN&f=ST%207747%202013%20INIT>.
- Council of the European Union. (2015). *Statement on Banking Union and Bridge Financing Arrangements for the Single Resolution Fund* [Press release]. Retrieved October 20, 2022, from <https://www.consilium.europa.eu/en/press/press-releases/2015/12/08/statement-by-28-ministers-on-banking-union-and-bridge-financing-arrangements-to-srf/>.
- Council of the European Union. (2016a). *Council Conclusions on a Roadmap to Complete the Banking Union: Report* [Press release]. Retrieved October 20, 2022, from <https://www.consilium.europa.eu/en/press/press-releases/2016/06/17/conclusions-on-banking-union/>.
- Council of the European Union. (2016b). *Interinstitutional File: 2015/0270 (COD)* [PDF file]. Retrieved October 20, 2022, from <http://data.consilium.europa.eu/doc/document/ST-10036-2016-INIT/en/pdf>.
- Council of the European Union. (2017). *Council Conclusions on Action Plan to Tackle Non-Performing Loans in Europe* [Press release]. Retrieved October 20, 2022, from <https://www.consilium.europa.eu/en/press/press-releases/2017/07/11/conclusions-non-performing-loans/>.
- Cox, A. H. (1967). Regulation of Interest on Deposits: An Historical Review. *Journal of Finance*, 22(2), 274–296.
- Craig, B. R., & Dinger, V. (2009). Bank Mergers and the Dynamics of Deposit Interest Rates. *Journal of Financial Services Research*, 2(36), 111–133.
- Crawford, C. (2011). The Repeal of the Glass-Steagall Act and the Current Financial Crisis. *Journal of Business & Economics Research*, 9(1), 127–134.
- Crédit Agricole Group. (2003). *Crédit Agricole S.A. Officially Takes Control of Finaref, Europe's Leading Private Card Operator* [Press release]. Retrieved October 20, 2022, from <https://www.credit-agricole.com/en/finance/finance/financial-press-releases/credit-agricole-s.a.-officially-takes-control-of-finaref-europe-s-leading-private-card-operator>.
- Crédit Agricole S.A. (2003). *Annual Report: 2002* [PDF file]. Retrieved October 20, 2022, from <https://ddd.uab.cat/pub/infanu/29486/iaCREDIT-AGRICOLEa2002ieng.pdf>.

- Crédit Agricole S.A. (2005). *Our Strengths United: 2004 Business Review* [PDF file]. Retrieved October 20, 2022, from <https://ddd.uab.cat/pub/infanu/29486/iaCREDIT-AGRICOLEa2004ieng.pdf>.
- Crédit Mutuel. (2022). *Rapport Financier: Groupe Crédit Mutuel 2021* [PDF file]. Retrieved October 20, 2022, from <https://www.creditmutuel.com/partage/fr/CNCM/telechargements/presse-et-publications/publications/2022/2021-Rapport-Financier-Groupe-Credit-Mutuel-2021.pdf>.
- CSBS (Conference of State Bank Supervisors). (2014). *Community Banking in the 21st Century: Opportunities, Challenges and Perspectives* [PDF file]. Retrieved October 20, 2022, from <https://www.communitybanking.org/~media/files/communitybanking/2013/cbcreport2013.pdf>.
- CSBS (Conference of State Bank Supervisors). (2017). *The Role of State Financial Regulation*. Retrieved October 20, 2022, from <https://www.csbs.org/policy/role-state-financial-regulation>.
- Cunningham, L. A. (2007). A Prescription to Retire the Rhetoric of “Principles-Based Systems” in Corporate Law, Securities Regulation, and Accounting. *Vanderbilt Law Review*, 60(5), 1409–1493.
- Cybo-Ottone, A., & Murgia, M. (2000). Mergers and Shareholder Wealth in European Banking. *Journal of Banking & Finance*, 24(6), 831–859.
- Cyree, K. B. (2016). The Effects of Regulatory Compliance For Small Banks Around Crisis-Based Regulation. *Journal of Financial Research*, 39(3), 215–246.
- Dahl, D., Fuchs, J., Meyer, A. P., & Neely, M. C. (2018). *Compliance Costs, Economies of Scale, and Compliance Performance: Evidence from a Survey of Community Banks* [PDF file]. Federal Reserve Bank of St. Louis. Retrieved April 20, 2021, from <https://www.communitybanking.org/~media/files/compliance%20costs%20economies%20of%20scale%20and%20compliance%20performance.pdf>.
- Dahl, D., Meyer, A., & Neely, M. (2016). *Bank Size, Compliance Costs and Compliance Performance in Community Banking* [PDF file]. Retrieved October 20, 2022, from https://www.communitybanking.org/~media/files/communitybanking/2016/session2_paper2_neely.pdf.
- Dal Bó, E. (2006). Regulatory Capture: A Review. *Oxford Review of Economic Policy*, 22(2), 203–225.

- Dal Bó, E., Dal Bó, P., & Di Tella, R. (2006). “Plata o Plomo?” :Bribe and Punishment in a Theory of Political Influence. *American Political Science Review*, 100(1), 41–53.
- Daripa, A., & Varotto, S. (1998). Value at Risk and Precommitment: Approaches to Market Risk Regulation. *Economic Policy Review*, 4(3), 137–143.
- Davis, K. C. (1958). *Administrative Law Treatise*. St. Paul, MN: West Publishing Company.
- Davis, K. C. (1971). *Administrative Law Treatise: 1970 Supplement*. St. Paul, MN: West Publishing Company.
- De Figueiredo, R. J., & Edwards, G. (2005). Does Private Money Buy Public Policy? Campaign Contributions and Regulatory Outcomes in Telecommunications. *Journal of Economics & Management Strategy*, 16(3), 547–576.
- De Larosière, J. (2009). *The High-Level Group on Financial Supervision in the EU: Chaired by Jacques de Larosière: Report* [PDF file]. Brussels: European Commission. Retrieved October 20, 2022, from http://ec.europa.eu/economy_finance/publications/pages/publication14527_en.pdf.
- De Nederlandsche Bank. (2015). *Perspective on the Structure of the Dutch Banking Sector: Efficiency and Stability through Competition and Diversity* [PDF file]. Retrieved October 20, 2022, from <https://www.devолksbank.nl/assets/files/Investor-Relations/Jaarverslagende-Volksbank/Annual-Report-de-Volksbank-N.V.-2018.pdf>.
- De Nicoló, G. (2001). *Size, Charter Value and Risk in Banking: An International Perspective*. Retrieved from <https://dx.doi.org/10.2139/ssrn.255465>.
- De Nicoló, G., & Kwast, M. L. (2002). Systemic Risk and Financial Consolidation: Are they Related?. *Journal of Banking & Finance*, 26(5), 861–880.
- De Nicoló, G., Bartholomew, P., Zaman, J., & Zephirin, M. (2004). Bank Consolidation, Internationalization, and Conglomeration: Trends and Implications for Financial Risk. *Financial Markets, Institutions & Instruments*, 13(4), 173–217.
- De Nicoló, G., Favara, G., & Ratnovski, L. (2012). Externalities and Macroprudential Policy. *Journal of Financial Perspectives*, 2(1), 1–11.
- De Soto, J. H. (2009). *The Theory of Dynamic Efficiency*. London: Routledge.
- Delis, M. D., & Tsionas, E. G. (2009). The Joint Estimation of Bank-Level Market Power and Efficiency. *Journal of Banking & Finance*, 33(10), 1842–1850.

- Delis, M. D., Molyneux, P., & Pasiouras, F. (2011). Regulations and Productivity Growth in Banking: Evidence from Transition Economies. *Journal of Money, Credit and Banking*, 43(4), 735–764.
- Delis, M. D., Staikouras, P. K., & Tsoumas, C. (2017). Formal Enforcement Actions and Bank Behavior. *Management Science*, 63(4), 959–987.
- Deloitte. (2021). *Deloitte GmbH: Prüfung der Sonderauswertung der BaFin zu Mitarbeitergeschäften mit Bezug zur Wirecard AG* [PDF file]. Retrieved October 20, 2022, from https://www.bafin.de/SharedDocs/Downloads/DE/Bericht/dl_deloitte-pruefung_der_sonderauswertung_mitarbeitergeschaefte.pdf;jsessionid=1ECD216CF30B50D100590B781E2FEF97.2_cid394?__blob=publicationFile&v=3.
- DeLong, G. L. (2001). Stockholder Gains from Focusing Versus Diversifying Bank Mergers. *Journal of Financial Economics*, 59(2), 221–252.
- Deltuvaitė, V. (2010). The Concentration-Stability Relationship in the Banking System: An Empirical Research. *Economics & Management*, 15, 900–909.
- Demirgüç-Kunt, A., Detragiache, E., & Tressel, T. (2008). Banking on the Principles: Compliance with Basel Core Principles and Bank Soundness. *Journal of Financial Intermediation*, 17(4), 511–542.
- Demsetz, H. (1973a). Industry Structure, Market Rivalry, and Public Policy. *The Journal of Law & Economics*, 16(1), 1–9.
- Demsetz, H. (1973b). The Market Concentration Doctrine: An Examination of Evidence and a Discussion of Policy. *AEI-Hoover Policy Studies*, 42(7), 1–30.
- Demsetz, R. S., & Strahan, P. E. (1995). Historical Patterns and Recent Changes in the Relationship between Bank Holding Company Size and Risk. *Economic Policy Review*, 1(2), 13–26.
- Deng, F., & Leonard, G. K. (2008). Allocative and Productive Efficiency. In W. D. Collins, & J. Angland (Eds.), *Issues in Competition Law and Policy*. Chicago: ABA Section of Antitrust Law.
- Denzau, A. T., & Munger, M. (1986). Legislators and Interest Groups: How Unorganized Interests Get Represented. *American Political Science Review*, 80(1), 89–106.

- DePamphilis, D. (2017). *Mergers, Acquisitions, and Other Restructuring Activities: An Integrated Approach to Process, Tools, Cases, and Solutions* (9th ed.). Cambridge, MA: Academic Press.
- Deutsche Bank. (2010). *Jahresbericht 2009: Gestärkt in eine neue Zeit* [PDF file]. Retrieved October 20, 2022, from https://investor-relations.db.com/files/documents/annual-reports/DB_Jahresbericht_2009.pdf?language_id=3.
- Deutscher Bundestag. (2015). *Antrag der Fraktionen der CDU/CSU und SPD: Zu den Überlegungen der Europäischen Kommission zur Schaffung einer Europäischen Einlagensicherung* [PDF file]. Retrieved October 20, 2022, from <http://dip21.bundestag.de/dip21/btd/18/076/1807644.pdf>.
- Deutscher Bundestag. (2016). *Antrag der Fraktionen der CDU/CSU und SPD: zu dem Vorschlag für eine Verordnung des Europäischen Parlaments und des Rates zur Änderung der Verordnung (EU) Nr. 806/2014 im Hinblick auf die Schaffung eines europäischen Einlagenversicherungssystems* [PDF file]. Retrieved October 20, 2022, from <http://dip21.bundestag.de/dip21/btd/18/076/1807644.pdf>.
- Deutscher Bundestag. (2018). *Antrag der Fraktionen der CDU/CSU und SPD: Zu den Überlegungen der Europäischen Kommission zur Schaffung einer Europäischen Einlagensicherung* [PDF file]. Retrieved October 20, 2022, from <https://dip21.bundestag.de/dip21/btd/18/065/1806548.pdf>.
- Deutscher Bundestag. (2020a). *Apas-Chef hat mit Wirecard-Aktien gehandelt* [Press release]. Retrieved October 20, 2022, from <https://www.bundestag.de/presse/hib/813032-813032>.
- Deutscher Bundestag. (2020b). *BAFA-Beamte verteidigen ihre Arbeit* [Press release]. Retrieved October 20, 2022, from <https://www.bundestag.de/presse/hib/813030-813030>.
- Deutscher Bundestag. (2020c). *Besorgnis wegen des Wirecard-Konkurses* [Press release]. Retrieved October 20, 2022, from <https://www.bundestag.de/presse/hib/703910-703910>.
- Deutscher Bundestag. (2020d). *Bilanzbetrug durch kompetente und unabhängige Wirtschaftsprüfung schnell aufdecken und erfolgreich bekämpfen* [PDF file]. Retrieved October 20, 2022, from <https://lisa-paus.de/wp-content/uploads/2020/11/1923730-Antrag-Wirtschaftspru%CC%88fer.pdf>.
- Deutscher Bundestag. (2020e). *Drei Fraktionen fordern Wirecard-Untersuchungsausschuss* Retrieved October 20, 2022, from <https://www.bundestag.de/dokumente/textarchiv/2020/kw37-de-untersuchungsausschuss-wirecard-790864>.

- Deutscher Bundestag. (2020f). *Reformleitlinien nach dem Wirecard-Skandal* [PDF file]. Retrieved October 20, 2022, from <https://dserver.bundestag.de/btd/19/231/1923120.pdf>.
- Deutscher Bundestag. (2020g). Sachstand: Möglichkeiten der Bundesanstalt für Finanzdienstleistungsaufsicht zur Bilanzkontrolle von Unternehmen vor Abschluss der Prüfung durch die Deutsche Prüfstelle für Rechnungslegung DPR e.V. *Wissenschaftliche Dienste*. Retrieved October 20, 2022, from <https://www.bundestag.de/resource/blob/704760/f63518af77fe9c4ba03b9e9ae3309525/WD-4-070-20-pdf-data.pdf>.
- Deutscher Bundestag. (2020h). *Sicherheitspolitische Aspekte im „Fall Wirecard“* [PDF file]. Retrieved October 20, 2022, from <https://dip21.bundestag.de/dip21/btd/19/234/1923489.pdf>.
- Deutscher Bundestag. (2020i). *Stenografischer Bericht: 174. Sitzung* (Plenarprotokoll 19/174). Retrieved October 20, 2022, from <https://dip21.bundestag.de/dip21/btp/19/19174.pdf>.
- Deutscher Bundestag. (2020j). *Wirtschaftsprüfung reformieren, Interessenkonflikte reduzieren* [PDF file]. Retrieved October 20, 2022, from <https://dip21.bundestag.de/dip21/btd/19/222/1922204.pdf>.
- Deutscher Bundestag. (2020k). *Zu Gutenberg berichtet vom Gespräch mit der Kanzlerin*. Retrieved October 20, 2022, from <https://www.bundestag.de/dokumente/textarchiv/2020/kw51-pa-3ua-812244>.
- Deutscher Bundestag. (2020l). *Zur Rolle der Aufsichtsbehörden im Wirecard-Skandal* [PDF file]. Retrieved October 20, 2022, from <https://dip21.bundestag.de/dip21/btd/19/214/1921494.pdf>.
- Deutscher Bundestag. (2021a). *Ausschuss: Strukturelle Unzulänglichkeiten bei der BaFin wurden offengelegt*. Retrieved October 20, 2022, from <https://www.bundestag.de/dokumente/textarchiv/2021/kw12-pa-3-ua-fr-828432>.
- Deutscher Bundestag. (2021b). *BaFin-Exekutivdirektorin äußert sich zum Leerverkaufsverbot* [Press release]. Retrieved October 20, 2022, from <https://www.bundestag.de/presse/hib/831418-831418>.
- Deutscher Bundestag. (2021c). *Beamte des Finanzministeriums sehen Hauptschuld bei der BaFin*. Retrieved October 20, 2022, from <https://www.bundestag.de/dokumente/textarchiv/2021/kw15-pa-3ua-fr-831914>.

- Deutscher Bundestag. (2021d). *Beschlussempfehlung und Bericht des 3. Untersuchungsausschusses der 19. Wahlperiode gemäß Artikel 44 des Grundgesetzes: Beschlussempfehlung* [PDF file]. Retrieved October 20, 2022, from <https://dserver.bundestag.de/btd/19/309/1930900.pdf>.
- Deutscher Bundestag. (2021e). *Christine Lambrecht: Justizministerium hat alle Aufgaben wahrgenommen*. Retrieved October 20, 2022, from <https://www.bundestag.de/dokumente/textarchiv/2021/kw16-pa-3ua-mi-831906>.
- Deutscher Bundestag. (2021f). *Europäische Finanzaufsicht kritisiert deutsche Behörden* [Press release]. Retrieved October 20, 2022, from <https://www.bundestag.de/presse/hib/826626-826626>.
- Deutscher Bundestag. (2021g). *Geheimdienste spielen Wirecard-Verbindungen herunter*. Retrieved October 20, 2022, from <https://www.bundestag.de/dokumente/textarchiv/2021/kw15-pa-3ua-do-831904>.
- Deutscher Bundestag. (2021h). *Leistung der Wirtschaftsprüfer im Fall Wirecard hinterfragt*. Retrieved October 20, 2022, from <https://www.bundestag.de/dokumente/textarchiv/2021/kw11-pa-3-ua-fr-827990>.
- Deutscher Bundestag. (2021i). *Nachfragen zur Rolle der Financial Intelligence Unit beim Wirecard-Skandal* [PDF file]. Retrieved October 20, 2022, from <https://dip21.bundestag.de/dip21/btd/19/264/1926494.pdf>.
- Deutscher Bundestag. (2021j). *Vertreter des Kanzleramts sagt zum Engagement für Wirecard in China aus*. Retrieved October 20, 2022, from <https://www.bundestag.de/dokumente/textarchiv/2021/kw02-pa-3ua-816148>.
- Deutscher Bundestag. (2021k). *Von Beust schrieb Briefe im Auftrag von Wirecard* [Press release]. Retrieved October 20, 2022, from <https://www.bundestag.de/presse/hib/816972-816972>.
- Deutscher Bundestag. (2021l). *Wirecard vergab besonders großzügige Beraterverträge* [Press release]. Retrieved October 20, 2022, from <https://www.bundestag.de/presse/hib/829358-829358>.
- Deutscher Bundestag. (2021m). *Zeuge: BaFin ging von Gefährdung des Marktvertrauens aus* [Press release]. Retrieved October 20, 2022, from <https://www.bundestag.de/presse/hib/830992-830992>.

- Deutscher Bundestag. (n.d.). *Einsetzungsbeschluss und Untersuchungsauftrag*. Retrieved October 20, 2022, from <https://www.bundestag.de/ausschuesse/untersuchungsausschuesse/3untersuchungsausschuss/auftrag-797810>.
- Dewald, W. G. (1972). The National Monetary Commission: A Look Back. *Journal of Money, Credit and Banking*, 4(4), 930–956.
- Dewatripont, M., & Tirole, J. (1994). *The Prudential Regulation of Banks*. Cambridge, MA: MIT Press.
- DeYoung, R. (1997). Bank Mergers, X-Efficiency, and the Market for Corporate Control. *Managerial Finance*, 23(1), 32–47.
- DeYoung, R. (2007). Safety, Soundness, and the Evolution of the US Banking Industry. *Economic Review* (Federal Reserve Bank of Atlanta), 92(1/2), 41–66.
- DeYoung, R., & Whalen, G. (1994). *Banking Industry Consolidation: Efficiency Issues* (Jerome Levy Economics Institute Working Paper No. 110). Levy Economics Institute of Bard College.
- DeYoung, R., Evanoff, D. D., & Molyneux, P. (2009). Mergers and Acquisitions of Financial Institutions: A Review of the Post-2000 Literature. *Journal of Financial Services Research*, 36(2-3), 87–110.
- Diamond, D. W., & Dybvig, P. H. (1983). Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy*, 91(3), 401–419.
- Dick, A. A. (2007). Market Size, Service Quality, and Competition in Banking. *Journal of Money, Credit & Banking*, 39(1), 49–81.
- Docking, D. S. (2012). Déjà Vu? A Comparison of the 1980s and 2008 Financial Crises. *Journal of Business Economics and Finance*, 1(1), 17–29.
- Dohms, H.-R. (2017). Das 250-Millionen-Euro-Rätsel des Börsenwunders Wirecard. *manager magazin*. Retrieved October 20, 2022, from <https://www.manager-magazin.de/digitales/it/wirecard-das-250-millionen-euro-raetsel-des-zahlungsdienstleisters-a-1135587.html>.
- Dolar, B., & Dale, B. (2020). The Dodd-Frank Act's Non-Uniform Regulatory Impact on the Banking Industry. *Journal of Banking Regulation*, 21(2), 188–195.
- Dolar, B., & Shughart, W. F. (2007). The Wealth Effects of the USA Patriot Act: Evidence from the Banking and Thrift Industries. *Journal of Money Laundering Control*, 10(3), 300–317.

- Dombret, A. (2018). *Finding the Right Measure of Consolidation in the Banking Sector* [PDF file]. Frankfurt am Main: Bank for International Settlements. Retrieved October 20, 2022, from <https://www.bis.org/review/r180511c.pdf>.
- Dowd, K. (1996). The Case for Financial Laissez-Faire. *Economic Journal*, 106(436), 679–87.
- DPA (Deutsche Presseagentur). (2020). Wirecard-Skandal: Umstrittener Apas-Chef freigestellt. *Süddeutsche Zeitung*. Retrieved October 20, 2022, from <https://www.sueddeutsche.de/politik/bundestag-wirecard-skandal-umstrittener-apas-chef-freigestellt-dpa.urn-newsml-dpa-com-20090101-201214-99-689039#:~:text=%22Peter%20Altmaier%20bleibt%20aber%20aufgefordert,klare%20Regeln%2C%20die%20Interessenkonflikte%20ausschlie%C3%9Fen>.
- Draghi, M. (2016). *Welcome Address* [Speech]. Frankfurt am Main: European Systemic Risk Board. Retrieved October 20, 2022, from <https://www.esrb.europa.eu/news/speeches/date/2016/html/sp160922.en.html>.
- Drutman, L. (2015). *The Business of America is Lobbying. How Corporations Became Politicized and Politics Became More Corporate*. Oxford: Oxford University Press.
- Duchin, R., & Sosyura, D. (2012). The Politics of Government Investment. *Journal of Financial Economics*, 106(1), 24–48.
- Dullien, S., & Herr, H. (2010). *Die EU-Finanzmarktreform: Stand und Perspektiven im Frühjahr 2010*. Berlin: Friedrich-Ebert-Stiftung.
- Dwyer Jr, G. P. (1996). Wildcat Banking, Banking Panics, and Free Banking in the United States. *Economic Review* (Federal Reserve Bank of Atlanta), 81(3-6), 1–20.
- DZ Bank. (2002). *Geschäftsbericht 2001* [PDF file]. Retrieved October 20, 2022, from https://www.dzbank.de/content/dam/dzbank_de/de/home/profil/investor_relations/Berichte/Archiv/DZ%20BANK_Konzern_2001.pdf.
- DZ Bank. (2011). *2010 Geschäftsbericht* [PDF file]. Retrieved October 20, 2022, from https://www.dzbank.de/content/dam/dzbank_de/de/home/profil/investor_relations/Berichte/2010/Sonstige%20Berichte/DZ_BANK_Konzern_Geschaeftsbericht_2010.pdf.
- DZ Bank. (2020). *Die Geschichte der DZ Bank: Die genossenschaftlichen Werte*. Retrieved October 20, 2022, from <https://www.dzbank.de/content/dzbank/de/home/die-dz-bank/profil/historie.html>.

- EBA (European Banking Authority). (2014). *EBA FINAL Draft Regulatory Technical Standards: On the Content of Resolution Plans and the Assessment of Resolvability* [PDF file]. Retrieved October 20, 2022, from <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/933992/dec9cabc-271f-431f-9d4b-015b5998899c/EBA-RTS-2014-15%20%28Final%20draft%20RTS%20on%20Resolution%20Plan%20Contents%29.pdf?retry=1>.
- EBA (European Banking Authority). (2015). *Opinion of the European Banking Authority on the Application of the Principle of Proportionality to the Remuneration Provisions in Directive 2013/36/EU* [PDF file]. Retrieved October 21, 2022, from <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/983359/588134c4-c438-4315-9b61-4fb5b4e67b15/EBA-Op-2015-25%20Opinion%20on%20the%20Application%20of%20Proportionality.pdf?retry=1>.
- ECB (European Central Bank). (2013). *ECB Starts Comprehensive Assessment in Advance of Supervisory Role* [Press release]. Retrieved October 21, 2022, from <https://www.bankingsupervision.europa.eu/press/pr/date/2013/html/sr131023.en.html>.
- ECB (European Central Bank). (2014a). Decision of the European Central Bank of 24 February 2014 on the Organisation of Preparatory Measures for the Collection of Granular Credit Data by the European System of Central Banks. *Official Journal of the European Communities*, L 104, 8.4.2014, 72–79.
- ECB (European Central Bank). (2014b). *Guide to Banking Supervision* [PDF file]. Retrieved October 21, 2022, from <https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssmguidebankingsupervision201411.en.pdf>.
- ECB (European Central Bank). (2014c). Regulation (EU) No 468/2014 of the European Central Bank of 16 April 2014 Establishing the Framework for Cooperation within the Single Supervisory Mechanism Between the European Central Bank and National Competent Authorities and with national designated authorities (SSM Framework Regulation). *Official Journal of the European Communities*, L 141, 14.5.2014, 1–50.
- ECB (European Central Bank). (2015). *AnaCredit*. Retrieved October 21, 2022, from https://www.ecb.europa.eu/stats/money_credit_banking/anacredit/html/index.en.html.
- ECB (European Central Bank). (2016). Regulation (EU) 2016/867 of the European Central Bank of 18 May 2016 on the Collection of Granular Credit and Credit Risk Data (ECB/2016/13). *Official Journal of the European Communities*, L 144, 1.6.2016, 44–98.

- ECB (European Central Bank). (2017). *Report on Financial Structures* [PDF file]. Retrieved October 21, 2022, from <https://www.ecb.europa.eu/pub/pdf/other/reportonfinancialstructures201710.en.pdf>.
- ECB (European Central Bank). (2019). *Modern Banking Supervision* [Speech]. Retrieved October 21, 2022, from <https://www.bankingsupervision.europa.eu/press/speeches/date/2019/html/ssm.sp190521~df9abc5c03.en.html>.
- ECB (European Central Bank). (2022a). *Balance Sheet Items* [Data set]. Retrieved October 21, 2022, from [https://sdw.ecb.europa.eu/browseTable.do?org.apache.struts.taglib.html.TOKEN=ff4a00089ae2b2a4b5e935e9fbc63fcb&df=true&REF_AREA.14=DE&REF_AREA.14=ES&REF_AREA.14=FR&REF_AREA.14=IT&REF_AREA.14=NL&MAX_DOWNLOAD_SERIES=500&DATASET=0&org.apache.struts.taglib.html.TOKEN=7d9c8aac4dd70a75cee90b4e592d8428&org.apache.struts.taglib.html.TOKEN=9fa3e17a59066dd3051c824c299c4a3f&legendRef=reference&BS_REP_SECTOR.14=A&BS_ITEM.14=T00&node=1491&SERIES_MAX_NUM=50&DATA_TYPE.14=1&activeTab=BSI&start=2000&end=2018&submitOptions.x=0&submitOptions.y=0&trans=N&q=&type=.](https://sdw.ecb.europa.eu/browseTable.do?org.apache.struts.taglib.html.TOKEN=ff4a00089ae2b2a4b5e935e9fbc63fcb&df=true&REF_AREA.14=DE&REF_AREA.14=ES&REF_AREA.14=FR&REF_AREA.14=IT&REF_AREA.14=NL&MAX_DOWNLOAD_SERIES=500&DATASET=0&org.apache.struts.taglib.html.TOKEN=7d9c8aac4dd70a75cee90b4e592d8428&org.apache.struts.taglib.html.TOKEN=9fa3e17a59066dd3051c824c299c4a3f&legendRef=reference&BS_REP_SECTOR.14=A&BS_ITEM.14=T00&node=1491&SERIES_MAX_NUM=50&DATA_TYPE.14=1&activeTab=BSI&start=2000&end=2018&submitOptions.x=0&submitOptions.y=0&trans=N&q=&type=)
- ECB (European Central Bank). (2022b). *EU Structural Financial Indicators* [Data set]. Retrieved October 21, 2022, from <https://sdw.ecb.europa.eu/reports.do?node=1000002869>.
- ECB (European Central Bank). (2022c). *List of Supervised Entities* [PDF file]. Retrieved October 21, 2022, from <https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.listofsupervisedentities202208.en.pdf?c16cf5bdb6d541598f78c2edca698a9b>.
- ECB (European Central Bank). (2022d). [Data set]. Retrieved October 21, 2022, from <https://sdw.ecb.europa.eu/browseSelection.do?type=series&node=SEARCHRESULTS&q=SSI?&DATASET=0&DATASET=1>
- Eckstein, P., Strozyk, J. L., & Strunz, B. (2020). Behörde gab Dutzende Hinweise nicht weiter. *tagesschau*. Retrieved August 11, 2020, from <https://www.tagesschau.de/investigativ/ndr/wirecard-ifo-verdachtsmeldungen-101.html>.
- Eckstein, P., Strozyk, J. L., & Strunz, B. (2021). Nord-Politiker lobbyierten für Wirecard. *NDR*. Retrieved October 21, 2022, from <https://www.ndr.de/nachrichten/investigation/Nord-Politiker-lobbyierten-fuer-Skandalbank,gluecksspiel340.html>.
- Edwards, F. R. (1968). The One-Bank Holding Company Conglomerate: Analysis and Evaluation. *Vanderbilt Law Review*, 22(6), 1275–1310.

- Eisenbach, T. M., Lucca, D. O., & Townsend, R. M. (2017). *The Economics of Bank Supervision* (NBER Working Paper No 22201). Retrieved from https://www.nber.org/system/files/working_papers/w22201/w22201.pdf.
- Ekkayokkaya, M., Holmes, P., & Paudyal, K. (2009). The Euro and the Changing Face of European Banking: Evidence from Mergers and Acquisitions. *European Financial Management*, 15(2), 451–476.
- Ellehausen, G. (1998). *The Cost of Bank Regulation: A Review of the Evidence* (Staff Study No. 171). Washington, DC: Board of Governors of the Federal Reserve System.
- Ellehausen, G. E., & Kurtz, R. D. (1988). Scale Economies in Compliance Costs for Federal Consumer Credit Regulations. *Journal of Financial Services Research*, 1(2), 147–159.
- Ellehausen, G., & Lowrey, B. R. (1997). *The Cost of Implementing Consumer Financial Regulations: An Analysis of Experience with the Truth in Savings Act* (Staff Studies No. 170). Washington, DC: Board of Governors of the Federal Reserve System.
- Engerer, H., & Schrooten, M. (2004). Erfolgreiche Sparkassenreformen in Europa. *Wochenbericht des DIW Berlin*, 71(24), 350–354.
- ESMA (European Securities and Markets Authority). (2019). *Opinion of the European Securities and Markets Authority of 18 February 2019 on a Proposed Emergency Measure by BaFin under Section 1 of Chapter V of Regulation (EU) No 236/2012* [PDF file]. Retrieved October 21, 2022, from https://www.esma.europa.eu/sites/default/files/library/esma70-146-19_opinion_on_bafin_emergency_measure_under_the_ssr_wirecard.pdf.
- ESMA (European Securities and Markets Authority). (2020). *Fast Track Peer Review on the Application of the Guidelines on the Enforcement of Financial Information (ESMA/2014/1293) by BaFin and FEEP in the Context of Wirecard: Peer Review Report* [PDF file]. Retrieved October 21, 2022, from https://www.esma.europa.eu/sites/default/files/library/esma42-111-5349_fast_track_peer_review_report_-_wirecard.pdf.
- ESRB (European Systemic Risk Board). (2014). *Is Europe Overbanked?* (Reports of the Advisory Scientific Committee No. 4). Frankfurt am Main: European Systemic Risk Board (ESRB), European System of Financial Supervision. Retrieved October 21, 2022, from <https://www.econstor.eu/bitstream/10419/193614/1/Reports-ASC-4.pdf>.
- Estrella, A. (2001). Mixing and Matching: Prospective Financial Sector Mergers and Market Valuation. *Journal of Banking & Finance*, 25(12), 2367–2392.

- Euro Summit. (2012). *Euro Area Summit Statement* [PDF file]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/media/21400/20120629-euro-area-summit-statement-en.pdf>.
- Euro Summit. (2018a). *Euro Summit Meeting (29 June 2018): Statement* [PDF file]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/media/35999/29-euro-summit-statement-en.pdf>.
- Euro Summit. (2018b). *Statement of the Euro Summit, 14 December 2018* [Press release]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/en/press/press-releases/2018/12/14/statement-of-the-euro-summit-14-december-2018/>.
- Euro Summit. (2021). *Statement of the Euro Summit, Meeting in Inclusive Format* [PDF file]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/media/53576/20211216-euro-summit-statement-en.pdf>.
- Eurogroup, & Council of the European Union. (2013). *Statement of Eurogroup and ECOFIN Ministers on the SRM backstop* [PDF file]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/media/21899/20131218-srm-backstop-statement.pdf>.
- Eurogroup. (2018). *Eurogroup Report to Leaders on EMU Deepening* [Press release]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/en/press/press-releases/2018/12/04/eurogroup-report-to-leaders-on-emu-deepening/>.
- Eurogroup. (2020). *Statement of the Eurogroup in Inclusive Format on the ESM Reform and the Early Introduction of the Backstop to the Single Resolution Fund* [Press release]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/de/press/press-releases/2020/11/30/statement-of-the-eurogroup-in-inclusive-format-on-the-esm-reform-and-the-early-introduction-of-the-backstop-to-the-single-resolution-fund/>.
- Eurogroup. (2022). *Eurogroup Statement on the Future of the Banking Union of 16 June 2022* [Press release]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/en/press/press-releases/2022/06/16/eurogroup-statement-on-the-future-of-the-banking-union-of-16-june-2022/>.
- Europe Economics (2009): *Study on the Cost of Compliance with Selected FSAP Measures: Final Report by Europe Economics* [PDF file]. Retrieved October 21, 2022, from <https://www.ebf.eu/wp-content/uploads/2017/01/D1105A-2012-Study-on-the-Cost-of-Compliance-with-Selected-FSAP-Measures-Final-Report-by-Europe-Economics-2009.pdf>.

- European Commission. (1995). European Council: Madrid 15 and 16 December. *Bulletin of the European Communities*, (12), 8–17.
- European Commission. (2004a). *Financial Services Action Plan: Good Progress but Real Impact Depends on Good Implementation* [Press Release]. Retrieved October 21, 2022, from http://europa.eu/rapid/press-release_IP-04-696_en.htm?locale=en.
- European Commission. (2004b). *Investment Services: Final Adoption of Directive is Boost for Investment Firms and their Clients* [Press Release]. Retrieved October 21, 2022, from http://europa.eu/rapid/press-release_IP-04-546_en.htm?locale=en.
- European Commission. (2006). *Commission Welcomes Adoption of Capital Requirements Directive* [Press release]. Retrieved October 21, 2022, from http://europa.eu/rapid/press-release_IP-06-797_en.htm?locale=en.
- European Commission. (2008). *High Level Expert Group on EU financial Supervision to Hold First Meeting on 12 November* [Press release]. Retrieved October 21, 2022, from http://europa.eu/rapid/press-release_IP-08-1679_en.htm.
- European Commission. (2010). *Green Paper: Audit Policy: Lessons from the Crisis* [Press release]. Retrieved October 21, 2022, from [https://www.europarl.europa.eu/meetdocs/2009_2014/documents/com/com_com\(2010\)0561_/com_com\(2010\)0561_en.pdf](https://www.europarl.europa.eu/meetdocs/2009_2014/documents/com/com_com(2010)0561_/com_com(2010)0561_en.pdf).
- European Commission. (2012a). *Commission Sets out the Next Steps for Stability, Growth and Jobs* [Press release]. Retrieved October 21, 2022, from http://europa.eu/rapid/press-release_IP-12-513_en.htm.
- European Commission. (2012b). *Communication from the Commission to the European Parliament and the Council: A Roadmap Towards a Banking Union*. Retrieved October 21, 2022, from <http://ec.europa.eu/transparency/regdoc/rep/1/2012/EN/1-2012-510-EN-F1-1.Pdf>.
- European Commission. (2012c). *Proposal for a Council Regulation Conferring Specific Tasks on the European Central Bank Concerning Policies Relating to the Prudential Supervision of Credit Institutions* [PDF file]. Retrieved October 21, 2022, from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012PC0511&from=EN>

- European Commission. (2012d). *Proposal for a Regulation of the European Parliament and of the Council Amending Regulation (EU) No 1093/2010 Establishing a European Supervisory Authority (European Banking Authority) as Regards Its Interaction with Council Regulation (EU) No.../... Conferring Specific Tasks on the European Central Bank Concerning Policies Relating to the Prudential Supervision of Credit Institutions* [PDF file]. Retrieved October 21, 2022, from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012PC0512&from=EN>.
- European Commission. (2012e). *State Aid: Commission Temporarily Approves Rescue Aid for Italian Bank Monte Dei Paschi* [Press release]. Retrieved October 21, 2022, from https://ec.europa.eu/commission/presscorner/api/files/document/print/en/ip_12_1383/IP_12_1383_EN.pdf.
- European Commission. (2013). *Proposal for a Regulation of the European Parliament and of the Council Establishing Uniform Rules and a Uniform Procedure for the Resolution of Credit Institutions and Certain Investment Firms in the Framework of a Single Resolution Mechanism and a Single Bank Resolution Fund and Amending Regulation (EU) No 1093/2010 of the European Parliament and of the Council* [PDF file]. Retrieved October 21, 2022, from <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0520:FIN:EN:PDF>.
- European Commission. (2014). *Commission Staff Working Document: Economic Review of the Financial Regulation Agenda Chapters 5 to 7 Accompanying the Document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Reformed Financial Sector for Europe* [PDF file]. Retrieved October 21, 2022, from https://eur-lex.europa.eu/resource.html?uri=cellar:841b8a91-dc18-11e3-8cd4-01aa75ed71a1.0001.01/DOC_2&format=PDF.
- European Commission. (2015a). *Post-Programme Surveillance Report: Spain, Spring 2015* (Occasional Papers No. 211). Luxembourg: Publications Office of the European Union.
- European Commission. (2015b). *Proposal for a Regulation of the European Parliament and of the Council Amending Regulation (EU) 806/2014 in order to Establish a European Deposit Insurance Scheme* [PDF file]. Retrieved October 21, 2022, from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015PC0586&from=EN>.

- European Commission. (2017a). *Annex to the Proposal for a Council Regulation on the Establishment of the European Monetary Fund* [PDF file]. Retrieved October 21, 2022, from https://eur-lex.europa.eu/resource.html?uri=cellar:050797ec-db5b-11e7-a506-01aa75ed71a1.0002.02/DOC_2&format=PDF.
- European Commission. (2017b). *Communication from the Commission to the European Parliament, the European Council, the Council and the European Central Bank: Further Steps Towards Completing Europe's Economic and Monetary Union: A Roadmap* [PDF file]. Retrieved October 21, 2022, from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0821&from=EN>.
- European Commission. (2017c). *Communication to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions on Completing the Banking Union* [PDF file]. Retrieved October 21, 2022, from http://ec.europa.eu/finance/docs/law/171011-communication-banking-union_en.pdf.
- European Commission. (2017d). *Proposal for a Council Regulation on the Establishment of the European Monetary Fund* [PDF file]. Retrieved October 21, 2022, from https://eur-lex.europa.eu/resource.html?uri=cellar:050797ec-db5b-11e7-a506-01aa75ed71a1.0002.02/DOC_1&format=PDF.
- European Commission. (2018a). *Communication from the Commission: First Progress Report on the Reduction of Non-Performing Loans in Europe* [PDF file]. Retrieved October 21, 2022, from https://ec.europa.eu/info/publications/180118-non-performing-loans-progress-report_en.
- European Commission. (2018b). *Communication from the Commission: Second Progress Report on the Reduction of Non-Performing Loans in Europe* [PDF file]. Retrieved October 21, 2022, from https://ec.europa.eu/info/publications/180314-non-performing-loans-progress-report_en.
- European Commission. (2018c). *Communication from the Commission: Third Progress Report on the Reduction of Non-Performing Loans and Further Risk Reduction in the Banking Union* [PDF file]. Retrieved October 21, 2022, from https://ec.europa.eu/info/publications/181128-non-performing-loans-progress-report_en.

- European Commission. (2019). *Communication from the Commission: Fourth Progress Report on the Reduction of Non-Performing Loans and Further Risk Reduction in the Banking Union* [PDF file]. Retrieved October 21, 2022, from https://finance.ec.europa.eu/publications/fourth-progress-report-reduction-non-performing-loans-npls-and-further-risk-reduction-banking-union_en.
- European Commission. (2020a). *Communication from the Commission: Tackling Non-Performing Loans in the Aftermath of the COVID-19 Pandemic*. Retrieved October 21, 2022, from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0822>.
- European Commission. (2020b). *Joint Declaration on EU Legislative Priorities for 2022 – Working Document* [PDF file]. Retrieved October 21, 2022, from https://ec.europa.eu/info/sites/default/files/211215-joint_declaration_2022_working_document_updated_clean.pdf.
- European Commission. (2021a). *Consultation Document: Targeted Consultation on Improving Transparency and Efficiency in Secondary Markets for Non-Performing Loans* [PDF file]. Retrieved October 21, 2022, from https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/2021-non-performing-loans-consultation-document_en.pdf.
- European Commission. (2021b). *Joint Declaration on EU Legislative Priorities for 2022 – Working Document* [PDF file]. Retrieved October 21, 2021, from https://ec.europa.eu/info/sites/default/files/211215-joint_declaration_2022_working_document_updated_clean.pdf.
- European Council. (1997). Resolution of the European Council on the Stability and Growth Pact Amsterdam, 17 June 1997. *Official Journal of the European Communities*, C 236, 2.8.1997, 1–2.
- European Council. (1998). *Cardiff European Council: 15 and 16 June 1998: Presidency Conclusions* [PDF file]. Retrieved October 21, 2022, from <https://www.consilium.europa.eu/media/21103/54315.pdf>.
- European Council. (2000). *Lisbon European Council 23 and 24 March 2000: Presidency Conclusions*. Retrieved October 21, 2022, from http://www.europarl.europa.eu/summits/lis1_en.htm.
- European Council. (2001a). European Council Stockholm: Conclusions of the Presidency: 23 - 24 March 2001. *Bulletin of the European Union*, (3), 11–45.

- European Council. (2001b). Resolution of the European Council of 23 March 2001 on More Effective Securities Market Regulation in the European Union. *Official Journal of the European Communities*, C 138, 11.5.2001, 1–2.
- European Council. (2009). *Brussels European Council: 18/19 June 2009: Presidency Conclusions* [PDF file]. Retrieved October 21, 2022, from https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/108622.pdf.
- European Council. (2012). *European Council: 13/14 December 2012: Conclusions* [PDF file]. Retrieved October 21, 2022, from https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/134353.pdf.
- European Monetary Institute. (1996). *Progress Towards Convergence* [PDF file]. Retrieved October 21, 2022, from <https://www.ecb.europa.eu/pub/pdf/conrep/cr1996en.pdf?329d77734d21b5d0184388efd94646b4>.
- European Monetary Institute. (1998). *Convergence Report: Report required by Article 109 j of the Treaty Establishing the European Community* [PDF file]. Retrieved October 21, 2022, from <https://www.ecb.europa.eu/pub/pdf/conrep/cr1998en.pdf>.
- European Parliament, & Council of the European Union (2004). Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on Markets in Financial Instruments Amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and Repealing Council Directive 93/22/EEC. *Official Journal of the European Communities*, L 145, 30.4.2004, 1–44.
- European Parliament, & Council of the European Union. (1994). Directive 94/19/EC of the European Parliament and of the Council of 30 May 1994 on Deposit-Guarantee Schemes. *Official Journal of the European Communities*, L 135, 31.5.1994, 5–14.
- European Parliament, & Council of the European Union. (2005). Directive 2005/1/EC of the European Parliament and of the Council of 9 March 2005 Amending Council Directives 73/239/EEC, 85/611/EEC, 91/675/EEC, 92/49/EEC and 93/6/EEC and Directives 94/19/EC, 98/78/EC, 2000/12/EC, 2001/34/EC, 2002/83/EC and 2002/87/EC in order to Establish a New Organisational Structure for Financial Services Committees. *Official Journal of the European Communities*, L 79, 24.3.2005, 9–17.

- European Parliament, & Council of the European Union. (2006a). Directive 2006/48/EC of the European Parliament and of the Council of 14 June 2006 Relating to the Taking Up and Pursuit of the Business of Credit Institutions (Recast). *Official Journal of the European Communities*, L 177, 30.6.2006, 1–200.
- European Parliament, & Council of the European Union. (2006b). Directive 2006/49/EC of the European Parliament and of the Council of 14 June 2006 on the Capital Adequacy of Investment Firms and Credit Institutions (Recast). *Official Journal of the European Communities*, L 177, 30.6.2006, 201–255.
- European Parliament, & Council of the European Union. (2009a). Directive 2009/111/EC of the European Parliament and of the Council of 16 September 2009 Amending Directives 2006/48/EC, 2006/49/EC and 2007/64/EC as Regards Banks Affiliated to Central Institutions, Certain Own Funds Items, Large Exposures, Supervisory Arrangements, and Crisis Management. *Official Journal of the European Communities*, L 302, 17.11.2009, 97–119.
- European Parliament, & Council of the European Union. (2009b). Directive 2009/14/EC of the European Parliament and of the Council of 11 March 2009 Amending Directive 94/19/EC on Deposit-Guarantee Schemes as Regards the Coverage Level and the Payout Delay. *Official Journal of the European Communities*, L 68, 13.3.2009, 3–7.
- European Parliament, & Council of the European Union. (2009c). Regulation (EC) No 1060/2009 of the European Parliament and of the Council of 16 September 2009 on Credit Rating Agencies. *Official Journal of the European Communities*, L 302, 17.11.2009, 1–31.
- European Parliament, & Council of the European Union. (2010a). Directive 2010/76/EU of the European Parliament and of the Council of 24 November 2010 amending Directives 2006/48/EC and 2006/49/EC as Regards Capital Requirements for the Trading Book and for Re-Securitisations, and the Supervisory Review of Remuneration Policies. *Official Journal of the European Communities*, L 329, 14.12.2010, 3–35.
- European Parliament, & Council of the European Union. (2010b). Regulation (EU) No 1092/2010 of the European Parliament and of the Council of 24 November 2010 on European Union Macro-Prudential Oversight of the Financial System and Establishing a European Systemic Risk Board. *Official Journal of the European Communities*, L 331, 15.12.2010, 1–11.

- European Parliament, & Council of the European Union. (2010c). Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 Establishing a European Supervisory Authority (European Banking Authority), Amending Decision No 716/2009/EC and Repealing Commission Decision 2009/78/EC. *Official Journal of the European Communities*, L 331, 15.12.2010, 12–47.
- European Parliament, & Council of the European Union. (2010d). Regulation (EU) No 1094/2010 of the European Parliament and of the Council of 24 November 2010 Establishing a European Supervisory Authority (European Insurance and Occupational Pensions Authority), Amending Decision No 716/2009/EC and repealing Commission Decision 2009/79/EC. *Official Journal of the European Communities*, L 331, 15.12.2010, 48–83.
- European Parliament, & Council of the European Union. (2010e). Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 Establishing a European Supervisory Authority (European Securities and Markets Authority), Amending Decision No 716/2009/EC and Repealing Commission Decision 2009/77/EC. *Official Journal of the European Communities*, L 331, 15.12.2010, 84–119.
- European Parliament, & Council of the European Union. (2011). Regulation (EU) No 513/2011 of the European Parliament and of the Council of 11 May 2011 Amending Regulation (EC) No 1060/2009 on Credit Rating Agencies. *Official Journal of the European Communities*, L 145, 31.5.2011, 185–211.
- European Parliament, & Council of the European Union. (2013a). Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on Access to the Activity of Credit Institutions and the Prudential Supervision of Credit Institutions and Investment Firms, Amending Directive 2002/87/EC and Repealing Directives 2006/48/EC and 2006/49/EC. *Official Journal of the European Communities*, L 176, 27.6.2013, 338–436.
- European Parliament, & Council of the European Union. (2013b). Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on Prudential Requirements for Credit Institutions and Investment Firms and Amending Regulation (EU) No 648/2012. *Official Journal of the European Communities*, L 176, 27.6.2013, 1–337.
- European Parliament, & Council of the European Union. (2014a). Directive 2014/49/EU of the European Parliament and of the Council of 16 April 2014 on Deposit Guarantee Schemes. *Official Journal of the European Communities*, L 173, 12.6.2014, 149–178.

- European Parliament, & Council of the European Union. (2014b). Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms and Amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council. *Official Journal of the European Communities*, L 173, 12.6.2014, 190–348.
- European Parliament, & Council of the European Union. (2014c). Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014 Establishing Uniform Rules and a Uniform Procedure for the Resolution of Credit Institutions and Certain Investment Firms in the Framework of a Single Resolution Mechanism and a Single Resolution Fund and Amending Regulation (EU) No 1093/2010. *Official Journal of the European Communities*, L 225, 30.7.2014, 1–90.
- European Parliament. (2016). *Draft Report: On the Proposal for a Regulation of the European Parliament and of the Council Amending Regulation (EU) 806/2014 in order to Establish a European Deposit Insurance Scheme (COM(2015)0586 – C8-0371/2015 – 2015/0270(COD))* [PDF file]. Retrieved October 21, 2022, from <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+COMPARL+PE-592.334+03+DOC+PDF+V0//EN&language=EN>.
- European Stability Mechanism. (2012). *Treaty Establishing the European Stability Mechanism* [PDF file]. Retrieved October 21, 2022, from https://www.esm.europa.eu/sites/default/files/20150203_-_esm_treaty_-_en.pdf.
- European Union. (2006). European Union: Consolidated Versions: Of the Treaty on European Union and of the Treaty Establishing the European Community. *Official Journal of the European Union*, L 225, 30.7.2014, 1–90.
- Eurostat. (2022a). *GDP and Main Components (Output, Expenditure and Income)* [Data set]. Retrieved October 21, 2022, from https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_10_gdp&lang=en.
- Eurostat. (2022b). *Population on 1 January by Age and Sex* [Data set]. Retrieved October 21, 2022, from https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_pjan&lang=en.

- Evans, J., Noe, T. H., & Thornton Jr, J. H. (1997). Regulatory Distortion of Management Compensation: The Case of Golden Parachutes for Bank Managers. *Journal of Banking & Finance*, 21(6), 825–848.
- Evrensel, A. Y. (2008). Banking Crisis and Financial Structure: A Survival-Time Analysis. *International Review of Economics & Finance*, 17(4), 589–602.
- Fajardo-García, G., & Soler-Tormo, F. (2016). The Credit Cooperative System in Spain. In S. Karafolas (Ed.), *Credit Cooperative Institutions in European Countries* (pp. 213–232). Cham: Springer.
- Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), 383–417.
- Färe, R., Grosskopf, S., & Lovell, C. K. (1984). The Structure of Technical Efficiency. In F. R. Forsund (Ed.), *Topics in Production Theory* (pp. 81–90). London: Palgrave Macmillan.
- Färe, R., Grosskopf, S., Maudos, J., & Tortosa-Ausina, E. (2015). Revisiting the Quiet Life Hypothesis in Banking Using Nonparametric Techniques. *Journal of Business Economics and Management*, 16(1), 159–187.
- Farrell, M. J. (1957). The Measurement of Productive Efficiency. *Journal of the Royal Statistical Society*, 120(3), 253–281.
- FDIC (Federal Deposit Insurance Corporation). (1983). *Deposit Insurance in a Changing Environment: A Study of the Current System of Deposit Insurance Pursuant to Section 712 of the Garn-St Germain Depository Institution Act of 1982, Submitted to the United States Congress*. Washington, DC: Federal Deposit Insurance Corporation.
- FDIC (Federal Deposit Insurance Corporation). (1984). *Federal Deposit Insurance Corporation: The First Fifty Years: a History of the FDIC, 1933-1983*. Retrieved October 21, 2022, from <https://www.fdic.gov/bank/historical/firstfifty/>.
- FDIC (Federal Deposit Insurance Corporation). (1985). *1984 Annual Report* [PDF file]. Retrieved October 21, 2022, from <https://www.fdic.gov/about/financial-reports/report/archives/fdic-ar-1984.pdf>.
- FDIC (Federal Deposit Insurance Corporation). (1986). *1985 Annual Report* [PDF file]. Retrieved October 21, 2022, from <https://www.fdic.gov/about/financial-reports/report/archives/fdic-ar-1985.pdf>.

- FDIC (Federal Deposit Insurance Corporation). (1997a). *History of the Eighties – Lessons for the Future: An Examination of the Banking Crises of the 1980s and Early 1990s*. Retrieved October 21, 2022, from <https://www.fdic.gov/bank/historical/history/index.html>.
- FDIC (Federal Deposit Insurance Corporation). (1997b). Uniform Financial Institutions Rating System. *Federal Register*, 62(3), 752–757.
- FDIC (Federal Deposit Insurance Corporation). (1998a). *A Brief History of Deposit Insurance in the United States* [PDF file]. Retrieved October 21, 2022, from <https://www.fdic.gov/bank/historical/brief/brhist.pdf>.
- FDIC (Federal Deposit Insurance Corporation). (1998b). *Managing the Crisis: The FDIC and RTC Experience*. Retrieved October 21, 2022, from <https://www.fdic.gov/bank/historical/managing/index.html>.
- FDIC (Federal Deposit Insurance Corporation). (2009). Deposit Insurance Assessments: 2010 Designated Reserve Ratio. *Federal Register*, 74(245), 68268.
- FDIC (Federal Deposit Insurance Corporation). (2010). *Final Rule Setting the Designated Reserve Ratio* [PDF file]. Retrieved October 21, 2022, from <https://www.fdic.gov/deposit/insurance/drr-2011.pdf>.
- FDIC (Federal Deposit Insurance Corporation). (2012). *FDIC Community Banking Study* [PDF file]. Retrieved October 21, 2022, from <https://www.fdic.gov/regulations/resources/cbi/report/cbi-full.pdf>.
- FDIC (Federal Deposit Insurance Corporation). (2013). *FDIC Board Approves Basel III Interim Final Rule and Supplementary Leverage Ratio Notice of Proposed Rulemaking* [Press release]. Retrieved October 21, 2022, from <https://www.fdic.gov/news/press-releases/2013/pr13060.html>.
- FDIC (Federal Deposit Insurance Corporation). (2019). *Resolutions Handbook* [PDF file]. Retrieved October 24, 2022, from <https://ypfsresourcelibrary.blob.core.windows.net/fdic/YPFS/resolutions-handbook.pdf>.
- FDIC (Federal Deposit Insurance Corporation). (2020a). *A History of Risk-Based Premiums at the FDIC* (Federal Deposit Insurance Corporation Staff Studies, Report No. 2020-01). Retrieved October 24, 2022, from <https://www.fdic.gov/analysis/cfr/staff-studies/2020-01.pdf>.

- FDIC (Federal Deposit Insurance Corporation). (2020b). *FDIC Community Banking Study* [PDF file]. Retrieved October 24, 2022, from <https://www.fdic.gov/resources/community-banking/report/2020/2020-cbi-study-full.pdf>.
- FDIC (Federal Deposit Insurance Corporation). (2020c). *What We Do*. Retrieved from October 24, 2022, <https://www.fdic.gov/about/what-we-do/>.
- FDIC (Federal Deposit Insurance Corporation). (n.d.). *Historical Bank Data*. Retrieved October 24, 2022, from <https://banks.data.fdic.gov/explore/historical/>.
- Federal Reserve Bank of Kansas City. (2011). *Survey of Community Depository Institutions in the Tenth Federal Reserve District* [PDF file]. Retrieved October 24, 2022, from <https://www.kansascityfed.org/documents/4479/11AllResults.pdf>.
- Federal Reserve Bank of Kansas City. (2014). *Survey of Community Depository Institutions in the Tenth Federal Reserve District* [PDF file]. Retrieved October 24, 2022, from <https://www.kansascityfed.org/documents/4486/14tenthdistrictsummaryresults.pdf>.
- Federal Reserve Bank of New York. (1979). *Uniform Bank Rating System* [PDF file]. Retrieved October 24, 2022, from https://fraser.stlouisfed.org/files/docs/historical/ny%20circulars/nycirc_1979_08692.pdf.
- Federal Reserve Board. (1933). Member Bank Reserves – Report of the Committee on Bank Reserves of the Federal Reserve System. *Nineteenth Annual Report of the Federal Reserve Board Covering Operations for the Year 1932*, 260–285.
- Federal Reserve System. (2011). Capital Plans. *Federal Register*, 76(231), 74631–74648.
- Federal Reserve System. (2014). Enhanced Prudential Standards for Bank Holding Companies and Foreign Banking Organizations. *Federal Register*, 79(59), 17240–17338.
- Fédération Nationale Banque Populaire. (2020). *Naissance de la Banque Populaire Grand Ouest*. Retrieved October 24, 2022, from <https://www.fnbp.fr/actualite/naissance-de-banque-populaire-grand-ouest/>.
- Fédération Nationale des Caisses d'Épargne. (n.d.). *Histoire*. Retrieved October 24, 2022, from <http://www.federation.caisse-epargne.fr/cooperatives-engagees/histoire/#>.
- Federcasse (Federazione Italiana delle Banche di Credito Cooperativo Casse Rurali ed Artigiane). (n.d.). *Le BCC*. Retrieved October 24, 2022, from <https://creditocooperativo.it/page/il-credito-cooperativo>.

- Feldman, R., Heinecke, K., & Schmidt, J. (2013). Quantifying the Costs of Additional Regulation on Community Banks. *Economic Policy Paper*, 13(3).
- Felsenfeld, C. (1985). Nonbank Banks: An Issue in Need of a Policy. *The Business Lawyer*, 41(1), 99–123.
- Feng, G., & Serletis, A. (2010). Efficiency, Technical Change, and Returns to Scale in Large US Banks: Panel Data Evidence from an Output Distance Function Satisfying Theoretical Regularity. *Journal of Banking & Finance*, 34(1), 127–138.
- Ferri, G., & Kalmi, P. (2014). *Only Up: Regulatory Burden and Its Effects on Credit Unions*. Madison, WI: Filene Research Institute.
- Ferrier, G. D., & Lovell, C. K. (1990). Measuring Cost Efficiency in Banking: Econometric and Linear Programming Evidence. *Journal of Econometrics*, 46(1–2), 229–245.
- FFIEC (Federal Financial Institutions Examination Council). (1979). *Annual Report 1979* [PDF file]. Retrieved October 24, 2022, from <https://www.ffiec.gov/PDF/annrpt79.pdf>.
- FFIEC (Federal Financial Institutions Examination Council). (1980). *Annual Report 1980* [PDF file]. Retrieved October 24, 2022, from <https://www.ffiec.gov/PDF/annrpt80.pdf>.
- FFIEC (Federal Financial Institutions Examination Council). (1981). *Annual Report 1981* [PDF file]. Retrieved October 24, 2022, from <https://www.ffiec.gov/PDF/annrpt81.pdf>.
- FFIEC (Federal Financial Institutions Examination Council). (1992). *Study on Regulatory Burden* [PDF file]. Retrieved October 24, 2022, from [https://www.ffiec.gov/pdf/FFIEC_Study_on_Regulatory_Burden_\(1992\).pdf](https://www.ffiec.gov/pdf/FFIEC_Study_on_Regulatory_Burden_(1992).pdf).
- FFIEC (Federal Financial Institutions Examination Council). (1996). Uniform Financial Institutions Rating System. *Federal Register*, 61(139), 37472–37478.
- FHFA (Federal Housing Finance Agency). (2009). *Strategic Plan: Fiscal Years 2009–2014* [PDF file]. Retrieved October 24, 2022, from https://www.fhfa.gov/AboutUs/Reports/ReportDocuments/FHFA_StrategicPlan_2009-2014_508.pdf.
- FHFA (Federal Housing Finance Agency). (2019). *The 2019 Strategic Plan for the Conservatorships of Fannie Mae and Freddie Mac* [PDF file]. Retrieved October 24, 2022, from <https://www.fhfa.gov/AboutUs/Reports/ReportDocuments/2019-Strategic-Plan.pdf>.
- Financial Stability Board. (2021). *2021 List of Global Systemically Important Banks (G-SIBs)*. Retrieved October 24, 2022, from <https://www.fsb.org/wp-content/uploads/P231121.pdf>.

- FLOFR (Florida Office of Financial Regulation). (n.d.). *About Our Agency*. Retrieved October 24, 2022, from <https://www.flofr.com/sitePages/AboutOFR.htm>.
- Florida Chamber Foundation. (2012). *2012 Small Business Lending Survey* [PDF file]. Retrieved October 24, 2022, from <http://www.flchamber.com/wp-content/uploads/2016/06/2012SmallBusinessLendingSurvey.pdf>.
- Ford, C. L. (2008). New Governance, Compliance, and Principles-Based Securities Regulation. *American Business Law Journal*, 45(1), 1–60.
- Førsund, F. R., & Hjalmarsson, L. (1974). On the Measurement of Productive Efficiency. *The Swedish Journal of Economics*, 76(2), 141–154.
- Fortis. (2008). *Fortis Statement on Transaction with Government of the Netherlands* [PDF file]. Retrieved October 24, 2022, from <http://hugin.info/134212/R/1256877/476130.pdf>.
- Frantz, R. (2018). Harvey Leibenstein, and an Anomaly Called X-efficiency Theory. *Journal of Behavioral Economics for Policy*, 2(1), 25–31.
- Fraser, D. R., Kolari, J. W., Pynnönen, S., & Tippens, T. K. (2011). Market Power, Bank Megamergers, and the Welfare of Bank Borrowers. *Journal of Financial Research*, 34(4), 641–658.
- Freixas, X., Parigi, B. M., & Rochet, J. C. (2000). Systemic Risk, Interbank Relations, and Liquidity Provision by the Central Bank. *Journal of Money Credit and Banking*, 32(3), 611–638.
- FREP (Financial Reporting Enforcement Panel). (2018). *Information on the Examination Process of the Financial Reporting Enforcement Panel (FREP)* [PDF file]. Retrieved March 5, 2021, from https://www.frep.info/docs/pruefverfahren/info_ablauf_pruefverfahren_en.pdf.
- FREP (Financial Reporting Enforcement Panel). (2020). *Fragen und Antworten zu der aktuellen Diskussion im Fall Wirecard* [PDF file]. Retrieved March 5, 2021, from https://www.frep.info/docs/pressemitteilungen/2020/20200701_pm_anlage.pdf.
- Friendly, H. J. (1962). The Federal Administrative Agencies: The Need for Better Definition of Standards. *Harvard Law Review*, 75(7), 1263–1318.
- Fröhlich, A. (2020). Berliner SPD-Abgeordneter betreute Wirecard als „Senior Berater“. *Der Tagesspiegel*. Retrieved October 24, 2021, from <https://www.tagesspiegel.de/berlin/skandal-um-milliardenschweren-betrug-berliner-spd-abgeordneter-betreute-wirecard-als-senior-berater/26266102.html>.

- Fröndhoff, B., & Berschens, R. (2020). Fall Wirecard: Die deutschen Wirtschaftsprüfer stehen am Pranger. *Handelsblatt*. Retrieved October 24, 2021, from <https://www.handelsblatt.com/unternehmen/dienstleister/bilanzfaelschung-fall-wirecard-die-deutschen-wirtschaftspruefer-stehen-am-pranger/25984920.html?ticket=ST-15342638-baKmO5NiP1a1lRFQjvLG-ap1>.
- Fröndhoff, B., & Hilebrand, J. (2020). Fall Wirecard: Neue Dokumente bringen Prüferaufsicht Apas in Erklärungsnot. *Handelsblatt*. Retrieved October 24, 2021, from <https://www.handelsblatt.com/unternehmen/dienstleister/untersuchungsausschuss-fall-wirecard-neue-dokumente-bringen-prueferaufsicht-apas-in-erklaerungsnot/26700550.html>.
- Fröndhoff, B., & Holtermann, F. (2021). Bundesregierung geht auf Distanz zum Präsidenten der „Bilanzpolizei“ DPR. *Handelsblatt*. Retrieved October 24, 2021, from <https://www.handelsblatt.com/finanzen/banken-versicherungen/banken/edgar-ernst-bundesregierung-geht-auf-distanz-zum-praesidenten-der-bilanzpolizei-dpr/26942532.html>.
- Frydl, E. J. (1993). *Excess Capacity in the Financial Sector: Causes and Issues* (Research Paper No. 9310). Federal Reserve Bank of New York.
- FSB & BCBS (Financial Stability Board & Basel Committee on Banking Supervision). (2010). *Interim Report: Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements* [PDF file]. Retrieved October 24, 2021, from <https://www.bis.org/publ/othp12.pdf>.
- FSOC (Financial Stability Oversight Council). (2011). *Report to the Congress on Prompt Corrective Action* [PDF file]. Retrieved October 24, 2021, from <https://home.treasury.gov/system/files/261/Report%20to%20the%20Congress%20on%20Prompt%20Corrective%20Action%20-%20December%2023%2C%202011.pdf>.
- Funk, A. (2020). „Der Fall Wirecard ist eine Causa Olaf Scholz“. *Der Tagesspiegel*. Retrieved October 24, 2022, from <https://www.tagesspiegel.de/wirtschaft/den-finanzminister-im-visier-der-fall-wirecard-ist-eine-causa-olaf-scholz/26585838.html>.
- G20. (2008). *Declaration: Summit on Financial Markets and the World Economy: November 15, 2008* [PDF file]. Retrieved October 24, 2022, from https://www.g20germany.de/Content/DE/StatischeSeiten/Breg/G7G20/Anlagen/G20-erklaerung-washington-2008-en___blob=publicationFile&v=1.pdf.

- G20. (2009a). *Declaration on Strengthening the Financial System – London Summit, 2 April 2009* [PDF file]. Retrieved October 24, 2022, from https://www.g20germany.de/Content/DE/StatischeSeiten/Breg/G7G20/Anlagen/G20-erklaerung-staerkung-finanzsystem-london-2009-en___blob=publicationFile&v=1.pdf.
- G20. (2009b). *Leaders' Statement: The Pittsburgh Summit: September 24 – 25, 2009* [PDF file]. Retrieved October 24, 2022, from https://www.g20germany.de/Content/DE/StatischeSeiten/Breg/G7G20/Anlagen/G20-erklaerung-pittsburgh-2009-en___blob=publicationFile&v=1.pdf.
- G20. (2009c). *The Global Plan for Recovery and Reform: 2 April 2009* [PDF file]. Retrieved October 24, 2022, from https://www.g20germany.de/Content/DE/StatischeSeiten/Breg/G7G20/Anlagen/G20-erklaerung-london-en___blob=publicationFile&v=1.pdf.
- G20. (2010). *The Seoul Summit Document* [PDF file]. Retrieved October 24, 2022, from https://www.g20germany.de/Content/DE/StatischeSeiten/Breg/G7G20/Anlagen/G20-seoul-gipfel-dokument-en___blob=publicationFile&v=1.pdf.
- Gail, D. B., & Norton, J. J. (1989). A Decade's Journey from Deregulation to Supervisory Reregulation: The Financial Institutions Reform, Recovery, and Enforcement Act of 1989. *The Business Lawyer*, 45(3), 1103–1228.
- Galati, G., & Moessner, R. (2013). Macroprudential Policy: A Literature Review. *Journal of Economic Surveys*, 27(5), 846–878.
- Gammelin, C. (2020). Guttenbergs Mission. *Süddeutsche Zeitung*. Retrieved October 24, 2022, from <https://www.sueddeutsche.de/wirtschaft/wirecard-merkel-untersuchungsausschuss-bundestag-1.5151488>.
- Gammelin, C., Giesen, C., & Ott, K. (2020a). Das politische Netz von Wirecard. *Süddeutsche Zeitung*. Retrieved October 24, 2022, from <https://www.sueddeutsche.de/wirtschaft/wirecard-untersuchungsausschuss-lobby-1.5150160?reduced=true>.
- Gammelin, C., Giesen, C., & Ott, K. (2020b). Ex-Polizeipräsident als Türöffner. *Süddeutsche Zeitung*. Retrieved October 24, 2022, from <https://www.sueddeutsche.de/bayern/aschheim-wirecard-kindler-herrmann-1.5053308>.
- Garcia, G., Baer, H., Brewer, E., Allardice, D. R., Cargill, T. F., Dobra, J., Kaufman, G. C., Gonczy, A. M. L., Laurent, R. D., & Mote, L. R. (1983). The Garn-St Germain Depository Institutions Act of 1982. *Economic Perspectives*, 7(2), 3–31.

- Garden, K. A., & Ralston, D. E. (1999). The X-Efficiency and Allocative Efficiency Effects of Credit Union Mergers. *Journal of International Financial Markets, Institutions and Money*, 9(3), 285–301.
- Garmaise, M. J., & Moskowitz, T. J. (2006). Bank Mergers and Crime: The Real and Social Effects of Credit Market Competition. *The Journal of Finance*, 61(2), 495–538.
- Gavurova, B., Kocisova, K., & Kotaskova, A. (2017). The Structure-Conduct-Performance Paradigm in the European Union Banking. *Economics & Sociology*, 10(4), 99–112.
- Geithner, T. F. (2009). *Treasury Secretary Timothy F. Geithner Written Testimony before the Senate Committee on Agriculture, Nutrition and Forestry Hearing on OTC Derivatives Reform and Addressing Systemic Risk* [Press release]. Retrieved October 24, 2022, from <https://home.treasury.gov/news/press-releases/tg425>.
- Generalzolldirektion. (n.d.). *Financial Intelligence Unit*. Retrieved October 24, 2022, from https://www.zoll.de/DE/Der-Zoll/Aufgaben-des-Zolls/Schutz-fuer-Buerger-Wirtschaft-und-Umwelt/FIU-Aufgaben/fiu-aufgaben_node.html.
- Geretto, E. (2010). M&As in Banking: A Literature Review. In R. Bottiglia, E. Gualandri, & G. N. Mazzocco (Eds.), *Consolidation in the European Financial Industry* (pp. 17–35). London: Palgrave Macmillan.
- German Central Bank. (2001). *Entwicklung des Bankstellennetzes im Jahr 2000: Bestand an Kreditinstituten am 31. Dezember 2000* [PDF file]. Retrieved October 24, 2022, from <https://www.bundesbank.de/resource/blob/598438/a5e86722cfde8084b56df11ea909b33b/mL/bankstellenstatistik-2000-anlage-1-data.pdf>.
- German Central Bank. (2009). *Entwicklung des Bankstellennetzes im Jahr 2008* [PDF file]. Retrieved October 24, 2022, from <https://www.bundesbank.de/resource/blob/598128/4dc926b23566901a996ffd228d3d72ec/mL/bankstellenbericht-2008-data.pdf>.
- German Central Bank. (2012). *The Performance of German Credit Institutions in 2011* [PDF file]. Retrieved November 3, 2022, from <https://www.bundesbank.de/resource/blob/622274/bbad99ffc329c2125ef11432916c03bb/mL/2012-09-performance-data.pdf>.
- German Central Bank. (2013). *Annual Report 2013* [PDF file]. Retrieved October 24, 2022, from <https://www.bundesbank.de/resource/blob/653398/981113c5dfa7f9aa0a71171d0dc886e8/mL/2013-annual-report-data.pdf>.

- German Central Bank. (2017). *Cooperation with the Federal Financial Supervisory Authority*. Retrieved October 24, 2022, from <https://www.bundesbank.de/en/tasks/banking-supervision/bundesbank/bafin/cooperation-with-the-federal-financial-supervisory-authority-622604>.
- German Central Bank. (2019). *Bankstellenbericht 2018: Entwicklung des Bankstellennetzes im Jahr 2018* [PDF file]. Retrieved October 24, 2022, from <https://www.bundesbank.de/resource/blob/802016/391887c18ebd8b1bdafcd1523ce8518d/mL/bankstellenbericht-2018-data.pdf>.
- German Central Bank. (2019). *Bankstellenbericht 2021: Entwicklung des Bankstellennetzes im Jahr 2021* [PDF file]. Retrieved October 24, 2022, from <https://www.bundesbank.de/resource/blob/894918/e4f32b6ca4130522d8db47352d32cdbf/mL/bankstellenbericht-2021-data.pdf>.
- Getter, D. E. (2014). *U.S. Implementation of the Basel Capital Regulatory Framework* [PDF file]. Retrieved October 24, 2022, from <https://fas.org/sgp/crs/misc/R42744.pdf>.
- Ghemawat, P., & Ricart Costa, J. E. (1993). The Organizational Tension between Static and Dynamic Efficiency. *Strategic Management Journal*, 14, 59-73.
- Gieseler, J. (2022a). *Die Sparkassenorganisation in Frankreich*. Berlin: Deutscher Sparkassen- und Giroverband.
- Gieseler, J. (2022b). *Die Sparkassenorganisation in Italien*. Berlin: Deutscher Sparkassen- und Giroverband.
- Gieseler, J. (2022c). *Die Sparkassenorganisation in Spanien*. Berlin: Deutscher Sparkassen- und Giroverband.
- Gilbert, R. (1984). Bank Market Structure and Competition: A Survey. *Journal of Money, Credit and Banking*, 16(4), 617–44.
- Gilbert, R. A. (1986). Requiem for Regulation Q: What It Did and Why It Passed Away. *Federal Reserve Bank of St. Louis Review*, 68(2), 22–37.
- Gischer, H. (2010). Wettbewerb und Effizienz in Bankenmärkten. In Wissenschaftsförderung der Sparkassen-Finanzgruppe (Ed.), *Geschäftspolitische Steuerung – Die Sparkassen zwischen Renditeorientierung und Gemeinwohl* (pp. 15–28), Stuttgart: Deutscher Sparkassen Verlag.
- Gischer, H., & Helmedag, F. (2007). Marktmacht als Herausforderung der Wettbewerbspolitik. In M. von Hauff (Ed.), *Die Zukunftsfähigkeit der Sozialen Marktwirtschaft* (pp. 215–240), Marburg: Metropolis-Verlag.

- Gischer, H., & Richter, T. (2009). Performancemessung von Banken im internationalen Vergleich. *WiSt–Wirtschaftswissenschaftliches Studium*, 38(11), 565–572.
- Gischer, H., & Richter, T. (2011). Konsolidierung, Effizienz und Stabilität: Sind große Banken leistungsfähiger als kleine?. *Review of Economics*, 62(2), 172–195.
- Gischer, H., Richter, T., & Alert, M. (2016). Wettbewerbsmessung im Bankensektor: Alternative Maße divergierende Ergebnisse. *Wirtschaftsdienst*, 96(12), 905–909.
- Goffart, D. (2020). Der „Bazooka“-Erfinder und sein Wirecard-Schatten. *WirtschaftWoche*. Retrieved October 24, 2022, from <https://www.wiwo.de/my/politik/deutschland/joerg-kukies-der-bazooka-erfinder-und-sein-wirecard-schatten/26702960.html>.
- Goldberg, L. G., & Rai, A. (1996). The Structure-Performance Relationship for European Banking. *Journal of Banking & Finance*, 20(4), 745–771.
- Golembe, C. H. (1960). The Deposit Insurance Legislation of 1933: An Examination of Its Antecedents and Its Purposes. *Political Science Quarterly*, 75(2), 181–200.
- Goodfriend, M., & Hargraves, M. (1983). A Historical Assessment of the Rationales and Functions of Reserve Requirements, *Economic Review* (Federal Reserve Bank of Richmond), 69(2), 3–21.
- Goodfriend, M., & King, R. G. (1988). Financial Deregulation, Monetary Policy, and Central Banking. *Economic Review* (Federal Reserve Bank of Richmond), 74(3), 3–22.
- Goodhart, C., Hartmann, P., Llewellyn, D. T., Rojas-Suarez, L., & Weisbrod, S. (2013). *Financial Regulation: Why, How and Where Now?*. London: Routledge.
- Gormley Jr, W. T. (1979). A Test of the Revolving Door Hypothesis at the FCC. *American Journal of Political Science*, 23(4), 665–683.
- Gorton, G. (1985). Bank Suspension of Convertibility. *Journal of Monetary Economics*, 15(2), 177–193.
- Gorton, G., Kahl, M., & Rosen, R. (2009). Eat or Be Eaten: A Theory of Mergers and Firm Size. *The Journal of Finance*, 64(3), 1291–1344.
- Grant Thornton. (2013). *Bank Board and Executive Survey: Cautious Optimism on the State of Banking* [PDF file]. Retrieved October 24, 2022, from https://www.bankdirector.com/wp-content/uploads/2013_Bank_Board__Executive_Survey.pdf.

- Greive, M., & Holtermann, F. (2020). Finanzministerium zeigt im Fall Wirecard mit dem Finger auf EY. *Handelsblatt*. Retrieved October 24, 2022, from <https://www.handelsblatt.com/finanzen/banken-versicherungen/banken/bilanzskandal-finanzministerium-zeigt-im-fall-wirecard-mit-dem-finger-auf-ey/26012270.html>.
- Greive, M., Hildebrand, J., & Kröner, A. (2020a). Bafin-Chef Felix Hufeld verschafft sich im Wirecard-Skandal etwas Luft. *Handelsblatt*. Retrieved October 24, 2022, from <https://www.handelsblatt.com/finanzen/banken-versicherungen/banken/finanzaufsicht-in-der-kritik-baf-in-chef-felix-hufeld-verschafft-sich-im-wirecard-skandal-etwas-luft/25959460.html?ticket=ST-15780836-xNqabrnXHr1IKhRHyk0Y-ap2>.
- Greive, M., Hildebrand, J., & Kröner, A. (2020b). Im Kreuzverhör zu Wirecard: So rechtfertigt sich Bafin-Chef Hufeld. *Handelsblatt*. Retrieved October 24, 2022, from <https://www.handelsblatt.com/finanzen/banken-versicherungen/banken/finanzausschuss-im-kreuzverhoer-zu-wirecard-so-rechtfertigt-sich-bafin-chef-hufeld/25966740.html>.
- Greive, M., Hildebrand, J., & Sigmund, T. (2020). Big Four machen Kasse: Bundesregierung vergibt Aufträge für 400 Millionen Euro. *Handelsblatt*. Retrieved October 24, 2022, from <https://www.handelsblatt.com/politik/deutschland/wirtschaftspruefungsgesellschaften-big-four-machen-kasse-bundesregierung-vergibt-auftraege-fuer-400-millionen-euro/26202312.html>.
- Grinstein, Y., & Hribar, P. (2004). CEO compensation and incentives: Evidence from M&A bonuses. *Journal of Financial Economics*, *1*(73), 119–143.
- Groseclose, T., & Snyder Jr, J. M. (1996). Buying Supermajorities. *American Political Science Review*, *90*(2), 303–315.
- Group of Ten. (2001). *Report on Consolidation in the Financial Sector* [PDF file]. Retrieved October 24, 2022, from <https://www.imf.org/external/np/g10/2001/01/Eng/pdf/file1.pdf>.
- Gruppo Intesa. (2001). *Consolidated Financial Statements* [PDF file]. Retrieved October 24, 2022, from https://group.intesasanpaolo.com/content/dam/portalgroup/repository-documenti/investor-relations/Contenuti/RISORSE/Documenti%20PDF%20Storici/en_storici_BI_bilanci_00/CNT-04-000000001D20F.pdf.
- Guy, E. G. (1966). The Applicability of the Federal Antitrust Laws to Bank Mergers. *Monthly Review* (Federal Reserve Bank of New York), *48*(4), 80–83.

- Hackethal, A., & Inderst, R. (2015). *Auswirkungen der Regulatorik auf kleinere und mittlere Banken am Beispiel der deutschen Genossenschaftsbanken: Gutachten im Auftrag des Bundesverbandes der Deutschen Volksbanken und Raiffeisenbanken e. V* [PDF file]. Retrieved October 24, 2022, from [https://www.bvr.de/p.nsf/0/EA57402CCD1BAC9FC1257ECF00349466/\\$file/GUTACHTEN-BVR2015.pdf](https://www.bvr.de/p.nsf/0/EA57402CCD1BAC9FC1257ECF00349466/$file/GUTACHTEN-BVR2015.pdf).
- Hakenes, H., & Schnabel, I. (2014). *Regulatory Capture by Sophistication* (CEPR Discussion Papers 10100). London: Centre for Economic Policy Research.
- Hamilton, L. C. (1992). *Regression with Graphics: A Second Course in Applied Statistics*. Belmont, CA: Duxbury Press.
- Hammond, B. (1961). The North's Empty Purse, 1861-1862. *The American Historical Review*, 67(1), 1–18.
- Hankir, Y., Rauch, C., & Ueber, M. P. (2011). Bank M&A: A Market Power Story?. *Journal of Banking and Finance*, 35(9), 2341–2354.
- Hannan, T. H. (1991). Bank Commercial Loan Markets and the Role of Market Structure: Evidence from Surveys of Commercial Lending. *Journal of Banking & Finance*, 15(1), 133–149.
- Hardy, D. (2006). *Regulatory Capture in Banking* (IMF Working Paper No. 06/34). International Monetary Fund.
- Härle, P., Lüders, E., Papanides, T., Pfetsch, S., Poppensieker, T., & Stegemann, U. (2010). *Basel III and European Banking: Its Impact, How Banks Might Respond, and the Challenges of Implementation* (McKinsey Working Papers on Risk, No. 26). Retrieved October 24, 2022, from https://www.mckinsey.com/~media/mckinsey/industries/financial%20services/our%20insights/basel%20iii%20now%20the%20hard%20part%20for%20european%20banks/26_basel_iii_and_european_banking.pdf.
- Harrigan, K. R. (1986). *Managing for Joint Venture Success*. New York, NY: Lexington Books.
- Hayes, A. (1971). The 1970 Amendments to the Bank Holding Company Act: Opportunities to Diversify. *Monthly Review* (Federal Reserve Bank of New York), 53(2), 23–27.
- He, Z., & Manela, A. (2016). Information Acquisition in Rumor-Based Bank Runs. *The Journal of Finance*, 71(3), 1113–1158.
- Heggstad, A. A. (1977). Market Structure, Risk and Profitability in Commercial Banking. *Journal of Finance*, 32(4), 1207–1216.

- Hein, S. E., Koch, T. W., & Nounamo, C. (2010). Moving FDIC Insurance to an Asset-Based Assessment System: Evidence from the Special Assessment of 2009. *Journal of Economics and Business*, 64(1), 24–36.
- Heinemann, F., & Schüler, M. (2004). A Stiglerian View on Banking Supervision. *Public Choice*, 121(1-2), 99–130.
- Heiney, J. N. (2011). Consolidation in the US banking Industry since Riegle-Neal. *Journal of Business & Economics Research (JBER)*, 9(9), 71–78.
- Hellmann, T. F., & Murdock, K. C. (2000). Liberalization, Moral Hazard in Banking and Prudential Regulation: Are Capital Requirements Enough?. *American Economic Review*, 90(1), 147–165.
- Herring, E. P. (1936). *Public Administration and the Public Interest*. New York, NY: McGraw-Hill.
- Hesse, M. (2016). Wette auf den Absturz. *Spiegel*. Retrieved October 25, 2022, from <https://www.spiegel.de/wirtschaft/wette-auf-den-absturz-a-305e6844-0002-0001-0000-000144545911?context=issue>.
- Hesse, M. (2019). Finanzaufsicht zeigt Journalisten wegen Marktmanipulation an. *Spiegel*. Retrieved October 25, 2022, from <https://www.spiegel.de/wirtschaft/unternehmen/wirecard-bafin-zeigt-journalisten-wegen-marktmanipulation-an-a-1263139.html>.
- Hesse, M. (2020). Wirecard offenbar in Betrug mit Corona-Hilfen verwickelt. *Spiegel*. Retrieved October 25, 2022, from <https://www.spiegel.de/wirtschaft/wirecard-und-die-bayerische-corona-connection-betrug-mit-soforthilfen-a-d26ddd87-bd16-49b5-8819-ce4fee3fa6c1>.
- Heukmes, J., & Guionnet, B. (2018). M&A Benefits for the Banking Sector Consolidation: An Overview of the US, EU and Luxembourg Market. *Inside Magazine*, (18), 122–135. Retrieved October 25, 2022, from <https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/about-deloitte/Inside/lu-inside18-full.pdf>.
- Hicks, J. R. (1935). Annual Survey of Economic Theory: The Theory of Monopoly. *Econometrica*, 3(1), 1–20.

- High-Level Working Group on EDIS. (2019) Letter by the High-Level Working Group on a European Deposit Insurance Scheme (EDIS) Chair to the President of the Eurogroup: Further Strengthening the Banking Union, Including EDIS: A Roadmap for Political Negotiations. Retrieved November 10, 2022, from <https://www.consilium.europa.eu/media/41644/2019-12-03-letter-from-the-hlwg-chair-to-the-peg.pdf>.
- Hildebrand, J. (2020). Wirecard-Skandal: Schicksalsstunde für Olaf Scholz. *Handelsblatt*. Retrieved October 25, 2022, from <https://www.handelsblatt.com/politik/deutschland/finanz-ausschuss-wirecard-skandal-schicksalsstunde-fuer-olaf-scholz/26045476.html?ticket=ST-1378127-mJqNbdddCeIUckUMZJXfY-ap1>.
- Hirschman, A. O. (1964). The Paternity of an Index. *American Economic Review*, 54(5), 761–762.
- Historical Society of the Deutsche Bank AG. (2012). *Deutsche Bank: 1870 – 2010* [PDF file]. Retrieved October 25, 2022, from https://country.db.com/ukraine/documents/Chronik_D_Bank_EN.PDF.
- Historical Society of the Deutsche Bank AG. (2022). *Tabelle ab 1952*. Retrieved October 25, 2022, from <https://www.bankgeschichte.de/facts-figures/business-figures/table-since-1952>.
- Hitt, M. A., Harrison, J. S., & Ireland, R. D. (2001). *Mergers & Acquisitions: A Guide to Creating Value for Stakeholders*. New York, NY: Oxford University Press.
- Holdsworth, J. T., & Dewey, D. R. (1911). *The First and Second Banks of the United States*. Washington, DC: U.S. Government Printing Office.
- Holtermann, F., & Schnell, C. (2020). Wirecard hatte mehr Geheimdienst-Verbindungen als bisher bekannt. *Handelsblatt*. Retrieved October 25, 2022, from <https://www.handelsblatt.com/politik/deutschland/milliarden-pleite-wirecard-hatte-mehr-geheimdienst-verbindungen-als-bisher-bekannt/26245260.html?ticket=ST-953589-lIm52CWGGTheTjdkTbv-ap1>.
- Homma, T., Tsutsui, Y., & Uchida, H. (2014). Firm Growth and Efficiency in the Banking Industry: A New Test of the Efficient Structure Hypothesis. *Journal of Banking and Finance*, 40(3), 143–153.
- Houston, J. F., James, C. M., & Ryngaert, M. D. (2001). Where Do Merger Gains Come From? Bank Mergers from the Perspective of Insiders and Outsiders. *Journal of Financial Economics*, 60(2–3), 285–331.

- Hsieh, M. F., & Lee, C. C. (2010). The Puzzle between Banking Competition and Profitability can be solved: International Evidence from Bank-Level Data. *Journal of Financial Services Research*, 38(2), 135–157.
- Huber, S. K. (1988). The Competitive Equality Banking Act of 1987: An Analysis and Critical Commentary. *Banking Law Journal*, 105(4), 284–324.
- Hughes, J. P., & Mester, L. J. (2013). Who Said Large Banks Don't Experience Scale Economies? Evidence from a Risk-Return-Driven Cost Function. *Journal of Financial Intermediation*, 22(4), 559–585.
- Hughes, J. P., Lang, W. W., Mester, L. J., & Moon, C. G. (1999). The Dollars and Sense of Bank Consolidation. *Journal of Banking & Finance*, 23(2-4), 291–324.
- Hughes, J. P., Lang, W. W., Mester, L. J., Moon, C. G., & Pagano, M. S. (2003). Do Bankers Sacrifice Value to Build Empires? Managerial Incentives, Industry Consolidation, and Financial Performance. *Journal of Banking & Finance*, 27(3), 417–447.
- Hughes, J. P., Mester, L. J., & Moon, C. G. (2001). Are Scale Economies in Banking Elusive or Illusive?: Evidence Obtained by Incorporating Capital Structure and Risk-Taking into Models of Bank Production. *Journal of Banking & Finance*, 25(12), 2169–2208.
- Huizinga, H. P., Nelissen, J., & Vander Venet, R. (2001). *Efficiency Effects of Bank Mergers and Acquisitions* (Tinbergen Institute Discussion Paper No. TI 01-088/3).
- Hulverscheidt, C. (2021). Ungereimtheiten bei der „Bilanzpolizei“ DPR. *Süddeutsche Zeitung*. Retrieved October 25, 2022, from <https://www.sueddeutsche.de/wirtschaft/wirecard-auf-sicht-bafin-1.5225009>.
- Humphrey, D. B., & Vale, B. (2003). Scale Economies, Bank Mergers, and Electronic Payments: A Spline Function Approach. *Journal of Banking & Finance*, 28(7), 1671–1696.
- Huntington, A. T., & Mawhinney, R. J. (1910). *Laws of the United States Concerning Money, Banking, and Loans, 1778-1909*. Washington, D.C.: U.S. Government Printing Office.
- Huntington, S. (1952). The Marasmus of the ICC: The Commission, the Railroads, and the Public Interest. *Yale Law Journal*, 61(4), 467–509.
- ICBA. (2014). *2014 ICBA Community Bank Call Report Burden Survey* [PDF file]. Retrieved October 25, 2022, from https://www.icba.org/docs/default-source/icba/news-documents/press-release/2015/2014callreportsurveyresults.pdf?sfvrsn=c1159f08_2.

- IDW (Institut der Wirtschaftsprüfer). (2020). *Fortentwicklung der Unternehmensführung und -kontrolle: erste Lehren aus dem Fall Wirecard* [PDF file]. Retrieved October 25, 2022, from <https://www.idw.de/blob/124552/996a2197d5e1463e74a0f769f4078b02/down-positions-papier-wirecard-2-aufl-data.pdf>.
- Igan, D., & Mishra, P. (2014). Wall Street, Capitol Hill, and K Street: Political Influence and Financial Regulation. *The Journal of Law and Economics*, 57(4), 1063–1084.
- Igan, D., Lambert, T. (2019). *Bank Lobbying: Regulatory Capture and Beyond* (Working Paper No. 19/171). International Monetary Fund.
- IJtsma, P., Spierdijk, L., & Shaffer, S. (2017). The Concentration–Stability Controversy in Banking: New Evidence from the EU-25. *Journal of Financial Stability*, 33(C), 273–284.
- IMAA (Institute for Mergers, Acquisitions and Alliances). (n.d.-a). *M&A Germany – Mergers & Acquisitions Germany*. Retrieved October 25, 2022, from <https://imaa-institute.org/mergers-acquisitions-germany/>.
- IMAA (Institute for Mergers, Acquisitions and Alliances). (n.d.-b). *M&A Statistics: Number and Value and Largest M&A Transactions by Region*. Retrieved October 25, 2022, from <https://imaa-institute.org/mergers-and-acquisitions-statistics/>.
- IMAA (Institute for Mergers, Acquisitions and Alliances). (n.d.-c). *M&A Statistics: Number and Value of M&A by Industry*. Retrieved October 25, 2022, from <https://imaa-institute.org/m-and-a-by-industries/>.
- IMF (International Monetary Fund). (2012). Spain: The Reform of Spanish Savings Banks: Technical Note. *IMF Country Report*, 12(141), 1–33.
- IMF (International Monetary Fund). (2017). *Global Financial Stability Report: Getting the Policy Mix Right* [PDF file]. Washington, D.C.: International Monetary Fund. Retrieved October 25, 2022, from <https://www.imf.org/-/media/Files/Publications/GFSR/2017/April/chapter-1/text.ashx>.
- ING (Internationale Nederlanden Groep). (2002). *Annual Report ING Group 2001: Toward a Global ING Brand* [PDF file]. Retrieved October 25, 2022, from <https://www.ing.com/web/file?uuid=786ef978-ce28-487f-84e9-11db8b50696d&owner=b03bc017-e0db-4b5d-abbf-003b12934429&contentid=11559>.

- ING (Internationale Nederlanden Groep). (2015). *ING Group Annual Report 2014: Empowering People* [PDF file]. Retrieved October 25, 2022, from <https://www.ing.com/web/file?uuid=9e4a52e6-1746-4a83-b31f-1c5978c8361c&owner=b03bc017-e0db-4b5d-abbf-003b12934429&contentid=33430>.
- ING (Internationale Nederlanden Groep). (n.d.). *History of ING*. Retrieved October 25, 2022, from <https://www.ing.com/About-us/Profile/History.htm>.
- ING Group. (2001). *Annual Report 2000 ING Group* [PDF file]. Retrieved October 25, 2022, from <https://www.ing.com/web/file?uuid=8b5bed7d-933f-4c3d-b69c-7e4be7fd08a8&owner=b03bc017-e0db-4b5d-abbf-003b12934429&contentid=11565>.
- Intesa Sanpaolo. (2008a). *Intesa Sanpaolo acquires JSC Praxex-Bank in Ukraine* [PDF file]. Retrieved October 25, 2022, from <https://group.intesasanpaolo.com/content/dam/portalgroup/repository-documenti/investor-relations/comunicati-stampa-en/2008/06/CNT-04-0000001AD0B/CNT-04-000000003F814.pdf>.
- Intesa Sanpaolo. (2008b). *Intesa Sanpaolo Takes Control of Carifirenze and is to Make a mandatory Complete-Acquisition Public Offer* [PDF file]. Retrieved October 25, 2022, from <https://group.intesasanpaolo.com/content/dam/portalgroup/repository-documenti/investor-relations/comunicati-stampa-en/2008/01/CNT-04-000000001AC51/CNT-04-000000003F7A0.pdf>.
- Intesa Sanpaolo. (2019). *History*. Retrieved October 25, 2022, from <https://group.intesasanpaolo.com/en/about-us/history>.
- Iser, J. C. (2021). „In Bayern war man zu stolz auf Wirecard“. *ZEIT ONLINE*. Retrieved October 25, 2022, from <https://www.zeit.de/wirtschaft/unternehmen/2021-01/wirecard-skandal-untersuchungsausschuss-bayern-florian-toncar/komplettansicht>.
- IW Consult GmbH Köln (2006). *Bürokratiekosten in der Kreditwirtschaft: Gutachten der IW Consult GmbH Köln für den Zentralen Kreditausschuss*. Köln: Institut der deutschen Wirtschaft Köln Consult GmbH.
- J.P. Morgan AG. (2005). *Annual Report 2004* [PDF file]. Retrieved from <https://www.jpmorganchase.com/content/dam/jpmc/jpmorgan-chase-and-co/investor-relations/documents/2004-AR-JPM.pdf>.
- J.P. Morgan AG. (2011). *Geschäftsbericht 2010* [PDF file]. Retrieved October 25, 2022, from https://www.jpmorgan.com/content/dam/jpm/global/disclosures/de/deutsch-version/2010_Annual_Report_Deutsch.pdf.

- J.P. Morgan AG. (2002). *Annual Report 2001* [PDF file]. Retrieved October 25, 2022, from <https://silo.tips/downloadFile/annual-report-jp-morgan-ag>.
- Jacewitz, S., Kravitz, T., & Shoukry, G. (2020). *Economies of Scale in Community Banks: Staff Studies* (Report No. 2020-06). Federal Deposit Insurance Corporation.
- Jackson, W. E., III. (1997). Market Structure and the Speed of Price Adjustments: Evidence of Non-Monotonicity. *Review of Industrial Organization*, 1(12), 37–57.
- Jennen, B., & Comfort, N. (2020). Ex-Wirecard CEO Met Senior Bundesbank Official in 2019. *Bloomberg*. Retrieved October 25, 2022, from <https://www.bloomberg.com/news/articles/2020-08-18/ex-wirecard-ceo-braun-met-senior-bundesbank-official-in-2019>.
- Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review*, 76(2), 323–329.
- Jeon, Y., & Miller, S. (2002). *Bank Concentration and Performance* (Economics Working Papers No. 2002-25). University of Connecticut, Department of Economics.
- Johnson, C. (2012). Congress Protected the Troops: Can the New CFPB Protect Civilians from Payday Lending?. *Washington and Lee Law Review*, 69(2), 649–727.
- Johnson, R. T. (1978). *Historical Beginnings... The Federal Reserve*. Boston, MA: Federal Reserve Bank of Boston.
- Jones, D. S., & King, K. K. (1995). The Implementation of Prompt Corrective Action: An Assessment. *Journal of Banking & Finance*, 19(3–4), 491–510.
- Jones, K. D., & Critchfield, T. (2005). Consolidation in the US Banking Industry: Is the ‘Long, Strange Trip’ About to End. *FDIC Banking Review*, 17(4), 31–61.
- Joskow, P. L., & Noll, R. G. (1981). Regulation in Theory and Practice: An overview. In G. Fromm (Ed.), *Studies in Public Regulation* (pp. 1–78). Cambridge, MA: The MIT Press.
- Joskow, P., & Rose, N. (1989). The Effects of Economic Regulation. *Handbook of Industrial Organization*, 2, 1449–1506.
- JPMorgan Chase & Co. (2009). *Annual Report 2008: The Way Forward* [PDF file]. Retrieved October 25, 2022, from <https://www.jpmorganchase.com/content/dam/jpmc/jpmorganchase-and-co/investor-relations/documents/2008-AR-Complete-AR.pdf>.
- JPMorgan Chase & Co. (2020). *History of Our Firm*. Retrieved October 25, 2022, from <https://institute.jpmorganchase.com/about/our-history>.

- Juncker, J.-C. (2015). *Completing Europe's Economic and Monetary Union* [PFD file]. Brussels: European Commission. Retrieved October 25, 2022, from https://ec.europa.eu/info/sites/default/files/5-presidents-report_en.pdf.
- Kaiser, T., Kunz, A., & Seibel, K. (2020). „Es erhärtet sich der Verdacht, dass Wirecard politischen Schutz genossen hat“. *Welt*. Retrieved October 25, 2022, from <https://www.welt.de/wirtschaft/article219275258/Wirecard-Skandal-Eine-Ohrfeige-fuer-den-Finanzminister.html>.
- Kalla, J. L., & Broockman, D. E. (2016). Campaign Contributions Facilitate Access to Congressional Officials: A Randomized Field Experiment. *American Journal of Political Science*, 60(3), 545–558.
- Kaplan, A. J. (1972). The Negotiable Order of Withdrawal (NOW) Account: “Checking Accounts” for Savings Banks?. *Boston College Law Review*, 14(3), 471–500.
- Kapopoulos, P., & Siokis, F. (2005). Market Structure, Efficiency and Rising Consolidation of the Banking Industry in the Euro Area. *Bulletin of Economic Research*, 57(1), 67–91.
- Kaufman, G. G. (1981). The Depository Institutions Deregulation and Monetary Control Act of 1980: What has Congress Wrought?. *Economic Review: Conference Supplement* (Federal Reserve Bank of San Francisco), (4), 199–236.
- Kaufman, G. G. (1988). Bank Runs: Causes, Benefits, and Costs. *Cato Journal*, 7(3), 559–594.
- Kaufman, G. G. (1996). Bank Failures, Systemic Risk, and Bank Regulation. *Cato Journal*, 16(1), 17–45.
- Kaufman, G. G. (2002). Too Big To Fail in Banking: What Remains?. *Quarterly Review of Economics & Finance*, 42(3), 423–423.
- Kaufman, G. G., & Scott, K. E. (2003). What is Systemic Risk, and Do Bank Regulators Retard or Contribute to It?. *The Independent Review*, 7(3), 371–391.
- Kaufman, G. G., & Wallison, P. J. (2001). The New Safety Net. *Regulation*, 24(2), 28–35.
- Kennedy, L. J., McCoy, P. A., & Bernstein, E. (2012). The Consumer Financial Protection Bureau: Financial Regulation for the twenty-First Century. *Cornell Law Review*, 97(5), 1141–1176.
- KfW (Kreditanstalt für Wiederaufbau). (2002). *Geschäftsbericht 2001* [PDF file]. Retrieved October 25, 2022, from https://www.kfw.de/PDF/Download-Center/Finanzpublikationen/PDF-Dokumente-Berichte-etc/1_Gesch%C3%A4ftsberichte/Gescha%CC%88ftsbericht_2001_D.pdf.

- KfW (Kreditanstalt für Wiederaufbau). (2004). *Geschäftsbericht 2003* [PDF file]. Retrieved from https://www.kfw.de/PDF/Download-Center/Finanzpublikationen/PDF-Dokumente-Berichte-etc/1_Gesch%C3%A4ftsberichte/Gescha%CC%88ftsbericht_2003_D.pdf.
- KfW (Kreditanstalt für Wiederaufbau). (2011). *Geschäftsbericht 2010* [PDF file]. Retrieved October 25, 2022, from https://www.kfw.de/PDF/Download-Center/Finanzpublikationen/PDF-Dokumente-Berichte-etc/1_Gesch%C3%A4ftsberichte/Gescha%CC%88ftsbericht_2010_BF_D.pdf.
- KfW (Kreditanstalt für Wiederaufbau). (2020). *Mit Deutschland gewachsen*. Retrieved from <https://www.kfw.de/%C3%9Cber-die-KfW/F%C3%B6rderung-auftrag-und-Geschichte/Geschichte-der-KfW/KfW-Jahrzehnte/>.
- Kipnis, A., & Holtermann, F. (2020). Gutachten verstärkt Kritik an Bafin im Fall Wirecard. *Handelsblatt*. Retrieved October 25, 2022, from <https://www.handelsblatt.com/finanzen/banken-versicherungen/banken/nach-bilanzskandal-gutachten-verstaerkt-kritik-an-bafin-im-fall-wirecard/25976048.html?ticket=ST-894440-EYpQCPbuToyGNKMJgRwD-ap6>.
- Klein, B. H. (1984). *Prices, Wages and Business Cycles: A Dynamic Theory*. New York, NY: Pergamon.
- Koetter, M. (2005). *Evaluating the German Bank Merger Wave* (Discussion Paper Series 2: Banking and Financial Studies No 12/2005). Frankfurt am Main: Deutsche Bundesbank.
- Koetter, M., & Vins, O. (2008). *The Quiet Life Hypothesis in Banking: Evidence from German Savings Banks* (Working Paper Series: Finance & Accounting, No. 190). Department of Finance, Goethe University Frankfurt am Main.
- Koetter, M., Kolari, J. W., & Spierdijk, L. (2008). *Testing the Quiet Life of US Banks with Adjusted Lerner Indices* (Federal Reserve Bank of Chicago Proceedings No. 1094). Federal Reserve Bank of Chicago.
- Koetter, M., Kolari, J. W., & Spierdijk, L. (2012). Enjoying the Quiet Life under Deregulation? Evidence from Adjusted Lerner Indices for US Banks. *Review of Economics and Statistics*, 94(2), 462–480.
- Kogler, M. (2020). Risk Shifting and the Allocation of Capital: A Rationale for Macroprudential Regulation. *Journal of Banking and Finance*, 118(9), 24–36.

- Koopmans, T. C. (1951). An Analysis of Production as an Efficient Combination of Activities. In T. C. Koopmans (Ed.), *Activity Analysis of Production and Allocation*, New York, NY: John Wiley and Sons, Inc.
- Korobkin, R. B. (2000). Behavioral Analysis and Legal Form: Rules vs. Standards Revisited. *Oregon Law Review*, 79(1), 23–60.
- Kovner, A., Vickery, J. I., & Zhou, L. (2014). Do Big Banks Have Lower Operating Costs?. *Economic Policy Review*, 20(2), 1–27.
- KPMG. (2012). *The Cumulative Impact of Regulation: An Analysis of the Effects of the Increase in and Accumulation of Regulations on the Services provided by the Dutch Banking Sector* [PDF file]. Retrieved October 25, 2022, from https://ec.europa.eu/finance/consultations/2012/hleg-banking/docs/contributions/registered-organisations/vno-ncw-annex_en.pdf.
- KPMG. (2013a). *Auswirkungen regulatorischer Anforderungen* [PDF file]. Retrieved October 25, 2022, from https://www.fundresearch.de/fundresearch-wAssets/sites/default/files/Nachrichten/Top-Themen/2013/Bro-BDB-Studie_11-13.pdf.
- KPMG. (2013b). *The Cumulative Impact of Regulation: An Impact Analysis of the Accumulation of Regulations on the Belgian Banking Sector*. [PDF file]. Retrieved October 25, 2022, from <https://assets.kpmg/content/dam/kpmg/pdf/2013/06/The-cumulative-impact-of-regulation.pdf>.
- KPMG. (2014). *Community Banking Survey: Seeking Strategic Advantage* [PDF file]. Retrieved October 25, 2022, from <https://assets.kpmg/content/dam/kpmg/pdf/2015/01/how-community-banks-are-driving-growth.pdf>.
- KPMG. (2016). *A Matter of Momentum: 2016 Regional and Community Banking Industry Outlook Survey* [PDF file]. Retrieved October 25, 2022, from <https://assets.kpmg/content/dam/kpmg/co/pdf/co-bt7-1sf-a-matter-of-momentum-2016-regional-and-community-banking-industry-outlook-survey.pdf>.
- KPMG. (2020). *Bericht über die unabhängige Untersuchung: Wirecard AG, München* [PDF file]. Retrieved October 25, 2022, from https://www.wirecard.com/uploads/Bericht_Sonderpruefung_KPMG.pdf.
- Kuck, H. (2022). Die Top 100 der deutschen Kreditwirtschaft: Weniger Bankstellen, weniger Mitarbeiter. *Die Bank: Zeitschrift für Bankpolitik und Praxis*, (7), 8–19.

- Kupiec, P. H., & O'Brien, J. M. (1997). *The Pre-Commitment Approach: Using Incentives to Set Market Risk Capital Requirements* (Finance and Economics Discussion Series Working Paper No 1997-14). Washington: Board of Governors of the Federal Reserve System.
- Kuprianov, A. (1985). The Monetary Control Act and the Role of the Federal Reserve in the Interbank Clearing Market. *Economic Review*, 71(4), 23–35.
- La Banque Postale. (2007). *Rapport Financier 2006* [PDF file]. Retrieved October 25, 2022, from <https://www.labanquepostale.com/content/dam/lbp/documents/investisseurs/en/regulatory-information/press-release/republication/LBP-2006-financial-report-EN.pdf>.
- La Banque Postale. (n.d.). *Our History: The History of La Banque Postale over the Years*. Retrieved October 25, 2022, from <https://www.labanquepostale.com/en/about/presentation-and-key-figures/history.html>.
- Laeven, L., & Levine, R. (2009). Bank Governance, Regulation and Risk Taking. *Journal of Financial Economics*, 93(2), 259–275.
- Laffont, J. J., & Tirole, J. (1991). The Politics of Government Decision-Making: A Theory of Regulatory Capture. *The Quarterly Journal of Economics*, 106(4), 1089–1127.
- Lambert, T. (2019). Lobbying on Regulatory Enforcement Actions: Evidence from US Commercial and Savings Banks. *Management Science*, 65(6), 2545–2572.
- Landi, A. (2012). Consolidation and Governance of Italian Banks. In S. Cosma, & E. Gualandri (Eds.), *The Italian Banking System: Impact of the Crisis and Future Perspectives* (pp. 55–66). London: Palgrave Macmillan.
- Lang, G., & Welzel, P. (1996). Efficiency and Technical Progress in Banking: Empirical Results for a Panel of German Cooperative Banks. *Journal of Banking & Finance*, 20(6), 1003–1023.
- Lange, T. (2020). Eng verdrahtet: Wirecards Lobbygeflecht. Retrieved October 25, 2022, from <https://www.lobbycontrol.de/2020/07/eng-verdrahtet-wirecards-lobbygeflecht/>.
- Langenbucher, K., Leuz, C., Krahn, J. P., & Pelizzon, L. (2020). *What are the Wider Supervisory Implications of the Wirecard Case?* (SAFE White Paper No. 74). European Parliament.
- Lau, R. R., Sigelman, L., Heldman, C., & Babbitt, P. (1999). The Effects of Negative Political Advertisements: A Meta-Analytic Assessment. *American Political Science Review*, 93(4), 851–875.

- LBBW (Landesbank Baden-Württemberg). (2009). *Der Geschäftsbericht 2008* [PDF file]. Retrieved October 25, 2022, from https://www.lbbw.de/public/geschaeftsbericht/lbbw_geschaeftsbericht_2008_7xc8gtbnk_m.pdf.
- LBBW (Landesbank Baden-Württemberg). (2011). *Der Geschäftsbericht 2010* [PDF file]. Retrieved October 25, 2022, from https://www.lbbw.de/public/geschaeftsbericht/lbbw_geschaeftsbericht_2010_7xc8gtt8h_m.pdf?origin=/geschaeftsbericht10.
- Leaver, C. (2009). Bureaucratic Minimal Squawk Behavior: Theory and Evidence from Regulatory Agencies. *American Economic Review*, 99(3), 572–607.
- Lee, D. C., & O’Neill, B. D. (2010). Executive Compensation: Dodd-Frank’s “Say-on-Pay” Provisions. *Insights: The Corporate & Securities Law Advisor*, 24(10), 1–10.
- Leggett, K. J., & Strand, R. W. (2002). Membership Growth, Multiple Membership Groups and Agency Control at Credit Unions. *Review of Financial Economics*, 11(1), 37–46.
- Leibenstein, H. (1966). Allocative Efficiency vs. ‘X-Efficiency’. *American Economic Review*, 56(3), 392–415.
- Leledakis, G. N., & Pyrgiotakis, E. G. (2022). US Bank M&As in the Post-Dodd-Frank Act Era: Do they Create Value?. *Journal of Banking & Finance*, 135(February), Article 105576. Retrieved from <https://doi.org/10.1016/j.jbankfin.2019.06.008>.
- Lepetit, L., Patry, S., & Rous, P. (2004). Diversification versus Specialisation: An Event Study of M&As in the European Banking Industry. *Applied Financial Economics*, 14(9), 663–669.
- Levitin, A. J., Pavlov, A. D., & Wachter, S. M. (2012). The Dodd-Frank Act and Housing Finance: Can It Restore Private Risk Capital to the Securitization Market?. *Yale Journal on Regulation*, 29(1), 155–180.
- Lewellen, W. G., & Huntsman, B. (1970). Managerial Pay and Corporate Performance. *American Economic Review*, 60(4), 710–20.
- Liang, N., & Rhoades, S. A. (1988). Geographic Diversification and Risk in Banking. *Journal of Economics and Business*, 40(4), 271–284.
- Lichtenstein, C. C. (1985). The US Response to the International Debt Crisis: The International Lending Supervision Act of 1983. *Virginia Journal of International Law*, 25(2), 401–435.
- Llewellyn, D. T. (2016). Proportionality in Bank Regulation. In P. Jackson (Ed.), *Banking Reform* (pp. 59–71). Vienna: Société Universitaire Européenne de Recherches Financières.

- Lobell, C. D. (1984). Nonbank Banks: Controversy over a New Form of Consumer Bank. *The Business Lawyer*, 39(3), 1193–1214.
- Logan, W. S. (1922). Amendments to the Federal Reserve Act. *The ANNALS of the American Academy of Political and Social Science*, 99(1), 114–121.
- Lohmann, S. (1995). Information, Access, and Contributions: A Signaling Model of Lobbying. *Public Choice*, 85(3–4), 267–284.
- Lorenz, M. O. (1905). Methods of Measuring the Concentration of Wealth. *Publications of the American Statistical Association*, 9(70), 209–219.
- Lovell, C. K., & Sickles, R. C. (1983). Testing Efficiency Hypotheses in Joint Production: A Parametric Approach. *The Review of Economics and Statistics*, 65(1), 51–58.
- Lown, C. S., Osler, C. L., Sufi, A., & Strahan, P. E. (2000). The Changing Landscape of the Financial Services Industry: What Lies Ahead?. *FRB of New York Economic Policy Review*, 6(4), 39–55.
- Lucca, D., Seru, A., & Trebbi, F. (2014). The Revolving Door and Worker Flows in Banking Regulation. *Journal of Monetary Economics*, 65, 17–32.
- Lybeck, J. A. (2016). *The Future of Financial Regulation: Who Should Pay for the Failure of American and European Banks?*. Cambridge: Cambridge University Press.
- Mace, M. L., & Montgomery, G. G. (1962). *Management Problems of Corporate Acquisitions*. Boston, MA: Harvard University.
- Madura, J., & Wiant, K. J. (1994). Long-Term Valuation Effects of Bank Acquisitions. *Journal of Banking & Finance*, 18(6), 1135–1154.
- Magalhaes, R., & Tribó, J. A. (2010). *Bank Regulations and Loan Contracts* (SSRN Working Papers Series). Universidad Carlos III de Madrid. Retrieved October 25, 2022, from https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID1944318_code837608.pdf?abstractid=1343845&mirid=1.
- Mahajan, A., Rangan, N. K., & Zardkoohi, A. (1996). Cost Structures in Multinational and Domestic Banking. *Journal of Banking & Finance*, 20(2), 283–306.

- Maier, M. (2020). Wirecard: „Der größte Börsenskandal Deutschlands“. *Berliner Zeitung*. Retrieved October 25, 2022, from [https://www.berliner-zeitung.de/wirtschaft-verantwortung/wirecard-der-groesste-boersenskandal-deutschlands-li.89991#:~:text=Sabine%20Reimer%2C%20Sprecherin%20der%20BaFin,f%C3%BCr%20Rechnungslegung%20\(DPR\)%E2%80%9C.&text=Im%20Fall%20von%20DPR%20betr%C3%A4gt,laut%20Jahresbericht%202019%20acht%20Monate](https://www.berliner-zeitung.de/wirtschaft-verantwortung/wirecard-der-groesste-boersenskandal-deutschlands-li.89991#:~:text=Sabine%20Reimer%2C%20Sprecherin%20der%20BaFin,f%C3%BCr%20Rechnungslegung%20(DPR)%E2%80%9C.&text=Im%20Fall%20von%20DPR%20betr%C3%A4gt,laut%20Jahresbericht%202019%20acht%20Monate).
- Maier, M. (2021a). Commerzbank warnte vor Wirecard, doch nichts geschah. *Berliner Zeitung*. Retrieved October 25, 2022, from <https://www.berliner-zeitung.de/wirtschaft-verantwortung/wirecard/commerzbank-warnte-vor-wirecard-doch-nichts-geschah-li.143541>.
- Maier, M. (2021b). Wirecard: Aufseher erhielten Warnung, doch keiner hat sie gelesen. *Berliner Zeitung*. Retrieved October 25, 2022, from <https://www.berliner-zeitung.de/wirtschaft-verantwortung/wirecard/wirecard-aufseher-erhielten-warnung-doch-keiner-hat-sie-gelesen-li.145848>.
- Maier, M. (2021c). Wirecard: „Erst die Spitze des Eisbergs“. *Berliner Zeitung*. Retrieved October 25, 2022, from <https://www.berliner-zeitung.de/wirtschaft-verantwortung/wirecard/wirecard-erst-die-spitze-des-eisbergs-li.143848>.
- Maier, M. (2021d). Wirecard: Staatsbesuch ohne Zeugen – was weiß die Bundesregierung?. *Berliner Zeitung*. Retrieved October 25, 2022, from <https://www.berliner-zeitung.de/wirtschaft-verantwortung/wirecard/wirecard-staatssekretaer-besucht-markus-braun-warum-li.153190>.
- Mallows, C. L. (1986). Augmented Partial Residuals. *Technometrics*, 28(4), 313–319.
- Marfels, C. (1971). Absolute and Relative Measures of Concentration Reconsidered. *Kyklos*, 24(4), 753–766.
- Marris, R. (1964). *The Economic Theory of “Managerial” Capitalism*. London: Macmillan.
- Marsh, T. D., & Norman, J. W. (2013a). *Reforming the Regulation of Community Banks after Dodd-Frank* [PDF file]. Retrieved October 25, 2022, from https://www.communitybanking.org/~/_media/files/communitybanking/2013/marsh_norman_reforming_regulation.pdf.
- Marsh, T. D., & Norman, J. W. (2013b). *The Impact of Dodd-Frank on Community Banks* [PDF file]. American Enterprise Institute. Retrieved October 25, 2022, from https://www.aei.org/wp-content/uploads/2013/05/-the-impact-of-doddfrank-on-community-banks_164334553537.pdf.

- Masera, R. (2013). US Basel III Final Rule on Banks' Capital Requirements: A Different-Size-Fits-All Approach. *PSL Quarterly Review*, 66(267), 387–402.
- Maslak, G. D., & Senel, G. (2021). *Bank Consolidation and Systemic Risk: M&A During the 2008 Financial Crisis* [PDF file]. Retrieved October 25, 2022, from http://www.goncasenel.com/uploads/2/4/8/1/24818900/maslak_senel_bank_consolidation_and_systemic_risk_paper_website.pdf.
- Mason, E. S. (1939). Price and Production Policies of Large-Scale Enterprise. *American Economic Review*, 29(1), 61–74.
- Maudos, J. (1998). Market Structure and Performance in Spanish Banking using a Direct Measure of Efficiency. *Applied Financial Economics*, 8(2), 191–200.
- Maudos, J., & De Guevara, J. F. (2007). The Cost of Market Power in Banking: Social Welfare Loss vs. Cost Inefficiency. *Journal of Banking & Finance*, 31(7), 2103–2125.
- McCord, R., & Prescott, E. (2014). The Financial Crisis, the Collapse of Bank Entry, and Changes in the Size Distribution of Banks. *FRB Richmond Economic Quarterly*, 100(1), 23–50.
- McCraw, T. K. (1975). Regulation in America: A Review Article. *Business History Review*, 49(2), 159–183.
- McCrum, D. (2015). Rupee Do: What is Wirecard Buying?. *Financial Times*. Retrieved October 25, 2022, from <https://www.ft.com/content/61934fe6-7447-37ae-98bc-a0c03edee377>.
- McCrum, D. (2019a). Wirecard Relied on Three Opaque Partners for Almost All Its Profit. *Financial Times*. Retrieved October 25, 2022, from <https://www.ft.com/content/a7b43142-6675-11e9-9adc-98bf1d35a056>.
- McCrum, D. (2019b). Wirecard's Suspect Accounting Practices Revealed. *Financial Times*. Retrieved October 25, 2022, from <https://www.ft.com/content/19c6be2a-ee67-11e9-bfa4-b25f11f42901>.
- McCrum, D., & Palma, S. (2019a). Executive at Wirecard Suspected of Using Forged Contracts. *Financial Times*. Retrieved October 25, 2022, from <https://www.ft.com/content/03a5e318-2479-11e9-8ce6-5db4543da632>.
- McCrum, D., & Palma, S. (2019b). Wirecard: Inside an Accounting Scandal. *Financial Times*. Retrieved October 25, 2022, from <https://www.ft.com/content/d51a012e-1d6f-11e9-b126-46fc3ad87c65>.

- McNulty, J. E. (2000). Another Look at Scale Economies at Large Commercial Banks. *American Business Review*, 18(2), 96–104.
- Meeker, J. E. (1926). Preventive v. Punitive Security Laws. *Columbia Law Review*, 26(3), 318–328.
- Méon, P. G., & Weill, L. (2005). Can Mergers in Europe Help Banks Hedge Against Macroeconomic Risk?. *Applied Financial Economics*, 15(5), 315–326.
- Merkley, J., & Levin, C. (2011). The Dodd-Frank Act Restrictions on Proprietary Trading and Conflicts of Interest: New Tools to Address Evolving Threats. *Harvard Journal of Legislation*, 48(2), 530–553.
- Mertens, K. (2008). Deposit Rate Ceilings and Monetary Transmission in the US. *Journal of Monetary Economics*, 55(7), 1290–1302.
- Mester, L. J. (1996). A Study of Bank Efficiency Taking into Account Risk-Preferences. *Journal of Banking & Finance*, 20(6), 1025–1045.
- Mester, L. J. (2005). *Optimal Industrial Structure in Banking* (Working Paper No. 08-2). Philadelphia: Federal Reserve Bank of Philadelphia.
- Meulemann, M., Uebele, M., & Wilfling, B. (2014). The Restoration of the Gold Standard after the US Civil War: A Volatility Analysis. *Journal of Financial Stability*, 12, 37–46.
- Mian, A., Sufi, A., & Trebbi, F. (2010). The Political Economy of the US Mortgage Default Crisis. *American Economic Review*, 100(5), 1967–1998.
- Miller, G. W. (1978). *Proposals on Financial Institution Reserve Requirements and Related Issues: Statement before the Committee on Banking, Finance and Urban Affairs, House of Representatives* [PDF file]. Retrieved October 25, 2022, from https://fraser.stlouisfed.org/files/docs/historical/miller/Miller_19780727.pdf.
- Mirzaei, A., Moore, T., & Liu, G. (2013). Does Market Structure Matter on Banks' Profitability and Stability? Emerging vs. Advanced Economies. *Journal of Banking & Finance*, 37(8), 2920–2937.
- Mishkin, F. S. (1996). *Evaluating FDICIA* [PDF file]. Retrieved October 25, 2022, from <https://www0.gsb.columbia.edu/faculty/fmishkin/PDFpapers/FDICIA96.pdf>.
- Mishkin, F. S. (2001). Prudential Supervision: Why Is It Important and What Are the Issues?. In F. S. Mishkin (ed.), *Prudential Supervision: What Works and What Doesn't* (pp. 1–30). Chicago and London: The University of Chicago Press.

- Mishkin, F. S. (2019). *The Economics of Money, Banking, and Financial Markets: Global Edition* (12th ed., Global Edition). Harlow: Pearson Education Limited.
- Mitchell, K., & Onvural, N. M. (1996). Economies of Scale and Scope at Large Commercial Banks: Evidence from the Fourier Flexible Functional Form. *Journal of Money, Credit and Banking*, 28(2), 178–199.
- Mitnick, B. M. (1980). *The Political Economy of Regulation: Creating, Designing, and Removing Regulatory Forms*. New York, NY: Columbia University Press.
- Molyneux, P., & Forbes, W. (1995). Market Structure and Performance in European Banking. *Applied Economics*, 27(2), 155–159.
- Moreau, N., & Boukhorssa, N. (2002). Les Caisses d'Épargne: Un Nouvel Acteur dans le Monde Coopératif. *Revue d'Économie Financière*, 67(3), 249–259.
- Mueller, D. C. (1969). A Theory of Conglomerate Mergers. *The Quarterly Journal of Economics*, 83(4), 643–659.
- Mulloy, P., & Lasker, C. (1995). The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994: Responding to Global Competition. *Journal of Legislation*, 21(2), 255–273.
- Natixis. (2006). *2006 Registration Document* [PDF file]. Retrieved October 25, 2022, from https://natixis.groupebpce.com/upload/docs/application/pdf/2007-08/2006_annual_report.pdf.
- Navaretti, G. B., Calzolari, G., Mansilla-Fernandez, J. M., & Pozzolo, A. F. (2018). Fintech and Banking. Friends or Foes?. *European Economy: Banks, Regulation, and the Real Sector*, 3(2), 9–30.
- Niesmann, A. (2020). Klingbeil: „Wir müssen uns weiter an die Maskenpflicht halten, auch wenn es nervt“. *Redaktionsnetzwerk Deutschland*. Retrieved October 25, 2022, from <https://www.rnd.de/politik/klingbeil-wir-muessen-uns-weiter-an-die-maskenpflicht-halten-auch-wenn-es-nervt-R4J5FNRKDVDQLN4Y3TGB2AZTKI.html>.
- Nippani, S., & Green Jr, K. W. (2002). The Banking Industry After the Riegle-Neal Act: Restructure and Overall Performance. *Quarterly Review of Economics & Finance*, 42(5), 901–901.
- Nițescu, D. C. (2018). Diversity and Proportionality, Challenges or Opportunities for the European Banking Sector?. *Theoretical & Applied Economics*, 25(2), 133–148.

- Noll, R. G. (1989). Economic Perspectives on the Politics of Regulation. In R. Schmalensee, & R. D. Willig (Eds.), *Handbook of Industrial Organization: Volume 2* (pp. 1253–1287). Amsterdam: North Holland.
- Nouy, D. (2017). *Too Much of a Good Thing? The Need for Consolidation in the Banking Sector* [Speech]. Retrieved October 25, 2022, from <https://www.bankingsupervision.europa.eu/press/speeches/date/2017/html/ssm.sp170927.en.html>.
- OCC (Office of the Comptroller of the Currency). (1895). *Annual Report of the Comptroller of the Currency to the First Session of the Fifty-Fourth Congress of the United States* [PDF file]. Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/56/item/19116>.
- OCC (Office of the Comptroller of the Currency). (2019). Covered Savings Associations. *Federal Register*, 84(101), 23991–24007.
- OECD (Organization for Economic Co-operation and Development). (1993). *Glossary of Industrial Organisation Economics and Competition Law* [PDF file]. Retrieved October 25, 2022, from <https://www.oecd.org/competition/abuse/2376087.pdf>.
- OECD (Organization for Economic Co-operation and Development). (2009). *Roundtable on Competition Policy, Industrial Policy and National Champions* [PDF file]. Retrieved October 25, 2022, from <https://www.oecd.org/daf/competition/44548025.pdf>.
- OECD (Organization for Economic Co-operation and Development). (2022). *Inflation (CPI)* [Data set]. Retrieved October 25, 2022, from <https://data.oecd.org/price/inflation-cpi.htm>.
- Office of the Comptroller of the Currency, & Federal Reserve System. (2013). Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Capital Adequacy, Transition Provisions, Prompt Corrective Action, Standardized Approach for Risk-weighted Assets, Market Discipline and Disclosure Requirements, Advanced Approaches Risk-Based Capital Rule, and Market Risk Capital Rule. *Federal Register*, 78(198), 62018–62291.
- Office of the Comptroller of the Currency, Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, & Securities and Exchange Commission. (2014a). Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships With, Hedge Funds and Private Equity Funds. *Federal Register*, 79(21), 5536–5806.

Office of the Comptroller of the Currency, Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, Securities and Exchange Commission, & Commodity Futures Trading Commission. (2014b). Treatment of Certain Collateralized Debt Obligations Backed Primarily by Trust Preferred Securities With Regard to Prohibitions and Restrictions on Certain Interests in, and Relationships With, Hedge Funds and Private Equity Funds. *Federal Register*, 79(21), 5223–5228.

Office of the Comptroller of the Currency, Federal Reserve System, Federal Deposit Insurance Corporation, & Office of Thrift Supervision. (2007). Risk-Based Capital Standards: Advanced Capital Adequacy Framework — Basel II. *Federal Register*, 72(235), 69288–69445.

Office of the Comptroller of the Currency, Federal Reserve System, & Federal Deposit Insurance Corporation. (2011). Risk-Based Capital Standards: Advanced Capital Adequacy Framework—Basel II; Establishment of a Risk-Based Capital Floor. *Federal Register*, 76(124), 37620–37629.

Office of the Comptroller of the Currency, Federal Reserve System, & Federal Deposit Insurance Corporation. (2012a). Regulatory Capital Rules: Advanced Approaches Risk-Based Capital Rule; Market Risk Capital Rule. *Federal Register*, 77(169), 52978–53057.

Office of the Comptroller of the Currency, Federal Reserve System, & Federal Deposit Insurance Corporation. (2012b). Regulatory Capital Rules: Standardized Approach for Risk-Weighted Assets; Market Discipline and Disclosure Requirements. *Federal Register*, 77(169), 52888–52975.

Office of the Comptroller of the Currency, Federal Reserve System, & Federal Deposit Insurance Corporation. (2012c). Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Minimum Regulatory Capital Ratios, Capital Adequacy, Transition Provisions, and Prompt Corrective Action. *Federal Register*, 77(169), 52792– 52886.

Office of the Comptroller of the Currency, Federal Reserve System, & Federal Deposit Insurance Corporation. (2014a). Liquidity Coverage Ratio: Liquidity Risk Measurement Standards. *Federal Register*, 79(197), 61440–61541.

Office of the Comptroller of the Currency, Federal Reserve System, & Federal Deposit Insurance Corporation. (2014b). Regulatory Capital Rules: Regulatory Capital, Enhanced Supplementary Leverage Ratio Standards for Certain Bank Holding Companies and Their Subsidiary Insured Depository Institutions. *Federal Register*, 79(84), 24528–24541.

- Office of the Comptroller of the Currency, Federal Reserve System, & Federal Deposit Insurance Corporation. (2020). Net Stable Funding Ratio: Liquidity Risk Measurement Standards and Disclosure Requirements. *Federal Register*, 86(27), 9120–9221.
- Office of the Comptroller of the Currency, Office of Thrift Supervision, Federal Reserve System, & Federal Deposit Insurance Corporation (2006). Risk-Based Capital Standards: Advanced Capital Adequacy Framework and Market Risk; Proposed Rules and Notices. *Federal Register*, 71(185), 55830–55958.
- Office of the Law Revision Counsel. (2021). *The Code of Laws of the United States of America. Title 12 – Banks and Banking* [PDF file]. Retrieved November 23, 2022, from <https://uscode.house.gov/download/annualhistoricalarchives/pdf/2021/2021usc12.pdf>.
- Osman, Y. (2021a). Wie die Bafin eine Hedgefonds-Managerin abwimmelte, die gegen Wirecard wettete. *Handelsblatt*. Retrieved October 25, 2022, from <https://www.handelsblatt.com/finanzen/banken-versicherungen/banken/bilanzskandal-wie-die-bafin-eine-hedgefonds-managerin-abwimmelte-die-gegen-wirecard-wettete/26778928.html>.
- Osman, Y. (2021b). Wirecard-Affäre: Die Bafin vernachlässigte über Jahre ihre internen Kontrollen. *Handelsblatt*. Retrieved October 25, 2022, from <https://www.handelsblatt.com/finanzen/banken-versicherungen/banken/aktiengeschaefteder-mitarbeiter-wirecard-afaeere-die-bafin-vernachlaessigte-ueber-jahre-ihre-internen-kontrollen/26985274.html>.
- Osterberg, W. P., & Thomson, J. B. (1999). Banking Consolidation and Correspondent Banking. *Economic Review* (Federal Reserve Bank of Cleveland), 35(1), 9–20.
- Otero-Iglesias, M., Royo S., & Steinberg, F. (2016). *The Spanish Financial Crisis: Lessons for the European Banking Union*. Retrieved October 25, 2022, from <https://media.realinstitutoelcano.org/wp-content/uploads/2021/10/informe-elcano-20-spanish-financial-crisis-lessons-european-banking-union.pdf>.
- Ott, K. (2020). Vertrauliches mit dem Wirecard-Chef. *Süddeutsche Zeitung*. Retrieved October 25, 2022, from <https://www.sueddeutsche.de/wirtschaft/finanz-skandal-vertrauliches-mit-dem-wirecard-chef-1.4964352>.
- Pareto, V. (1971). *Manual of Political Economy*. New York: Augustus M. Kelley. (Original work published 1906).
- Pasiouras, F. (2008). International Evidence on the Impact of Regulations and Supervision on Banks' Technical Efficiency: An Application of Two-Stage Data Envelopment Analysis. *Review of Quantitative Finance and Accounting*, 30(2), 187–223.

- Pasiouras, F., Gaganis, C., & Zopounidis, C. (2006). The Impact of Bank Regulations, Supervision, Market Structure, and Bank Characteristics on Individual Bank Ratings: A Cross-Country Analysis. *Review of Quantitative Finance and Accounting*, 27(4), 403–438.
- Pasiouras, F., Tanna, S., & Zopounidis, C. (2009). The Impact of Banking Regulations on Banks' Cost and Profit Efficiency: Cross-Country Evidence. *International Review of Financial Analysis*, 18(5), 294–302.
- Peirce, H., Robinson, I., & Stratmann, T. (2014). *How are Small Banks Faring under Dodd-Frank?* (Working Paper No. 14-05). Washington: George Mason University.
- Peltzman, S. (1976). Toward a More General Theory of Regulation. *The Journal of Law and Economics*, 19(2), 211–240.
- Peltzman, S. (1977). The Gains and Losses from Industrial Concentration. *Journal of Law and Economics*, 20(2), 229–263.
- Peltzman, S. (1984). Constituent Interest and Congressional Voting. *The Journal of Law and Economics*, 27(1), 181–210.
- Peltzman, S., Levine, M. E., & Noll, R. G. (1989). The Economic Theory of Regulation after a Decade of Deregulation. *Brookings Papers on Economic Activity*, 20(1989), 1–59.
- Penas, M. F., & Unal, H. (2004). Gains in Bank Mergers: Evidence from the Bond Markets. *Journal of Financial Economics*, 74(1), 149–179.
- Peristiani, S. (1997). Do Mergers Improve the X-Efficiency and Scale Efficiency of US Banks? Evidence from the 1980s. *Journal of Money, Credit & Banking*, 29(3), 326–337.
- Phillips, L. W., & Calder, B. (1979). Evaluating Consumer Protection Programs: Part I. Weak but Commonly Used Research Designs. *Journal of Consumer Affairs*, 13(2), 157–185.
- Phillips, L. W., & Calder, B. J. (1980). Evaluating Consumer Protection Laws: II. Promising Methods. *The Journal of Consumer Affairs*, 14(1), 9–36.
- Pigou, A. C. (1932). *The Economics of Welfare*. London: Macmillan and Co.
- Pike, C. J., & Thomson, J. B. (1992). FDICIA's Prompt Corrective Action Provisions. *Economic Commentary* (Federal Reserve Bank of Cleveland).
- Pilloff, S. J. (1996). Performance Changes and Shareholder Wealth Creation Associated with Mergers of Publicly Traded Banking Institutions. *Journal of Money, Credit and Banking*, 28(3), 294–310.

- Pittman, R. W. (2007). Consumer Surplus as the Appropriate Standard for Antitrust Enforcement. *Competition Policy International*, 3(2), 205–224.
- Pohl, M., & Tortella, T. (2017). *A Century of Banking Consolidation in Europe: The History and Archives of Mergers and Acquisitions*. London: Routledge.
- Poli, F. (2019). *Co-operative Banking Networks in Europe*. Cham: Palgrave Macmillan Studies in Banking and Financial Institutions.
- Poshakwale, S., Aghanya, D., & Agarwal, V. (2020). The Impact of Regulations on Compliance Costs, Risk-Taking, and Reporting Quality of the EU Banks. *International Review of Financial Analysis*, 68(C), Article 101431. Retrieved from <https://doi.org/10.1016/j.irfa.2019.101431>.
- Posner, R. A. (1971). Taxation by Regulation. *The Bell Journal of Economics and Management Science*, 2(1), 22–50.
- Posner, R. A. (1974). Theories of Economic Regulation. *Bell Journal of Economics and Management Science*, 5(2), 335–358.
- Prager, R. A., & Hannan, T. H. (1998). Do Substantial Horizontal Mergers Generate Significant Price Effects? Evidence from the Banking Industry. *The Journal of Industrial Economics*, 46(4), 433–452.
- Prange, C., & Mayrhofer, U. (2015). Alliances and Joint Ventures. *Academy of Management Perspectives*, 25(2), 12–24.
- Punt, L. W., & Van Rooij, M. C. J. (1999). *The Profit-Structure Relationship, Efficiency and Mergers in the European Banking Industry: An Empirical Assessment* (Research Memorandum WO&E No. 604). De Nederlandsche Bank.
- Quadir, F. (2019). *Safkhet Capital to BaFin on Short Sale Ban* [Letter]. Retrieved October 25, 2022, from <https://img1.wsimg.com/blobby/go/14c124c6-8b4b-4fce-aa5b-4fc04834d828/downloads/Safkhet%20Capital%20to%20BaFin%20on%20Short%20Sale%20Ban.pdf?ver=1553002904959>.
- Rabobank Group. (2002). *Annual Report 2001* [PDF file]. Retrieved October 25, 2022, from https://www.rabobank.com.au/-/media/rabobank-au/files/pdf/disclosures/2001/rabobank_group_annual_report-2001.pdf?la=en&hash=CA3966DE31D499E930AB0CA575FC2FAD6DC6CC48.

- Rabobank Group. (2003). *Annual Report 2002: Our Ambition: To Be Market Leader* [PDF file]. Retrieved October 25, 2022, from https://www.rabobank.com.au/-/media/rabobank-au/files/pdf/disclosures/2002/rabobank_group_annual_report2002.pdf?la=en&hash=59F30D13B0042218BAC389841B417D97577E6A05.
- Rabobank Group. (2008). *Annual Summary 2007* [PDF file]. Retrieved October 25, 2022, from https://www.rabobank.com.au/-/media/rabobank-au/files/pdf/disclosures/2007/uk_annual_summary_2007.pdf?la=en&hash=101B55EEFC2A0CD2750BAA5D1809F0C5E932E1B.
- Rabobank. (2018). *Rabobank Through the Years* [PDF file]. Retrieved October 25, 2022, from <https://www.rabobank.com/en/images/r652-rabodoordetijd-eng-def.pdf>.
- Rad, A. T., & Van Beek, L. (1999). Market Valuation of European Bank Mergers. *European Management Journal*, 17(5), 532–540.
- Ramsey, J. (2014). *Remarks on the Volcker Rule’s Market Making Exemption* [Speech]. Retrieved October 25, 2022, from [https://www.sec.gov/news/speech/2014-spch020414jr#:~:text=Market%20making%20\(along%20with%20other,from%20the%20proprietary%20trading%20prohibition.&text=%5B3%5D%20Of%20course%2C%20that,securities%20firms%20do%20in%20general](https://www.sec.gov/news/speech/2014-spch020414jr#:~:text=Market%20making%20(along%20with%20other,from%20the%20proprietary%20trading%20prohibition.&text=%5B3%5D%20Of%20course%2C%20that,securities%20firms%20do%20in%20general).
- Randall, S. (1999). Insurance Regulation in the United States: Regulatory Federalism and the National Association of Insurance Commissioners. *Florida State University Law Review*, 26(3), 625–699.
- Rangan, N., Grabowski, R., Aly, H. Y., & Pasurka, C. (1988). The Technical Efficiency of US Banks. *Economics Letters*, 28(2), 169–175.
- Restoy, F. (2018). *The European Banking Union: What are the Missing Pieces?* [PDF file]. Geneva: Bank for International Settlements. Retrieved October 25, 2022, from <https://www.bis.org/speeches/sp181018a.pdf>.
- Restrepo-Tobón, D., & Kumbhakar, S. C. (2014). Enjoying the Quiet Life under Deregulation? Not Quite. *Journal of Applied Econometrics*, 29(2), 333–343.
- Rhoades, S. A., & Rutz, R. D. (1982). Market Power and Firm Risk: A Test of the ‘Quiet Life’ Hypothesis. *Journal of Monetary Economics*, 9(1), 73–85.
- Rivard, R. J., & Thomas, C. R. (1997). The Effect of Interstate Banking on Large Bank Holding Company Profitability and Risk. *Journal of Economics and Business*, 1(49), 61–76.

- Robertson, R. M. (1968). *The Comptroller and Bank Supervision: A Historical Appraisal*. Washington, DC: The Office of the Comptroller of the Currency.
- Rochet, J. C. (2007). *Why Are There So Many Banking Crises?: The Politics and Policy of Bank Regulation*. Princeton, NJ and Oxford: Princeton University Press.
- Rochet, J. C., & Tirole, J. (1996). Interbank Lending and Systemic Risk. *Journal of Money, Credit and Banking*, 28(4), 733–762.
- Rosenbluth, F., & Schaap, R. (2003). The Domestic Politics of Banking Regulation. *International Organization*, 57(2), 307–336.
- Rosenbluth, G. (1955). Measures of Concentration. In G. J. Stigler (Ed.), *Business Concentration and Price Policy* (pp. 57–99). Princeton, NJ: Princeton University Press.
- S&P Global Market Intelligence. (2021). *Europe's 50 Largest Banks by Assets, 2021*. Retrieved October 25, 2022, from <https://www.spglobal.com/marketintelligence/en/news-insights/research/europes-50-largest-banks-by-assets-2021>.
- S&P Global Market Intelligence. (2022a). *Europe's 50 Largest Banks by Assets, 2022*. Retrieved October 25, 2022, from <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/europe-s-50-largest-banks-by-assets-2022-69689461>.
- S&P Global Market Intelligence. (2022b). *The World's 100 Largest Banks, 2022*. Retrieved October 25, 2022, from <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/the-world-s-100-largest-banks-2022-69651785>.
- Sabadell Bank. (2020). *Banco Sabadell, 140 Years of History*. Retrieved October 25, 2022, from <https://www.grupbancsabadell.com/corp/en/about-the-group/history.html>.
- Samuelson, P. A. (1947). *Foundations of Economic Analysis*. Cambridge, MA: Harvard University Press.
- Santander. (2001). *Informe Anual 2000* [PDF file]. Retrieved October 25, 2022, from <https://ddd.uab.cat/pub/infanu/117819/iaSANTANDERa2000ispa.pdf>.
- Santander. (2009). *Annual Report 2008* [PDF file]. Retrieved October 25, 2022, from <https://www.santander.com/content/dam/santander-com/en/documentos/informe-anual/2008/IA-2008-Annual%20Report%202008-10-en.pdf>.
- Santander. (n.d.). *Our History: Santander was Founded in 1857. Learn about the Bank's History over More than 160 Years*. Retrieved October 25, 2022, from <https://www.santander.com/en/about-us/our-history#2010-2016>.

- Santos, J. A. (2001). Bank Capital Regulation in Contemporary Banking Theory: A Review of the Literature. *Financial Markets, Institutions & Instruments*, 10(2), 41–84.
- Santos, T. (2014). Antes del Diluvio: The Spanish Banking System in the First Decade of the Euro Area. In E. L. Glaeser, T. Santos, & E. G. Weyl (Eds.), *After the Flood: How the Great Recession Changed Economic Thought* (pp. 153–208). Chicago and London: The University of Chicago Press.
- Sapienza, P. (2002). The Effects of Banking Mergers on Loan Contracts. *The Journal of Finance*, 57(1), 329–367.
- Schackmann-Fallis, K.-P., Weiß, M., & Gischer, H. (2016). Differenzierte Regulierung – ein Plädoyer aus der Perspektive deutscher Sparkassen. *Zeitschrift für das gesamte Kreditwesen*, 69(21), 1052–1055.
- Schaeck, K., Cihak, M., & Wolfe, S. (2009). Are Competitive Banking Systems More Stable?. *Journal of Money, Credit and Banking*, 41(4), 711–734.
- Schenkel, A. (2017). *Proportionality of Banking Regulation: Evidence from Germany* [PDF file]. Retrieved October 25, 2022, from http://v3.globalcube.net/clients/eacb/content/medias/publications/research/Young_Researchers_Award/schenkel_andreas_proportionality_of_banking_regulation.pdf.
- Scherer, F. M., & Ross, D., 1990, p. 97). *Industrial Market Structure and Economic Performance* (3rd ed.). Boston, MA: Houghton Mifflin.
- Schmitt, J. (2020). Wirecard und der plötzliche Abstieg der DPR. *Finance-Magazin*. Retrieved October 25, 2022, from <https://www.finance-magazin.de/finanzabteilung/bilanzierung/wirecard-und-der-ploetzliche-abstieg-der-dpr-2060901/>.
- Schmitt, J., Kampf, L., Riedel, K., & Grill, M. (2021). Gut bezahlte Lobbyisten: Das Beraternetzwerk von Wirecard. *Das Erste*. Retrieved October 25, 2022, from <https://www1.wdr.de/daserste/monitor/sendungen/wirecard-146.html>.
- Schroeder, F. J. (1985). *Compliance Costs and Consumer Benefits of the Electronic Fund Transfer Act: Recent Survey Evidence* (Staff Studies No. 143). Washington, DC: Board of Governors of the Federal Reserve System.
- Scott, K. E. (1977). The Dual Banking System: A model of Competition in Regulation. *Stanford Law Review*, 30(1), 1–50.

- Sealey, C. W., & Lindley, J. T. (1977). Inputs, Outputs, and a Theory of Production and Cost at Depository Financial Institutions. *Journal of Finance*, 32(4), 1251–1266.
- SEC (Securities and Exchange Commission). (2001). *FORM 10-Q: Quarterly Report Pursuant to Sections 13 or 15(d)* [PDF file]. Retrieved October 25, 2022, from <http://pdf.secdatabase.com/1031/0000912057-01-528176.pdf>.
- SEC (Securities and Exchange Commission). (2002). *FORM 8-K: Current Report Filing* [PDF file]. Retrieved October 25, 2022, from <http://pdf.secdatabase.com/2826/0000912057-02-027805.pdf>.
- SEC (Securities and Exchange Commission). (2010). Regulation SBSR—Reporting and Dissemination of Security-Based Swap Information. *Federal Register*, 75(231), 75208–75288.
- SEC (Securities and Exchange Commission). (n.d.). *What We Do*. Retrieved October 25, 2022, from <https://www.sec.gov/Article/whatwedo.html>.
- Selgin, G. (2000). The Suppression of State Banknotes: A Reconsideration. *Economic Inquiry*, 38(4), 600–615.
- Sharma, V. (2010). Do Bank Mergers Create Shareholder Value? An Event Study Analysis. *Award Winning Economics Papers*, 10. Retrieved October 25, 2022, from <https://digitalcommons.macalester.edu/cgi/viewcontent.cgi?article=1009&context=econaward>.
- Sharpe, S. A. (1997). The Effect of Consumer Switching Costs on Prices: A Theory and its Application to the Bank Deposit Market. *Review of Industrial Organization*, 1(12), 79–94.
- Sheng, A. (1996). The United States: Resolving Systemic Crisis, 198191. In A. Sheng (Ed.), *Bank Restructuring: Lessons from the 1980s* (pp. 99–121). Washington, D.C.: The World Bank.
- Shepherd, W. G. (1972). The Elements of Market Structure. *The Review of Economics and Statistics*, 54(1), 25–37.
- Shepherd, W. G. (1983). Economies of Scale and Monopoly Profits. In J. V. Craven (Ed.), *Industrial Organization, Antitrust, and Public Policy* (pp. 165–204). Dordrecht: Springer.
- Shepherd, W. G. (1986). Tobin’s Q and the Structure-Performance Relationship: Comment. *American Economic Review*, 76(5), 1205–1210.
- Sherman, A. J. (2018). *Mergers and Acquisitions from A to Z* (4th ed.). New York, NY: AMACOM.

- Sherman, H. D., & Zhu, J. (2006). *Service Productivity Management: Improving Service Performance Using Data Envelopment Analysis (DEA)*. New York, NY: Springer Science & Business Media.
- Shive, S. A., & Forster, M. M. (2017). The Revolving Door for Financial Regulators. *Review of Finance*, 21(4), 1445–1484.
- Shleifer, A., & Vishny, R. W. (1993). Corruption. *The Quarterly Journal of Economics*, 108(3), 599–617.
- Short, B. K. (1979). The Relation between Commercial Bank Profit Rates and Banking Concentration in Canada, Western Europe, and Japan. *Journal of Banking & Finance*, 3(3), 209–219.
- Shull, B., Hanweck, G. A. (2001). *Bank Mergers in a Deregulated Environment: Promise and Peril*. Westport, CT: Greenwood Publishing Group.
- Siaw, I., & Yu, A. (2004). An Analysis of the Impact of the Internet on Competition in the Banking Industry, Using Porter's Five Forces Model. *International Journal of Management*, 21(4), 514–523.
- Sigmund, T. (2020). Kanzleramt war offenbar vor Merkels Chinareise über Vorwürfe gegen Wirecard informiert. *Handelsblatt*. Retrieved October 25, 2022, from <https://www.handelsblatt.com/politik/deutschland/anlegerskandal-kanzleramt-war-offenbar-vor-merkels-china-reise-ueber-vorwuerfe-gegen-wirecard-informiert/26023382.html?ticket=ST-1584162-wAYzoRjCfN067WuzcbYz-ap1>.
- Simons, K., & Stavins, J. (1998). Has Antitrust Policy in Banking Become Obsolete?. *New England Economic Review*, 13–26.
- Skaperdas, S., & Grofman, B. (1995). Modeling Negative Campaigning. *American Political Science Review*, 89(1), 49–61.
- Skeel, D. (2011). *The New Financial Deal: Understanding the Dodd-Frank Act and Its (Unintended) Consequences*. Hoboken, NJ: John Wiley & Sons.
- Smart, S. R. (1994). The Consequences of Appointment Methods and Party Control for Telecommunications Pricing. *Journal of Economics & Management Strategy*, 3(2), 301–323.
- Smirlock, M. (1985). Evidence on the (Non) Relationship between Concentration and Profitability in Banking. *Journal of Money, Credit and Banking*, 17(1), 69–83.

- Smirlock, M., Gilligan, T., & Marshall, W. (1984). Tobin's q and the Structure-Performance Relationship. *American Economic Review*, 74(5), 1051–1060.
- Smirlock, M., Gilligan, T., & Marshall, W. (1986). Tobin's q and the Structure-Performance Relationship: Reply. *American Economic Review*, 76(5), 1211–1213.
- SMSG (Securities and Markets Stakeholder Group). (2020). *Advice to ESMA: Own Initiative Overview Report on the Wirecard Case* [PDF file]. Retrieved October 25, 2022, from https://www.esma.europa.eu/sites/default/files/library/esma22-106-3194_smsg_wirecard_overview_report_0.pdf.
- Snyder Jr, J. M. (1991). On Buying Legislatures. *Economics & Politics*, 3(2), 93–109.
- Société Générale Group. (2001). *Annual Report 2000* [PDF file]. Retrieved October 25, 2022, from http://media.corporate-ir.net/media_files/irol/69/69575/reports/2000/2000AnnualReportManagement.pdf.
- Société Générale Group. (2002). *Annual Report: 2001* [PDF file]. Retrieved October 25, 2022, from http://media.corporate-ir.net/media_files/irol/69/69575/reports/2001/2001AnnualReport.pdf.
- Société Générale Group. (2003). *Review 2002* [PDF file]. Retrieved October 25, 2022, from http://media.corporate-ir.net/media_files/irol/69/69575/reports/2002/2002annualreportfull.pdf.
- Société Générale Group. (2005). *Annual Report: 2004* [PDF file]. Retrieved October 25, 2022, from <https://web3.cmvm.pt/sdi2004/emitentes/docs/fsd9552.pdf>.
- Société Générale Group. (2006). *Société Générale finalizes acquisition of Splitska Banka in Croatia* [Press release]. Retrieved October 25, 2022, from <https://www.societegenerale.com/sites/default/files/pressrelase/06090gb.pdf>.
- Soussa, F. (2000). Too Big To Fail: Moral Hazard and Unfair Competition?. In L. Halme, C. Hawkesby, J. Healey, I. Saapar, & F. Soussa (Eds.), *Financial Stability and Central Banks: Selected Issues for Financial Safety Nets and Market Discipline* (pp. 5–31). London: Centre for Central Banking Studies, Bank of England.
- Spong, K. (2000). *Banking Regulation: Its Purposes, Implementation, and Effects* (5th ed.). Kansas City, MO: Federal Reserve Bank of Kansas City.
- Sprague, I. (1986). *Bail Out: Insider's Account of Bank Failures & Rescues*. New York, NY: Basic Books.

- Stappel, M. (2014). *Banking Union as Cost Driver* (Economic Perspectives). DZ Bank AG. Retrieved October 25, 2022, from http://v3.globalcube.net/clients/eacb/content/medias/publications/external_studies/DZ_Bank_study_-_Banking_Union_ENG.pdf.
- Starova, H., Cernohorsky, J., & Teply, P. (2010). Value Creation of European Bank Mergers and Acquisitions in the 1998–2007 Period. *Journal of Economics*, 58(5), 458–470.
- Stigler, G. J. (1968). Price and Non-Price Competition. *Journal of Political Economy*, 76(1), 149–154.
- Stigler, G. J. (1971). The Theory of Economic Regulation. *The Bell Journal of Economics and Management Science*, 2(1), 3–21.
- Strahan, P. E. (2003). The Real Effects of US Banking Deregulation. *Federal Reserve Bank of St. Louis Review*, 85(4), 111–128.
- Stratmann, T. (1992). Are Contributors Rational? Untangling Strategies of Political Action Committees. *Journal of Political Economy*, 100(3), 647–664.
- SVR (Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung). (2015). *Zukunftsfähigkeit in den Mittelpunkt: Jahresgutachten: 15-16* [PDF file]. Retrieved October 25, 2022, from https://www.sachverstaendigenrat-wirtschaft.de/fileadmin/dateiablage/gutachten/jg201516/wirtschafts-gutachten/jg15_ges.pdf.
- SVR (Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung). (2016). *Zeit für Reformen: Jahresgutachten: 16–17* [PDF file]. Retrieved October 25, 2022, from https://www.sachverstaendigenrat-wirtschaft.de/fileadmin/dateiablage/gutachten/jg201617/ges_jg16_17.pdf.
- Sykes, J. B. (2019). *Federal Preemption in the Dual Banking System: An Overview and Issues for the 116th Congress* [PDF file]. Retrieved October 25, 2022, from <https://fas.org/sgp/crs/misc/R45726.pdf>.
- Tabakovic, H., & Wollmann, T. G. (2018). *From Revolving Doors to Regulatory Capture? Evidence from Patent Examiners* (No. 24638). National Bureau of Economic Research.
- Tarullo, D. K. (2006). *Hearing on an Update of the New Basel Capital Accord September 26, 2006: Prepared Statement of Daniel K. Tarullo* [PDF file]. Retrieved October 25, 2022, from <https://www.banking.senate.gov/imo/media/doc/ACF4C86.pdf>.

- Tayan, B. (2019). *The Wells Fargo Cross-Selling Scandal* (Rock Center for Corporate Governance at Stanford University Closer Look Series: Topics, Issues and Controversies in Corporate Governance No. CGRP-62 Version 2). Stanford: Corporate Governance Research Initiative at the Stanford Graduate School of Business, Rock Center for Corporate Governance at Stanford University.
- The White House. (2009). *Remarks of the President on Regulatory Reform* [Remark]. Retrieved October 25, 2022, from <https://obamawhitehouse.archives.gov/the-press-office/remarks-president-regulatory-reform/>.
- The White House. (2010). *Remarks by the President on Financial Reform* [Remark]. Retrieved October 25, 2022, from <https://web.archive.org/web/20150129053817/http://www.whitehouse.gov/the-press-office/remarks-president-financial-reform>.
- Todeva, E., & Knoke, D. (2005). Strategic Alliances and Models of Collaboration. *Management Decision*, 43(1), 123–148.
- Tregenna, F. (2009). The Fat Years: The Structure and Profitability of the US Banking Sector in the Pre-Crisis Period. *Cambridge Journal of Economics*, 33(4), 609–632.
- Uri, N. D. (2001). Technical Efficiency, Allocative Efficiency, and the Implementation of a Price Cap Plan in Telecommunications in the United States. *Journal of Applied Economics*, 4(1), 163–186.
- U.S. Congress. (1863). *An Act to Provide a National Currency, Secured by a Pledge of United States Bonds, and to Provide for the Circulation and Redemption Thereof*, 12 Stat. 665. 37th Congress, 3d Session, Ch. 58. (Feb. 25, 1863). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1111>.
- U.S. Congress. (1864). *An Act to Provide a National Currency, Secured by a Pledge of United States Bonds, and to Provide for the Circulation and Redemption Thereof*, 13 Stat. 99. 38th Congress, 1st Session, Ch. 106 (June 3, 1864). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/files/docs/historical/congressional/national-bank-act-1864.pdf>.
- U.S. Congress. (1908). *An Act to Amend the National Banking Laws*, 35 Stat. 546. 60th Congress, 1st Session, Ch. 229 (May 30, 1908). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/5742>.

- U.S. Congress. (1914). *An Act to Provide for the Establishment of Federal Reserve Banks, to Furnish an Elastic Currency, to Afford Means of Rediscounting Commercial Paper, to Establish a More Effective Supervision of Banking in the United States, and for Other Purposes*, Public Law 63–43, 63d Congress, H.R. 7837, 38 Stat. 251 (Dec. 23, 1913). Retrieved from <https://fraser.stlouisfed.org/title/975>.
- U.S. Congress. (1920). *The National Bank Act*, 18 Stat. 123, Ch. 343 (June 20, 1874). Retrieved October 25, 2022, from https://fraser.stlouisfed.org/files/docs/historical/congressional/192002sen_nbact.pdf.
- U.S. Congress. (1927). *An Act to Further Amend the National Banking Laws and the Federal Reserve Act*, Public Law 69–639, 69th Congress, H.R. 2, 44 Stat. 1224 (Feb. 25, 1927). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/976>.
- U.S. Congress. (1932). *An Act to Create Federal Home Loan Banks, to Provide for the Supervision Thereof, and for Other Purposes*, Public Law 72-304, 72d Congress, H.R. 12280, 47 Stat. 725 (July 22, 1932). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/5998>.
- U.S. Congress. (1933a). *An Act to Provide Emergency Relief with Respect to Home Mortgage Indebtedness, to Refinance Home Mortgages, to Extend Relief to the Owners of Homes Occupied By Them and Who Are Unable to Amortize Their Debt Elsewhere, to Amend the Federal Home Loan Bank Act, to Increase the Market for Obligations of the United States and for Other Purposes*, Public Law 73-43, 73d Congress, H.R. 5240, 48 Stat. 128 (June 13, 1933). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/850>.
- U.S. Congress. (1933b). *An Act to Provide for the Safer and More Effective Use of the Assets of Banks, to Regulate Interbank Control, to Prevent the Undue Diversion of Funds into Speculative Operations, and For Other Purposes*, Public Law 73–66, 73d Congress, H.R. 5661, 48 Stat. 162 (June 16, 1933). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/991>.
- U.S. Congress. (1934a). *An Act to Provide for the Regulation of Securities Exchanges and of Over-the-Counter Markets Operating in Interstate and Foreign Commerce and Through the Mails, to Prevent Inequitable and Unfair Practices on Such Exchanges and Markets, and for Other Purposes*, Public Law 73–291, 73d Congress, H.R. 9323, 48 Stat. 881 (June 6, 1934). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1120>.

- U.S. Congress. (1934b). *An Act to Encourage Improvement in Housing Standards and Conditions, to Provide a System of Mutual Mortgage Insurance, and for Other Purposes*, Public Law 73-479, 73d Congress, H.R. 9620, 48 Stat. 1246 (June 27, 1934). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/archival/1341/item/457156>.
- U.S. Congress. (1934c). *An Act to Establish a Federal Credit Union System, to Establish a Further Market for Securities of the United States and to Make More Available to People of Small Means Credit for Provident Purposes Through a National System of Cooperative Credit, Thereby Helping to Stabilize the Credit Structure of the United States*, Public Law 86-354, 73d Congress, 48 Stat. 1216 (June 26, 1934). Retrieved October 25, 2022, from <https://www.loc.gov/law/help/statutes-at-large/73rd-congress/session-2/c73s2ch750.pdf>.
- U.S. Congress. (1935). *An Act to Provide for the Sound, Effective, and Uninterrupted Operation of the Banking System, and for Other Purposes*, Public Law 74-305, 74th Congress, H.R. 7617, 49 Stat. 684 (Aug. 23, 1935). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/983>.
- U.S. Congress. (1936). *An Act to Amend the Grain Futures Act to Prevent and Remove Obstructions and Burdens Upon Interstate Commerce in Grains and Other Commodities by Regulating Transactions Therein on Commodity Futures Exchanges, to Limit or Abolish Short Selling, to Curb Manipulation, and for Other Purposes*, Public Law 74-675, 74th Congress, H.R. 6772, 49 Stat. 1491 (June 15, 1936). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1096>.
- U.S. Congress. (1950). *An Act to Amend the Federal Deposit Insurance Act*, Public Law 84-511, 84th Congress, H.R. 6227, 70 Stat. 133 (May 9, 1956). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/984>.
- U.S. Congress. (1956). *An Act to Define Bank Holding Companies, Control Their Future Expansion, and Require Divestment of Their Nonbanking Interests*, Public Law 84-511, 84th Congress, H.R. 6227, 70 Stat. 133 (May 9, 1956). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/984>.
- U.S. Congress. (1960). *An Act to Amend the Federal Deposit Insurance Act to Require Federal Approval for Mergers and Consolidations of Insured Banks*, Public Law 86-463, 86th Congress, S. 1062, 74 Stat. 129 (May 13, 1960). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1024>.

- U.S. Congress. (1966a). *Amend the Bank Holding Company Act: Hearings before a Committee on Banking and Currency: United States Senate: Eighty-Ninth Congress: Second Session on S. 2353, S. 2418, and H.R. 7371: Bills to Amend the Bank Holding Company Act of 1956: March 16, 17, 22, 23, 24, 29, 30 and 31, 1966: Part 1*. Washington, DC: U.S. Government Printing Office.
- U.S. Congress. (1966b). *An Act to Establish a Procedure for the Review of Proposed Bank Mergers so as to Eliminate the Necessity for the Dissolution of Merged Banks, and for Other Purposes*, Public Law 89–356, 89th Congress, S. 1698, 80 Stat. 7 (Feb. 21, 1966). Retrieved October 25, 2022, from <https://uscode.house.gov/statutes/pl/89/356.pdf>.
- U.S. Congress. (1966c). *To Eliminate Unsound Competition for Savings and Time Deposits: Hearings Before the Committee on Banking and Currency: House of Representatives: Eighty-Ninth Congress: Second Session on H.R. 14026: May 9, 10, 11, 12, 19, 24, 25, 31; June 1, 2, 7, 8, 9, 16, and 23, 1966*. Washington, DC: U.S. Government Printing Office.
- U.S. Congress. (1969a). *Bank Holding Company Act Amendments: Hearings before the Committee on Banking and Currency: House of Representatives: Ninety-First Congress: First Session on H.R. 6778: A Bill to Amend the Bank Holding Company Act of 1956, and For Other Purposes: Part 1: April 15, 16, 17, 18, 21, 22, 23, 24, and 25, 1969*. Washington, DC: U.S. Government Printing Office.
- U.S. Congress. (1969b). *The Growth of Unregistered Bank Holding Companies – Problems and Prospects: Staff Report for the Committee on Banking and Currency: House of Representatives: 91st Congress: First Session*. Washington, DC: U.S. Government Printing Office.
- U.S. Congress. (1970a). *An Act to Amend the Bank Holding Company Act of 1956, and for Other Purposes*, Public Law 91–607, 91st Congress, H.R. 6778, 84 Stat. 1760 (Dec. 31, 1970). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1127>.
- U.S. Congress. (1970b). *An Act to Amend the Federal Credit Union Act so as to Provide for an Independent Federal Agency for the Supervision of Federally Chartered Credit Unions, and for Other Purposes*, Public Law 91–206, 91st Congress, H.R. 2, 73 Stat. 628 (March 10, 1970). Retrieved October 25, 2022, from <https://www.govinfo.gov/content/pkg/STATUTE-84/pdf/STATUTE-84-Pg49-2.pdf#page=1>.

- U.S. Congress. (1974). *An Act to Amend the Commodity Exchange Act to Strengthen the Regulation of Futures Trading, to Bring All Agricultural and Other Commodities Traded on Exchanges Under Regulation, and for Other Purposes*, Public Law 93–463, 93d Congress, H.R. 13113, 88 Stat. 1389 (Oct. 23, 1974). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/5859>.
- U.S. Congress. (1978a). *An Act to Extend the Authority for the Flexible Regulation of Interest Rates on Deposits and Accounts in Depository Institutions*, Public Law 95–630, 95th Congress, H.R. 14279, 92 Stat. 3641 (Nov. 10, 1978). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1032>.
- U.S. Congress. (1978b). *An Act to Provide for Federal Regulation of Participation by Foreign Banks in Domestic Financial Markets*, Public Law 95–369, 95th Congress, H.R. 10899, 92 Stat. 607 (Sept. 17, 1978). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1041>.
- U.S. Congress. (1979). Proceedings and Debates of the 96th Congress: First Session: Volume 125 – Part 23: October 25, 1979 to November 2, 1979. *Congressional Record (Bound Edition)*, 125(23), 29485–30932.
- U.S. Congress. (1980). *An Act to Facilitate the Implementation of Monetary Policy, to Provide for the Gradual Elimination of All Limitations on the Rates of Interest Which Are Payable on Deposits and Accounts, and to Authorize Interest-bearing Transaction Accounts, and for Other Purposes*, Public Law 96–221, 96th Congress, H.R. 4986, 94 Stat. 132 (March 31, 1980). Retrieved October 25, 2022, from https://fraser.stlouisfed.org/title/1042?start_page=55.
- U.S. Congress. (1982). *An Act to Revitalize the Housing Industry by Strengthening the Financial Stability of Home Mortgage Lending Institutions and Ensuring the Availability of Home Mortgage Loans*, Public Law 97–320, 97th Congress, H.R. 6267, 96 Stat. 1469 (Oct. 15, 1982). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1044>.
- U.S. Congress. (1983). *An Act Making Supplemental Appropriations for the Fiscal Year Ending September 30, 1984, and for Other Purposes*, Public Law 98–181, 98th Congress, H.R. 3959, 97 Stat. 1153 (Nov. 30, 1983). Retrieved October 25, 2022, from https://fraser.stlouisfed.org/title/1045?start_page=85.

- U.S. Congress. (1987). *An Act to Regulate Nonbank Banks, Impose a Moratorium on Certain Securities and Insurance Activities by Banks, Recapitalize the Federal Savings and Loan Insurance Corporation, Allow Emergency Interstate Bank Acquisitions, Streamline Credit Union Operations, Regulate Consumer Checkholds, and for Other Purposes*, Public Law 100–86, 100th Congress, H.R. 27, 101 Stat. 552 (Aug. 10, 1987). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1028>.
- U.S. Congress. (1989). *An Act to Reform, Recapitalize, and Consolidate the Federal Deposit Insurance System, to Enhance the Regulatory and Enforcement Powers of Federal Financial Institutions Regulatory Agencies, and for Other Purposes*, Public Law 101–73, 101st Congress, H.R. 1278, 103 Stat. 183. (Aug. 9, 1989). Retrieved October 25, 2022, from https://fraser.stlouisfed.org/title/1046?start_page=295.
- U.S. Congress. (1991a). *An Act to Require the Least-Cost Resolution of Insured Depository Institutions, to Improve Supervision and Examinations, to Provide Additional Resources to the Bank Insurance Fund, and for Other Purposes*, Public Law 102–242, 102d Congress, S. 543, 105 Stat. 2236 (Dec. 19, 1991). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/415>.
- U.S. Congress. (1991b). Proceedings and Debates of the 102nd Congress: First Session: Volume 137 – Part 5: March 13, 1991 to March 21, 1991 (pp. 5915–7426). *Congressional Record (Bound Edition)*, 137(5), 5915–7426.
- U.S. Congress. (1992). *An Act to Improve the Regulation of Futures Trading, Authorize Appropriations for the Commodity Futures Trading Commission, and for Other Purposes*. Public Law 102–546, 102nd Congress, H.R. 707 (Oct. 28, 1991). Retrieved October 25, 2022, from <https://www.congress.gov/bill/102nd-congress/house-bill/707/text>.
- U.S. Congress. (1994a). *An Act to Amend the Bank Holding Company Act of 1956, the Revised Statutes of the United States, and the Federal Deposit Insurance Act to Provide for Interstate Banking and Branching*, Public Law 103–328, 103d Congress, H.R. 3841, 108 Stat. 2338 (Nov. 9, 1994). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1048>.
- U.S. Congress. (1994b). *An Act to Reduce Administrative Requirements for Insured Depository Institutions to the Extent Consistent with Safe and Sound Banking Practices, to Facilitate the Establishment of Community Development Financial Institutions, and for Other Purposes*, Public Law 103-325, 103d Congress, H.R. 3474, 108 Stat. 2160 (Sept. 23, 1994). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1047>.

- U.S. Congress. (1996). *Consumer Credit Reporting Reform Act of 1996 and Economic Growth and Regulatory Paperwork Reduction Act of 1996*, Public Law 104–208, 104th Congress, H.R. 3610, 110 Stat. 3009. Division A, Title II (Sept. 30, 1996). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1049>.
- U.S. Congress. (1999). *An Act to Enhance Competition in the Financial Services Industry by Providing a Prudential Framework for the Affiliation of Banks, Securities Firms, Insurance Companies, and Other Financial Service Providers, and for Other Purposes*, Public Law 106–102, 106th Congress, S. 900, 113 Stat. 1338 (Nov. 12, 1999). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1050>.
- U.S. Congress. (2000). *An Act Making Consolidated Appropriations for the Fiscal Year Ending September 30, 2001, and for Other Purposes*, Public Law 106–554, 106th Congress, H.R. 4577, 114 Stat. 2763 (Dec. 21, 2000). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1133>.
- U.S. Congress. (2006). *An Act to Provide for Reconciliation Pursuant to Section 202(a) of the Concurrent Resolution on the Budget for Fiscal Year 2006*, Public Law 109–171, 109th Congress, S. 1932, 120 Stat. 4. Title II-B (Feb. 8, 2006). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1052>.
- U.S. Congress. (2008a). *An Act to Provide Authority for the Federal Government to Purchase and Insure Certain Types of Troubled Assets for the Purposes of Providing Stability to and Preventing Disruption in the Economy and Financial System and Protecting Taxpayers, to Amend The Internal Revenue Code of 1986 to Provide Incentives for Energy Production and Conservation, to Extend Certain Expiring Provisions, to Provide Individual Income Tax Relief, and for Other Purposes*, Public Law 110–343, 110th Congress, H.R. 1424, 122 Stat. 3765 (Oct. 3, 2008). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1036>.
- U.S. Congress. (2008b). *An Act to Provide Needed Housing Reform and for Other Purposes*, Public Law 110–289, 110th Congress, H.R. 3221, 122 Stat. 2654 (July 30, 2008). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1055>.

- U.S. Congress. (2010). *An Act to Promote the Financial Stability of the United States by Improving Accountability and Transparency in the Financial System, to End “Too Big to Fail”, to Protect the American Taxpayer by Ending Bailouts, to Protect Consumers From Abusive Financial Services Practices, and for Other Purposes*, Public Law 111–203, 111th Congress, H.R. 4173, 124 Stat. 1376 (July 21, 2010). Retrieved October 25, 2022, from <https://fraser.stlouisfed.org/title/1031>.
- U.S. Congress. (2018). *An Act to Promote Economic Growth, Provide Tailored Regulatory Relief, and Enhance Consumer Protections, and for Other Purposes*, Public Law 115–174, S. 2155, 115th Congress, 132 Stat. 1296 (May 24, 2018). Retrieved October 25, 2022, from <https://www.congress.gov/115/plaws/publ174/PLAW-115publ174.pdf>.
- U.S. Department of the Treasury. (1931). *Annual Report of the Comptroller of the Currency*. Washington, D.C.: Government Printing Office.
- U.S. Department of the Treasury. (1991). *Modernizing the Financial System: Recommendations for Safer, More Competitive Banks*. Chicago, IL: Commerce Clearing House.
- U.S. Department of the Treasury. (2009). *Financial Regulatory Reform: A New Foundation: Rebuilding Financial Supervision and Regulation* [PDF file]. Retrieved October 25, 2022, from https://fraser.stlouisfed.org/files/docs/historical/fct/treasury_finregreform_20090617.pdf?utm_source=direct_download.
- U.S. Department of the Treasury. (2010). *Citizens’ Report: On the Troubled Asset Relief Program (TARP)* [PDF file]. Retrieved October 25, 2022, from https://home.treasury.gov/sites/default/files/initiatives/financial-stability/reports/Documents/OFS%20CR_2010_Feb11_last.pdf
- U.S. Department of the Treasury. (2017). *Citizens’ Report: Office of Financial Stability – Troubled Asset Relief Program (TARP)* [PDF file]. Retrieved October 25, 2022, from <https://home.treasury.gov/sites/default/files/initiatives/financial-stability/reports/Documents/FY2017%20OFS%20Citizens%20Report.pdf>.
- U.S. General Accounting Office. (1986). *Financial Services: Information on Nonbank Banks* [PDF file]. Retrieved October 25, 2022, from <http://archive.gao.gov/d13t3/129389.pdf>.
- U.S. General Accounting Office. (1984). *Net Worth Certificate Assistance Programs: Their Design, Major Differences, and Early Implementation* [PDF file]. Retrieved October 25, 2022, from <https://www.gao.gov/assets/150/142241.pdf>.

- U.S. Government Accountability Office. (2007). *Financial Regulation: Complex and Fragmented Structure Could Be Streamlined to Improve Effectiveness* [PDF file]. Retrieved October 25, 2022, from <https://www.gao.gov/assets/680/675400.pdf>.
- U.S. Government Accountability Office. (2016). *Risk-Based Capital: Bank Regulators Need to Improve Transparency and Overcome Impediments to Finalizing the Proposed Basel II Framework* [PDF file]. Retrieved October 25, 2022, from <https://www.gao.gov/assets/gao-07-253.pdf>.
- U.S. House of Representatives. (2009). *Roll Call 968: Bill Number: H. R. 4173*. Retrieved October 25, 2022, from <https://clerk.house.gov/Votes/2009968>.
- U.S. Senate. (2010). *Roll Call Vote 111th Congress – 2nd Session*. Retrieved October 25, 2022, from https://www.senate.gov/legislative/LIS/roll_call_lists/roll_call_vote_cfm.cfm?congress=111&session=2&vote=00162.
- Uhde, A., & Heimeshoff, U. (2009). Consolidation in Banking and Financial Stability in Europe. *Journal of Banking and Finance*, 33(7), 1299–1311.
- Ülgen, F. (2018). Financial Stability as a Global Public Good and Relevant Systemic Regulation as a Problem of Collective Action. In P. Bance (Ed.), *Providing Public Goods and Commons: Towards Coproduction and New Forms of Governance for a Revival of Public Action* (pp. 95–112). Liège: CIRIEC.
- UniCredit Bank AG. (2011). *2010 Geschäftsbericht* [PDF file]. Retrieved October 25, 2022, from <https://www.hypovereinsbank.de/content/dam/hypovereinsbank/ueber-uns/pdf/investor-relations/Berichte/DE/2010/20110323-gb-2010-konzern.pdf>.
- UniCredit Bank AG. (2019). *2018: UniCredit Bank AG: Annual Report* [PDF file]. Retrieved October 25, 2022, from <https://www.hypovereinsbank.de/content/dam/hypovereinsbank/ueber-uns/pdf/investor-relations/Berichte/EN/2019/190325-Annual-Report-UniCredit-Bank-AG-2018.pdf>.
- UniCredit. (2005). *Consolidated Quarterly Report as at 31 March 2005* [PDF file]. Retrieved October 25, 2022, from https://www.unicreditgroup.eu/content/dam/unicreditgroup-eu/documents/en/investors/financial-calendar/2005/relazione_trimestrale_marzo_2005_inglese.pdf.
- UniCredit. (2019). *Our History*. Retrieved from <https://www.unicreditgroup.eu/en/unicredit-at-a-glance/our-history.html>.

- Valeria, M. (2020). *Proportionality and Banks: A Comparative Analysis of Tailored Banking Regulation* [PDF file]. Retrieved October 25, 2022, from https://boa.unimib.it/retrieve/handle/10281/306472/459735/phd_unimib_835503.pdf.
- Van Rompuy, H. (2012). *Towards a Genuine Economic and Monetary Union* [PDF file]. Retrieved October 25, 2022, from <https://www.consilium.europa.eu/media/33785/131201.pdf>.
- Van Rompuy, H., Barroso, J. M., Juncker, J. C., & Draghi, M. (2012). *Towards a Genuine Economic and Monetary Union* [PDF file]. Retrieved October 25, 2022, from https://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ec/134069.pdf.
- Vander Vennet, R. (2002). Cost and Profit Efficiency of Financial Conglomerates and Universal Banks in Europe. *Journal of Money, Credit, and Banking*, 34(1), 254–282.
- VanHoose, D. (2017). *The Industrial Organization of Banking: Bank Behavior, Market Structure, and Regulation* (2nd ed.). Berlin: Springer-Verlag.
- Varmaz, A. (2006). *Rentabilität im Bankensektor: Identifizierung, Quantifizierung und Operationalisierung werttreibender Faktoren*. Wiesbaden: Deutscher Universitäts-Verlag.
- Verschoor, C. C. (2017). Wells Fargo Scandal Continues: New Disclosures Increase the Scope of Fraud and Raise Issues of Audit and Disclosure Failure. *Strategic Finance*, 99(5), 18–20.
- Viscusi, W. K., Vernon, J. M., & Harrington, J. E. (2005). *Economics of Regulation and Antitrust* (5th ed.). Cambridge, MA: MIT Press.
- Wall, L. D. (1989). Capital Requirements for Banks: A Look at the 1981 and 1988 Standards. *Economic Review* (Federal Reserve Bank of Atlanta), 74(2), 14–29.
- Walter, Ingo. 2004. *Mergers and Acquisitions in Banking and Finance*. Oxford: Oxford University Press.
- Waschbusch, G. (2000). *Bankenaufsicht: die Überwachung der Kreditinstitute und Finanzdienstleistungsinstitute nach dem Gesetz über das Kreditwesen*. Munich: Oldenbourg.
- Wawro, G. (2001). A Panel Probit Analysis of Campaign Contributions and Roll-Call Votes. *American Journal of Political Science* 45(3), 563–579
- Webel, B. (2017). *The Dodd-Frank Wall Street Reform and Consumer Protection Act: Background and Summary*. Retrieved October 25, 2022, from <https://fas.org/sgp/crs/misc/R41350.pdf>.

- Weiß, G. N., Neumann, S., & Bostandzic, D. (2014). Systemic Risk and Bank Consolidation: International Evidence. *Journal of Banking & Finance*, 40(3), 165–181.
- Wells Fargo. (1999). *Brand New: Wells Fargo & Company 1998 Annual Report* [PDF file]. Retrieved October 25, 2022, from <https://qjubs3y9ggo1neukf3sc81r19vv-wpengine.netdna-ssl.com/assets/pdf/annual-reports/1998-annual-report.pdf>.
- Wells Fargo. (2001). *Our Product is Service: Wells Fargo Annual Report 2000* [PDF file]. Retrieved October 25, 2022, from <https://qjubs3y9ggo1neukf3sc81r19vv-wpengine.netdna-ssl.com/assets/pdf/annual-reports/2000-annual-report.pdf>.
- Wells Fargo. (2009). *Together We'll Go Far: Wells Fargo & Company Annual Report 2008* [PDF file]. Retrieved October 25, 2022, from <https://qjubs3y9ggo1neukf3sc81r19vv-wpengine.netdna-ssl.com/assets/pdf/annual-reports/2008-annual-report.pdf>.
- Wells Fargo. (2018a). *As Wells Fargo Transforms to Meet Customer Needs and Improve Operational Excellence, Company to Be More Efficient* [Press release]. Retrieved October 25, 2022, from <https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-transforms-meet-customer-needs-and-improve>.
- Wells Fargo. (2018b). *Wells Fargo to Sell 52 Retail Bank Branches to Flagstar Bancorp: Sale includes branches in Indiana, Michigan, Ohio, Part of Wisconsin* [Press release]. Retrieved October 25, 2022, from <https://newsroom.wf.com/press-release/wells-fargo-sell-52-retail-bank-branches-flagstar-bancorp>.
- Wheelock, D. C., & Wilson, P. W. (2009). Robust Nonparametric Quantile Estimation of Efficiency and Productivity Change in US Commercial Banking, 1985–2004. *Journal of Business & Economic Statistics*, 27(3), 354–368.
- Wheelock, D. C., & Wilson, P. W. (2011). Are Credit Unions Too Small?. *Review of Economics and Statistics*, 93(4), 1343–1359.
- Wheelock, D. C., & Wilson, P. W. (2012). Do Large Banks Have Lower Costs? New Estimates of Returns to Scale for US Banks. *Journal of Money, Credit and Banking*, 44(1), 171–199.
- White, E. N. (1982). The Political Economy of Banking Regulation, 1864–1933. *The Journal of Economic History*, 42(1), 33–40.
- White, E. N. (1985). The Merger Movement in Banking, 1919–1933. *The Journal of Economic History*, 45(02), 285–291.

- White, E. N. (1998). The Legacy of Deposit Insurance: The Growth, Spread, and Cost of Insuring Financial Intermediaries. In M. D. Bordo, C. Goldin, & E. N. White (Eds.), *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century* (pp. 87–124). Chicago, IL: University of Chicago Press.
- White, E. N. (2014). *The Regulation and Reform of the American Banking System, 1900-1929*. Princeton, N.J.: Princeton University Press.
- Wilcox, J. A. (2005). *Economies of Scale and Continuing Consolidation of Credit Unions* (Federal Reserve Bank of San Francisco Economic Letter No. 2005-29). Retrieved October 25, 2022, from <https://www.frbsf.org/economic-research/files/el2005-29.pdf>.
- Williamson, J. (1966). Profit, Growth and Sales Maximization. *Economica*, 33(129), 1–16.
- Wilson, C. S. (2019). *Welfare Standards Underlying Antitrust Enforcement: What You Measure is What You Get* [Speech]. Retrieved October 25, 2022, from https://www.ftc.gov/system/files/documents/public_statements/1455663/welfare_standard_speech_-_cmr-wilson.pdf.
- Winston, C. (2007). *Government Failure versus Market Failure: Microeconomic Policy Research and Government Performance*. Washington, D.C.: Brookings Institution Press.
- Wirecard. (2010). *Annual Report 2010* [PDF file]. Retrieved October 25, 2022, from <https://ir.wirecard.com/download/companies/wirecard/Annual%20Reports/DE0007472060-JA-2010-EQ-E-01.pdf>.
- Wirecard. (2018). *Annual Report 2018* [PDF file]. Retrieved October 25, 2022, from <https://ir.wirecard.com/download/companies/wirecard/Annual%20Reports/DE0007472060-JA-2018-EQ-E-01.pdf>.
- Wirecard. (2019). *Half Year Financial Report as of 30 June 2019* [PDF file]. Retrieved October 25, 2022, from <https://www.wirecard.com/wp-content/uploads/2020/12/Half-yearly-financial-report-2019.pdf>.
- World Bank. (2022). *GDP (current LCU): Netherlands*. Retrieved October 25, 2022, from <https://data.worldbank.org/indicator/NY.GDP.MKTP.CN?locations=NL>.
- Wyplosz, C. (1999). International Financial Instability. In I. Kaul, I. Grunberg, & M. A. Stern (Eds.) *Global Public Goods* (pp. 152–189). New York: Oxford University Press.
- Yoshino, M. Y., & Rangan, U. S. (1995). *Strategic Alliances: An Entrepreneurial Approach to Globalization*. Cambridge, MA: Harvard University Press.

- Zatarra. (2016). *Wirecard AG (WDI GR)* [PDF file]. Retrieved October 25, 2022, from <https://ffj-online.org/wp-content/uploads/2019/10/Zatarra-Report-24-Feb-2016.pdf>.
- ZEW (Zentrum für Europäische Wirtschaftsforschung). (2008). *M&A Report: Berichte und Analysen zu weltweiten Fusionen und Übernahmen* [PDF file]. Retrieved from <http://ftp.zew.de/pub/zew-docs/zn/schwerpunkte/ma-report/MA-Report1008.pdf>.
- Zhang, H. (1995). Wealth Effects of US Bank Takeovers. *Applied Financial Economics*, 5(5), 329–336.
- Zou, Y., Miller, S. M., & Malamud, B. (2011). Geographic Deregulation and Commercial Bank Performance in US State Banking Markets. *The Quarterly Review of Economics and Finance*, 51(1), 28–35.
- zu Guttenberg, K.-T. (2020). Ein Virus namens Leerverkäufe. *Frankfurter Allgemeine Zeitung*. Retrieved October 25, 2022, from <https://www.faz.net/aktuell/finanzen/finanzmarkt/corona-am-markt-ein-virus-namens-leerverkaeufe-16696027.html>.

10 APPENDIX

10.1 Consolidation in Germany

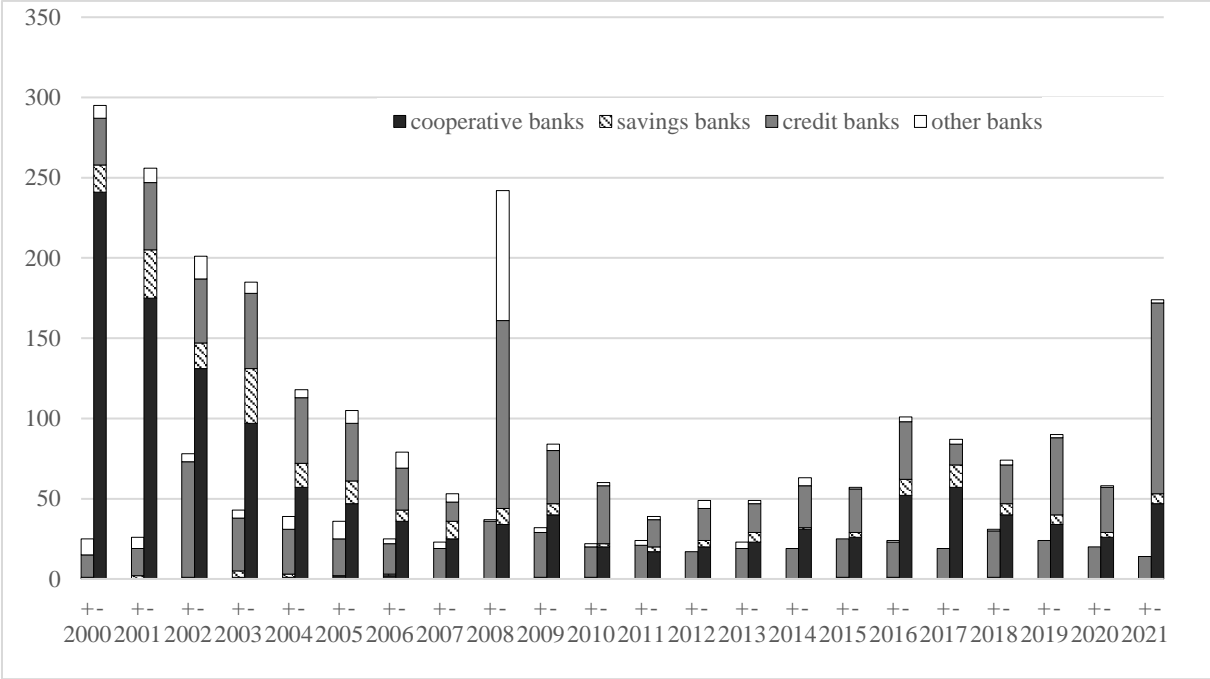


Figure 46: New Additions and Departures of Credit Institutions in Germany
 Source: German Central Bank; adjusted for relocations.

10.2 Elimination of Outliers

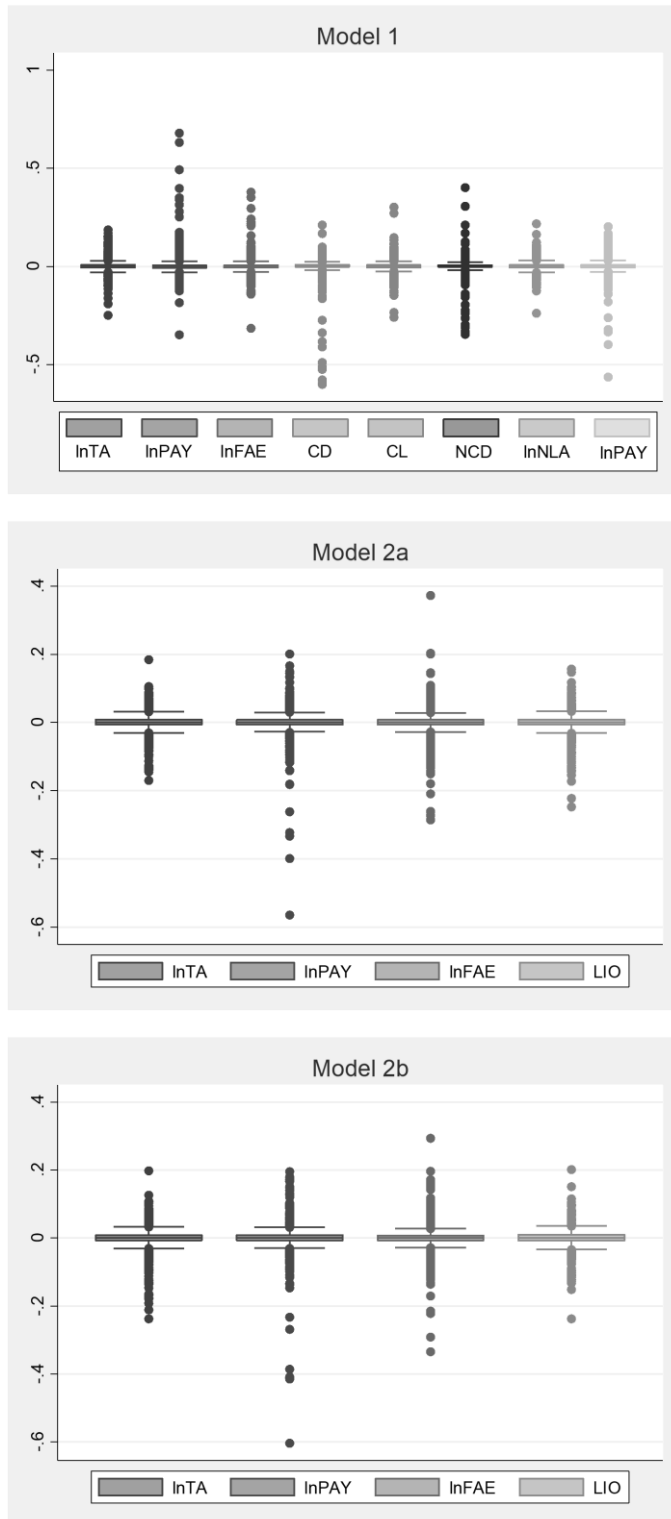


Figure 47: DFBETA Plots¹⁹³, Excluding Eliminated Outliers

¹⁹³ In the literature, values of $|DFBETA| > 2/\sqrt{n}$ are usually considered (too) high (e.g., Belsley et al., 1980, p. 28), which would be about $|0.05|$ in this case.

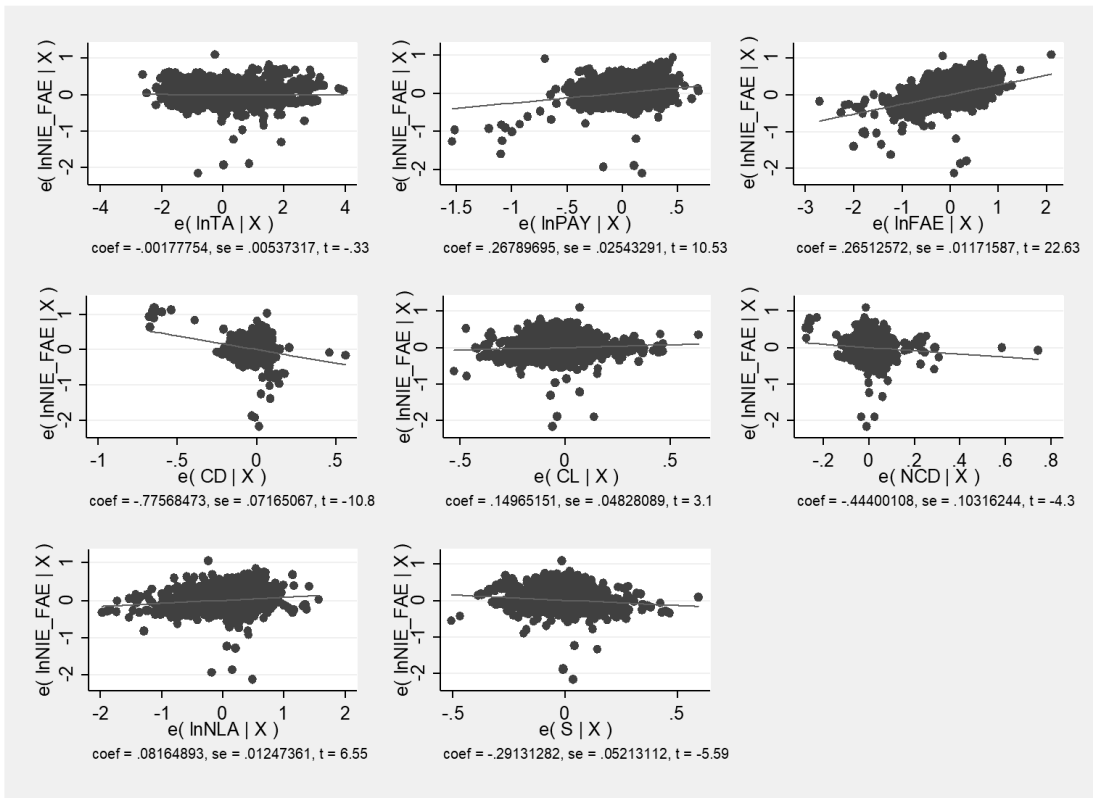


Figure 48: Added Variable Plots, Excluding Eliminated Outliers, Model 1

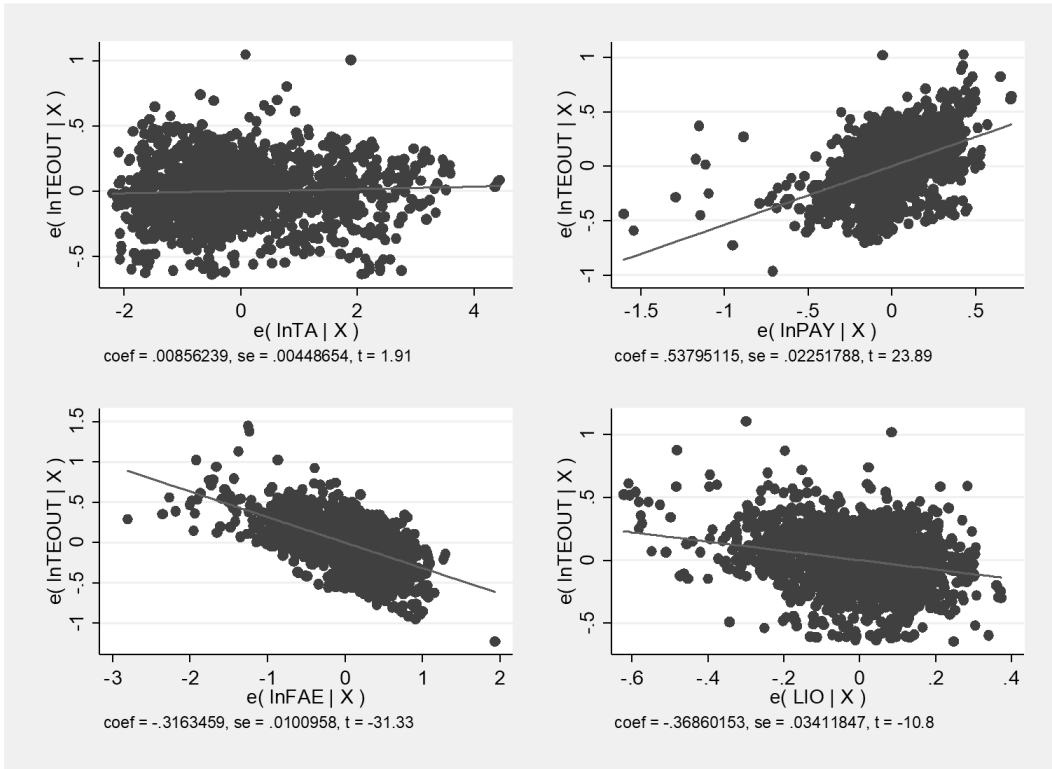


Figure 49: Added Variable Plots, Excluding Eliminated Outliers, Model 2a

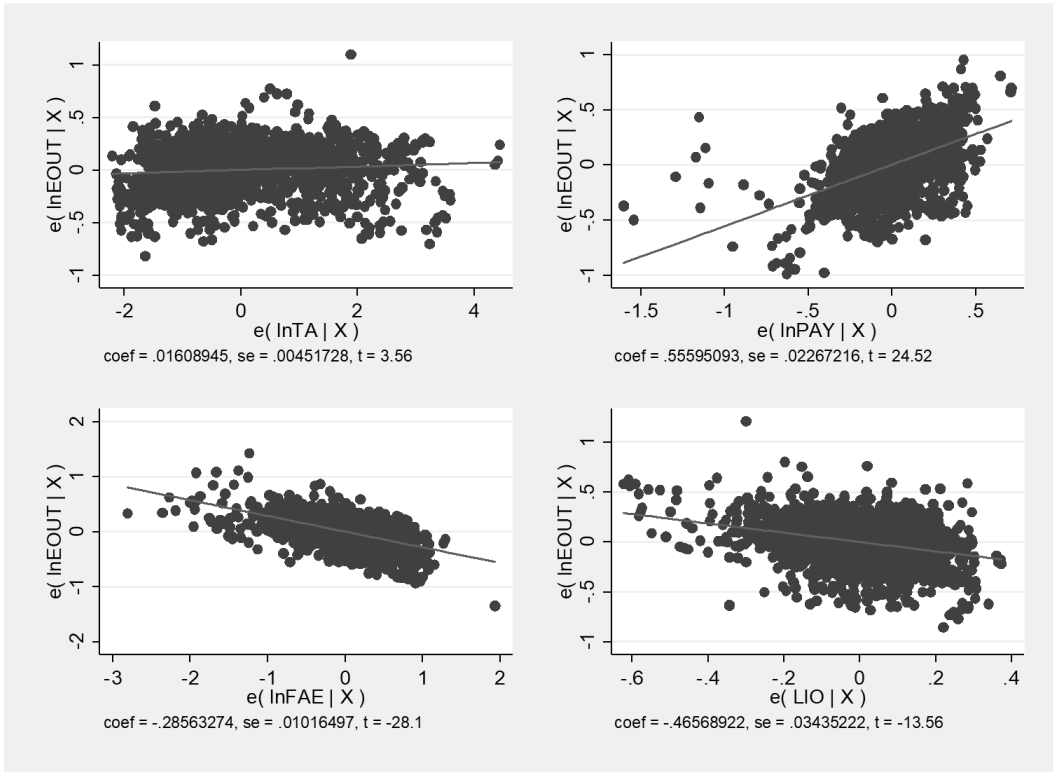
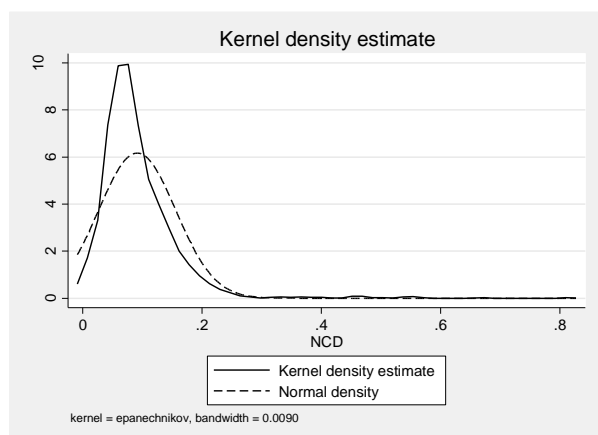
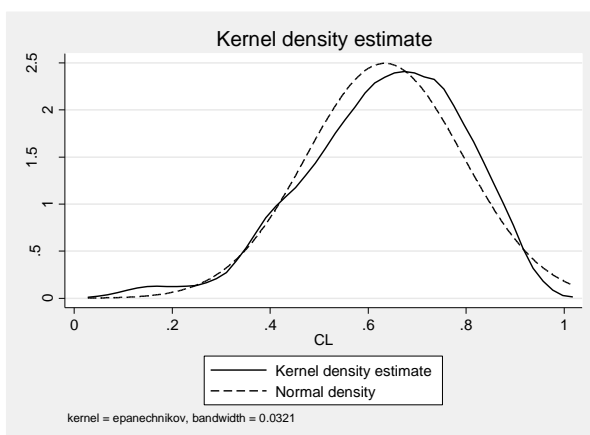
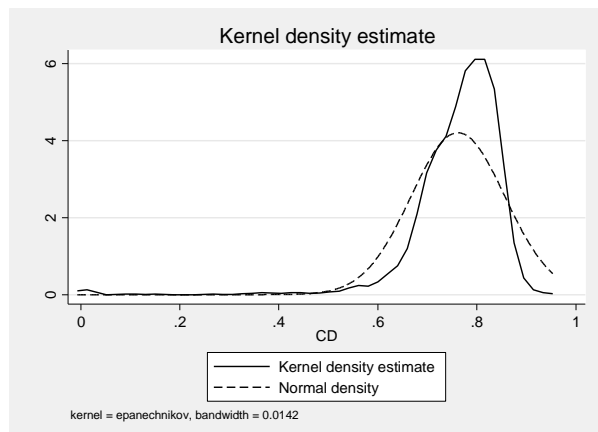
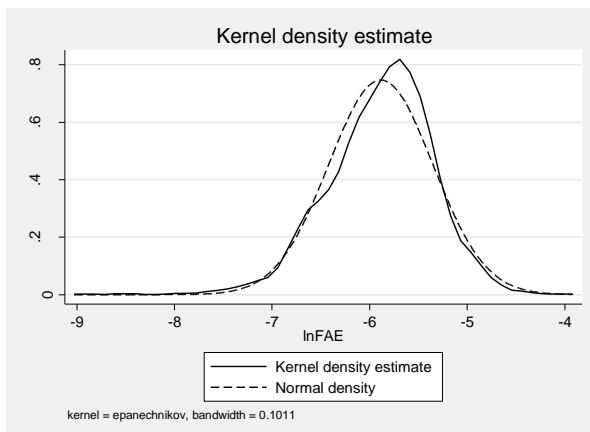
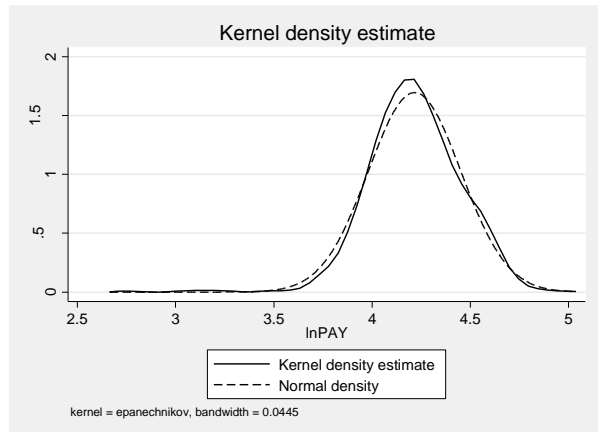
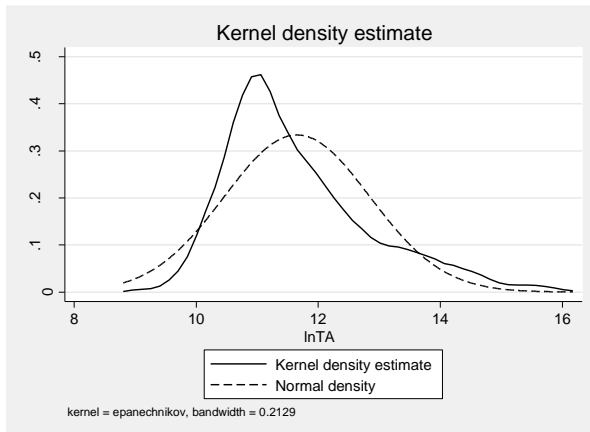


Figure 50: Added Variable Plots, Excluding Eliminated Outliers, Model 2b

10.3 Assumption Tests

10.3.1 Linearity



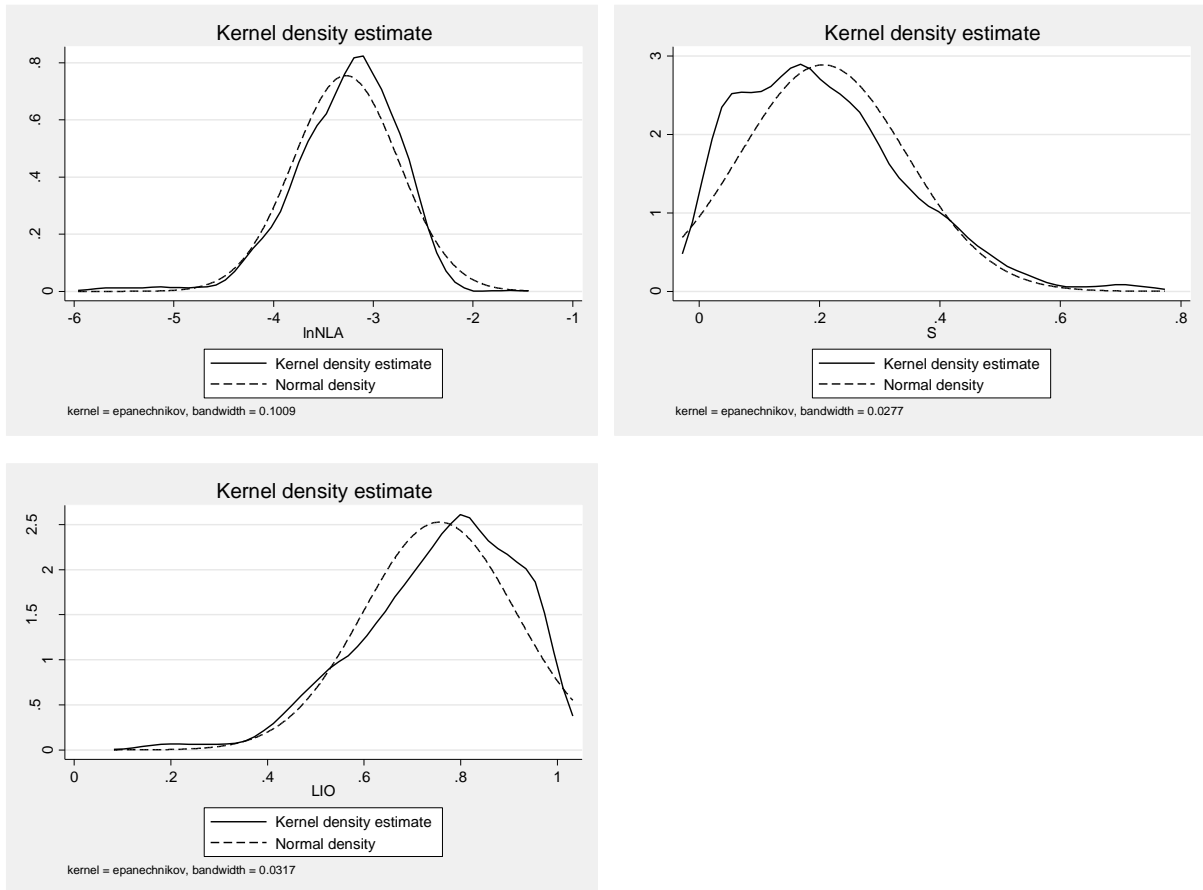


Figure 51: Kernel Density Estimates

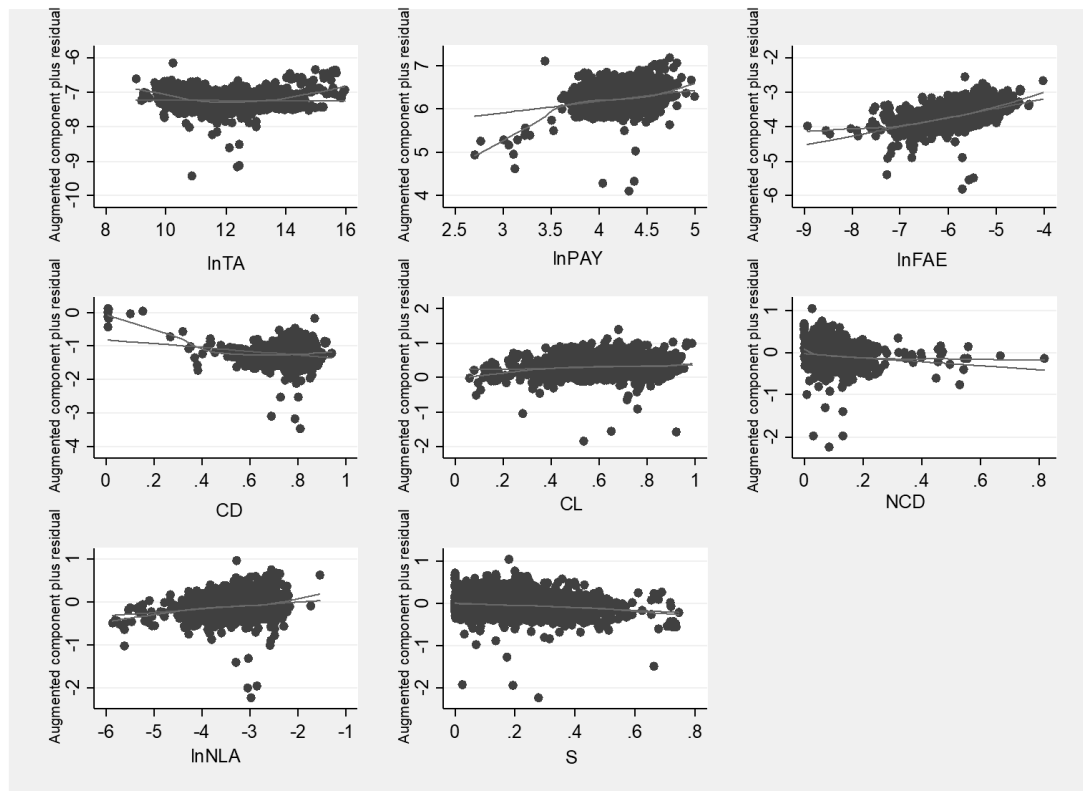


Figure 52: Augmented Component-Plus-Residual Plots, Model 1

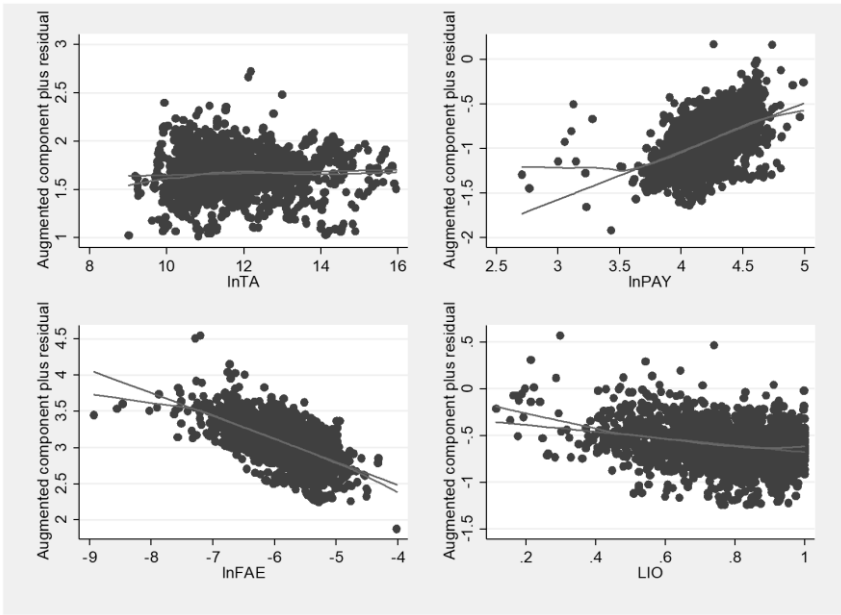


Figure 53: Augmented Component-Plus-Residual Plots, Model 2a

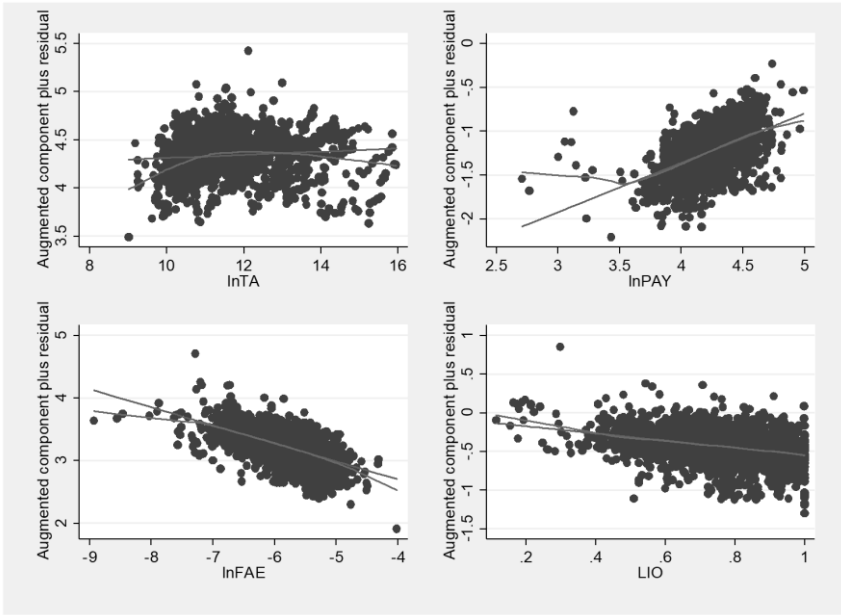


Figure 54: Augmented Component-Plus-Residual Plots, Model 2b

10.3.2 Homoscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance
 Variables: fitted values of lnNIE_FAE

chi2(1) = 0.15
 Prob > chi2 = 0.7025

Figure 55: Breusch-Pagan Test, Model 1

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of lnTEOUT

chi2(1) = 2.99
Prob > chi2 = 0.0837

Figure 56: Breusch-Pagan Test, Model 2a

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of lnEOUT

chi2(1) = 0.75
Prob > chi2 = 0.3871

Figure 57: Breusch-Pagan Test, Model 2b

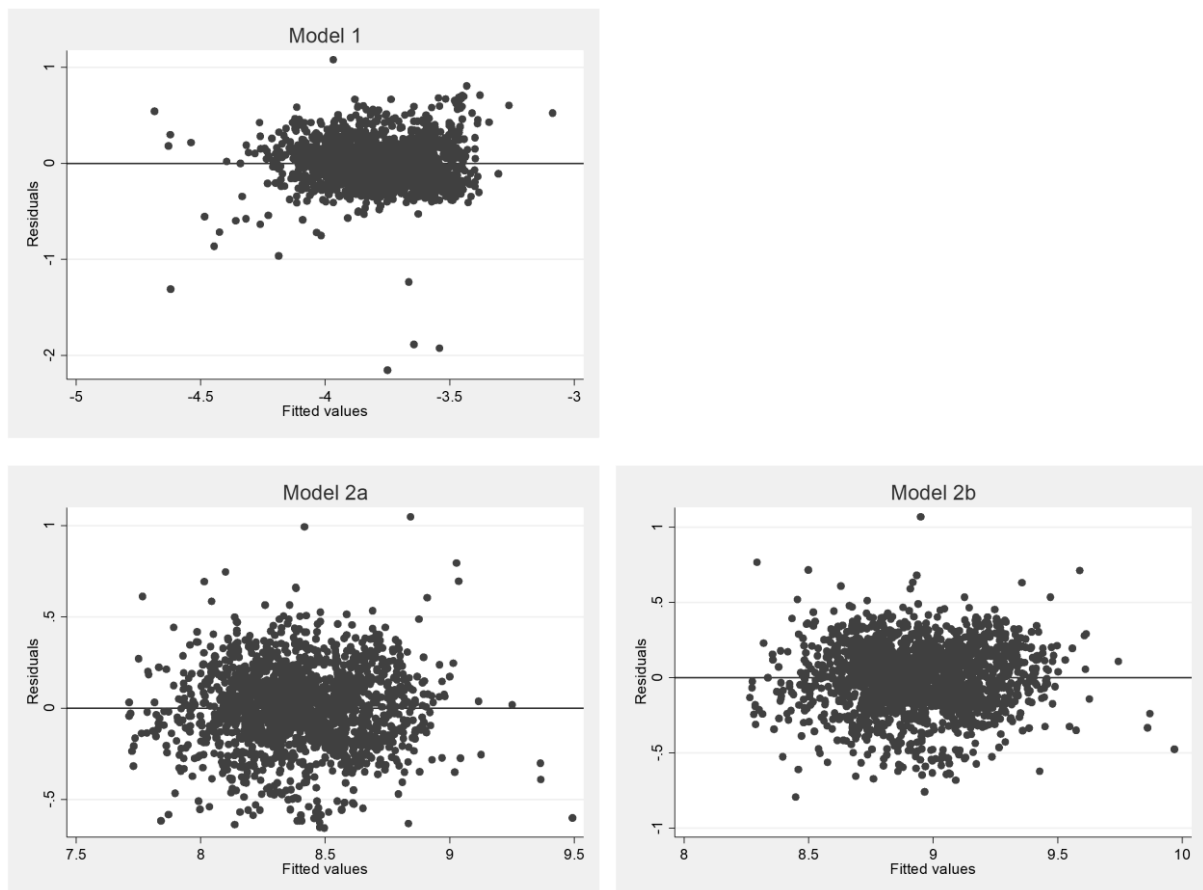


Figure 58: Residual Plots

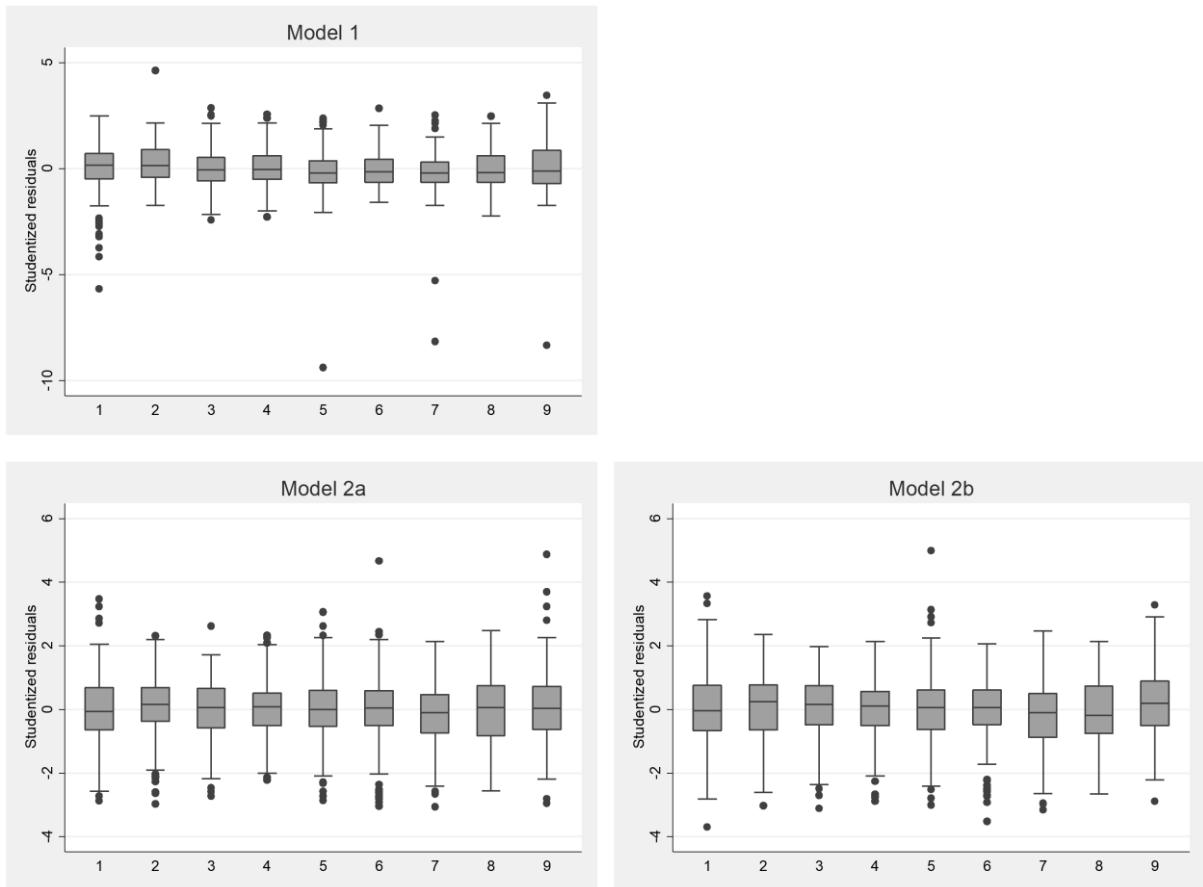


Figure 59: Residual Boxplots, Groups

10.3.3 Non-Autocorrelation

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

$F(1, 106) = 9.434$
 Prob > F = 0.0027

Figure 60: Wooldridge Test, Model 1

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

$F(1, 106) = 91.853$
 Prob > F = 0.0000

Figure 61: Wooldridge Test, Model 2a

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

$F(1, 106) = 141.484$
 Prob > F = 0.0000

Figure 62: Wooldridge Test, Model 2b

10.3.4 Normal Distribution of Errors

Table 24: Shapiro-Wilk Tests for Normality, Model 1

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
rstud	1818	0.92591	80.562	11.125	0.00000

Table 25: Shapiro-Wilk Tests for Normality, Model 2a

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
rstud	1818	0.99134	9.414	5.684	0.00000

Table 26: Shapiro-Wilk Tests for Normality, Model 2b

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
rstud	1818	0.98973	11.163	6.115	0.00000

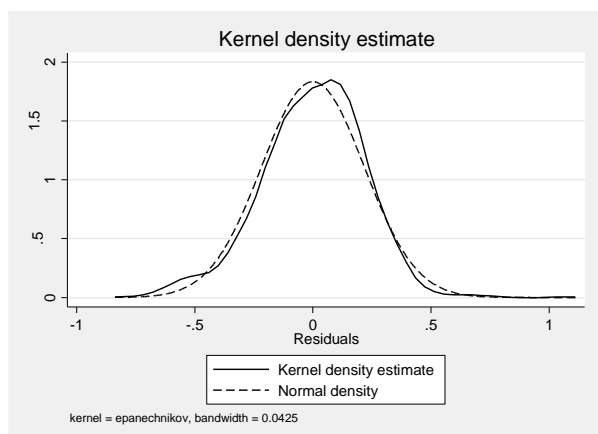
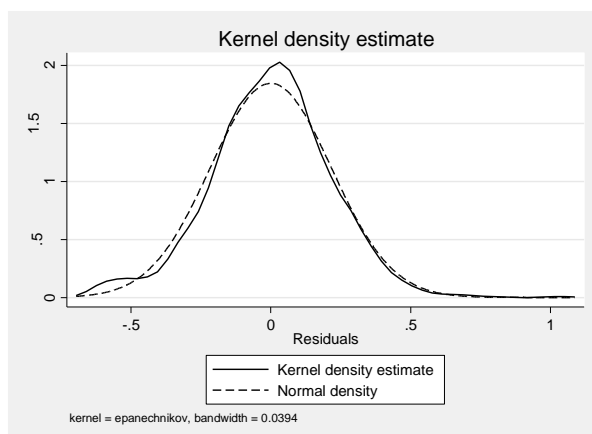
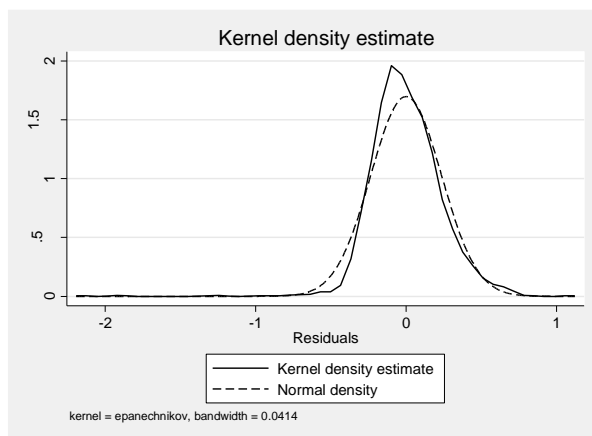


Figure 63: Kernel Density Plots

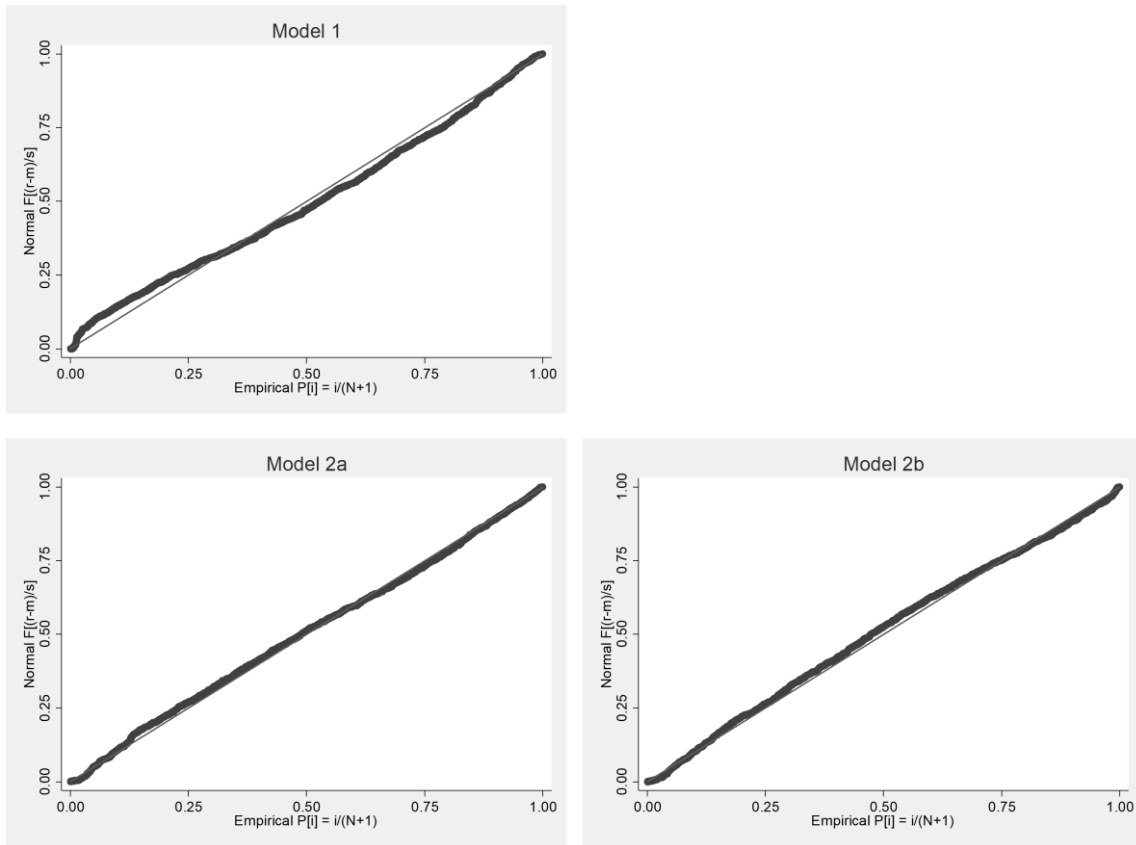


Figure 64: Standardized Normal Probability Plots

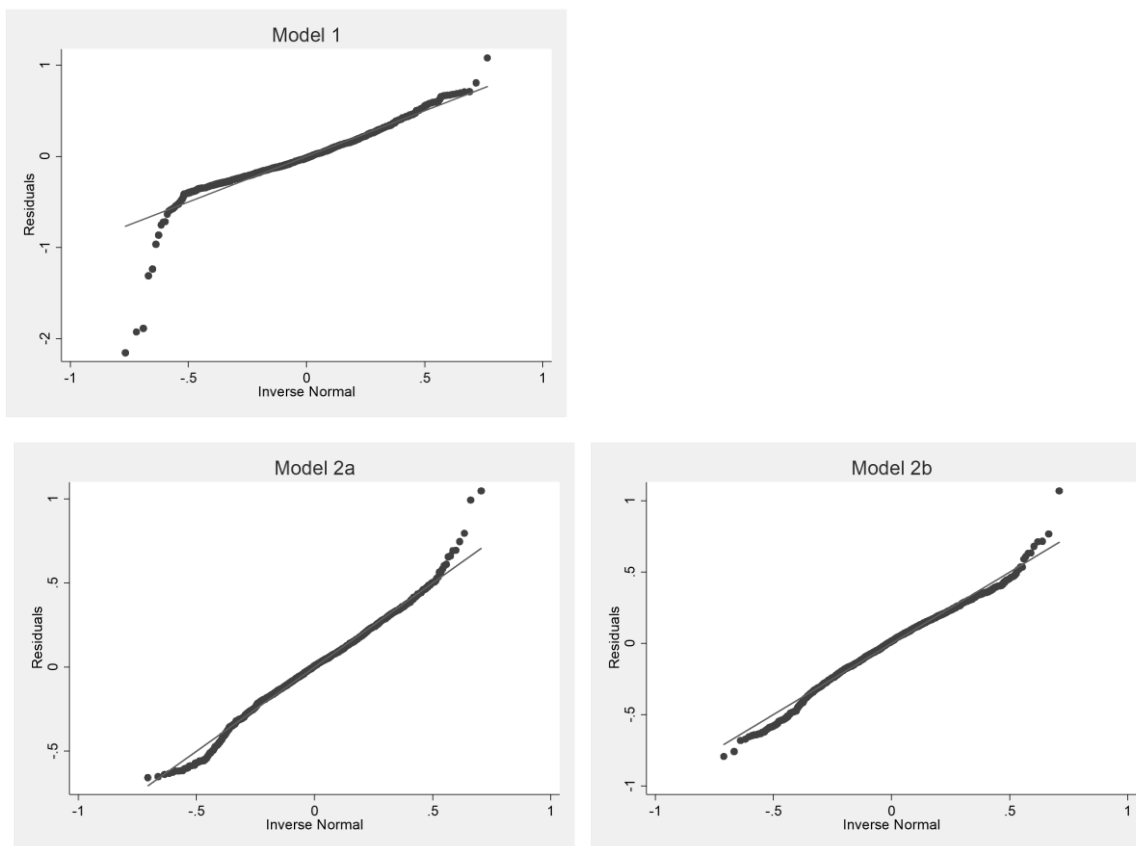


Figure 65: Plots of the Residuals' Quantiles against the Quantiles of a Normal Distribution

10.3.5 No Multicollinearity

Table 27: Variance Inflation Factors, Model 1

Variable	VIF	1/VIF
CL	1.95	0.512180
S	1.70	0.588401
CD	1.51	0.660911
NCD	1.46	0.685634
lnNLA	1.42	0.703405
lnTA	1.35	0.739608
lnFAE	1.28	0.778979
lnPAY	1.17	0.851836
Mean VIF	1.48	

Table 28: Variance Inflation Factors, Model 2

Variable	VIF	1/VIF
lnFAE	1.13	0.885476
LIO	1.13	0.887950
lnTA	1.12	0.895414
lnPAY	1.09	0.917225
Mean VIF	1.12	

10.3.6 Model Specification

Table 29: Hausman Test, Model 1

	Coefficients		(b-B) Difference	sqrt(diag(V _b -V _B)) S.E.
	(b) fixed	(B) random		
lnTA	-.2308227	-.0581384	-.1726843	.0154129
lnPAY	.5803069	.4888438	.0914631	.0126131
lnFAE	.1623972	.2255657	-.0631685	.0080999
CD	.1904943	-.2048661	.3953604	.051532
CL	.1417565	.1918771	-.0501206	.043306
NCD	.2627001	-.0633897	.3260898	.03434
lnNLA	.1140036	.1019943	.0120093	.0086207
S	.0652586	-.0623331	.1275917	.0220393

b = consistent under Ho and Ha; obtained from xtregar
 B = inconsistent under Ha, efficient under Ho; obtained from xtregar

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(8) &= (b-B)' [(V_b - V_B)^{-1}] (b-B) \\ &= 177.96 \\ \text{Prob} > \text{chi2} &= 0.0000 \end{aligned}$$

Table 30: Hausman Test Model 2a

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
lnTA	.3149476	.1155047	.1994429	.0142757
lnPAY	.3716692	.4066777	-.0350085	.0026369
lnFAE	-.1605276	-.221684	.0611565	.0038284
LIO	-.0944057	-.1686116	.0742059	.

b = consistent under Ho and Ha; obtained from xtregar
 B = inconsistent under Ha, efficient under Ho; obtained from xtregar

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 199.12
 Prob>chi2 = 0.0000
 (V_b-V_B is not positive definite)

Table 31: Hausman Test Model 2b

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
lnTA	.2857723	.0940132	.1917592	.0148384
lnPAY	.3794248	.3870432	-.0076184	.0037667
lnFAE	-.149994	-.1928973	.0429033	.004504
LIO	-.4429876	-.4740003	.0310127	.

b = consistent under Ho and Ha; obtained from xtregar
 B = inconsistent under Ha, efficient under Ho; obtained from xtregar

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 64.83
 Prob>chi2 = 0.0000
 (V_b-V_B is not positive definite)