# A Appendix

# INTERNET APPENDIX
# Back to the Roots of Internal Credit Risk Models: Does Risk Explain Why Banks' Risk-Weighted Asset Levels Converge over Time?

Victoria Böhnke[a], Steven Ongena[b], Florentina Paraschiv[c], and Endre J. Reite[d]

[a]Corresponding author: Victoria Böhnke, Deutsche Bundesbank, P.O. Box 10 06 02, 60006 Frankfurt am Main, Germany, victoria.boehnke@bundesbank.de; University of Münster.
[b]University of Zürich; Swiss Finance Institute; KU Leuven; NTNU Business School; CEPR.
[c]Zeppelin University; NTNU Business School.
[d]NTNU Business School.

# Guide to the Internet Appendix

This Internet Appendix includes additional information, complementing the research paper "Back to the Roots of Internal Credit Risk Models: Does Risk Explain Why Banks' Risk-Weighted Asset Levels Converge over Time?" regarding the following seven sections:

**A.1 Supplementary figures**
Figures A.1 and A.2 illustrate the quarterly mean risk-weighted asset (RWA) density before and after IRB approval and the banks' loan portfolio composition across country groups. Figure A.3 presents the annual mean RWA density for banks using the standardized approach. For banks using the internal ratings-based (IRB) approach, Figures A.4 and A.5 provide the evolution of RWA densities for the 52 banks in our sample. Figure A.6 illustrates the mean and the standard deviation of all banks' RWA densities over time. Figures A.7 and A.9 present the development across countries and over time of quarterly mean sizes and loan shares, and of the sovereign credit-default swap spreads, respectively. Figures A.8 and A.10 illustrate the RWAD development across country groups.

**A.2 Stylized facts of RWA densities in banks**
This section provides stylized facts of RWA densities in banks, supplementing Section 2 in the main body of the text. This also includes Figure A.11, illustrating the development of the quarterly mean capital adequacy ratio across countries and over time.

**A.3 Details on events in the European banking sector**
Table A.1 provides an overview on the timeline of relevant events in the European banking sector.

**A.4 Sample description**
Table A.2 provides descriptive statistics of all banks one quarter before IRB adoption. Table A.3 reports descriptive statistics for the RWA densities across years. Tables A.4 and A.5 provide an overview of the basic data and list all banks in our sample together with their IRB adoption date. Table A.6 presents the distribution by country. Tables A.7 and A.8 provide the variable descriptions for the cross-sectional and the panel data set, respectively. Tables A.9 and A.10 report summary statistics for the cross-sectional and the panel data set, respectively. Pearson's correlation coefficients are shown in Tables A.11 A.12, and A.13, respectively. Table A.14 presents summary statistics for the RWA densities over time for each country group.

**A.5 Details on the indices suggested by Barth et al. (2013)**
Tables A.15 and A.16 summarize the questions of the World Bank's Bank Regulation and Supervision Survey used to calculate the capital regulatory index and the supervisory power index as suggested by Barth et al. (2013).

### A.6 Convergence tests

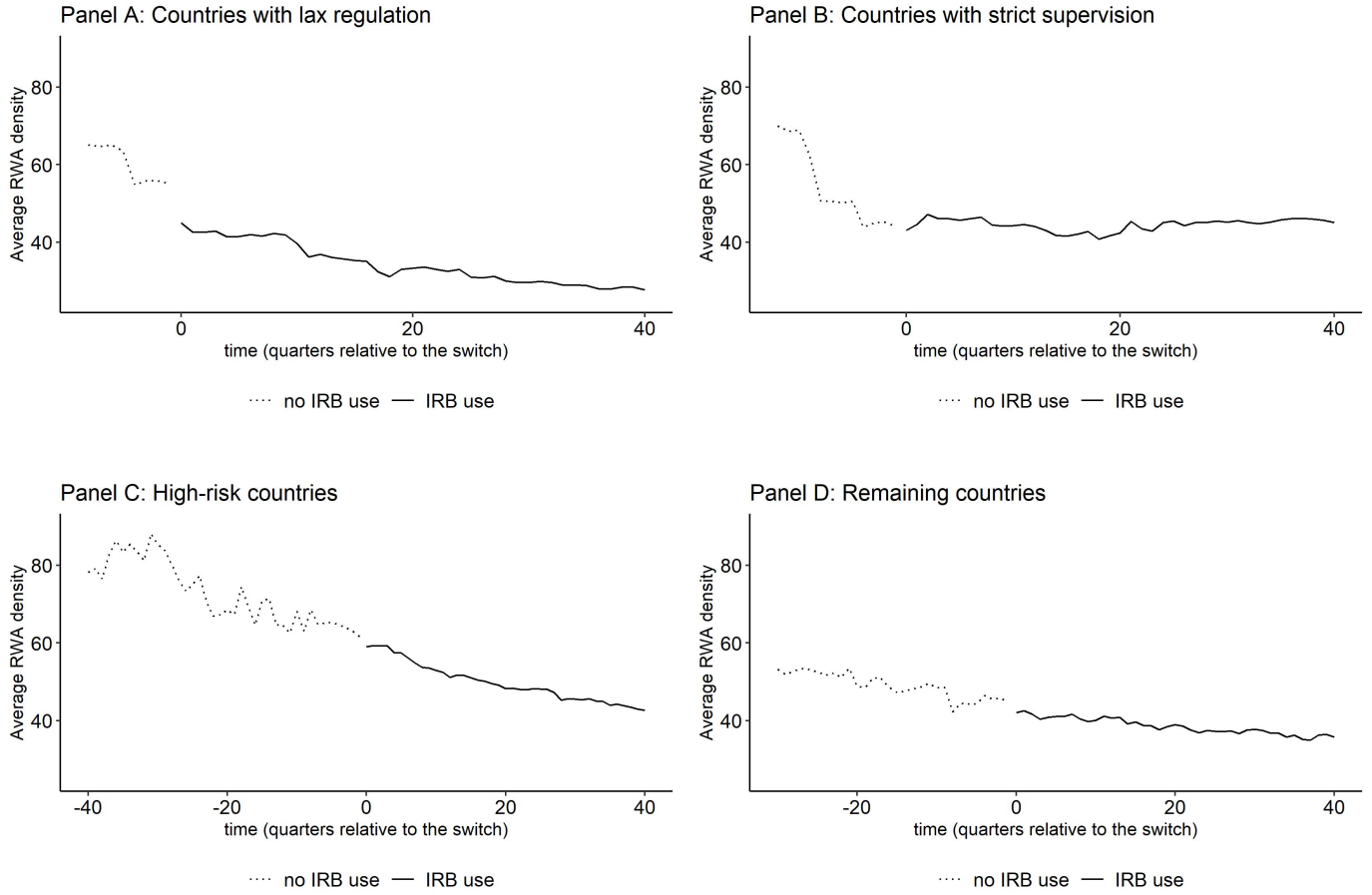
Tables A.17 and A.18 present an overview of the country × quarter-fixed effects coefficients' significance. Table A.19 reports the regression results of the corresponding panel analysis.

### A.7 Robustness tests

Tables A.20 to A.26 present the results of the robustness checks with respect to the cross-sectional analysis. Tables A.27 to A.33 report the robustness tests of the panel analysis.

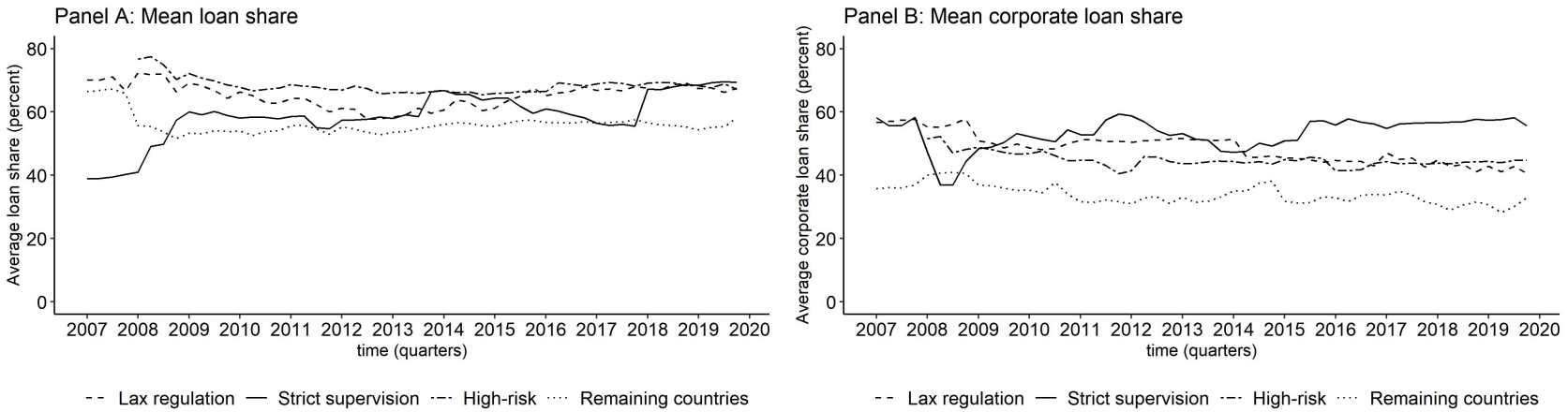
## A.1 Supplementary figures

Figure A.1: Bank average risk-weighted asset densities before and after IRB approval across country groups.



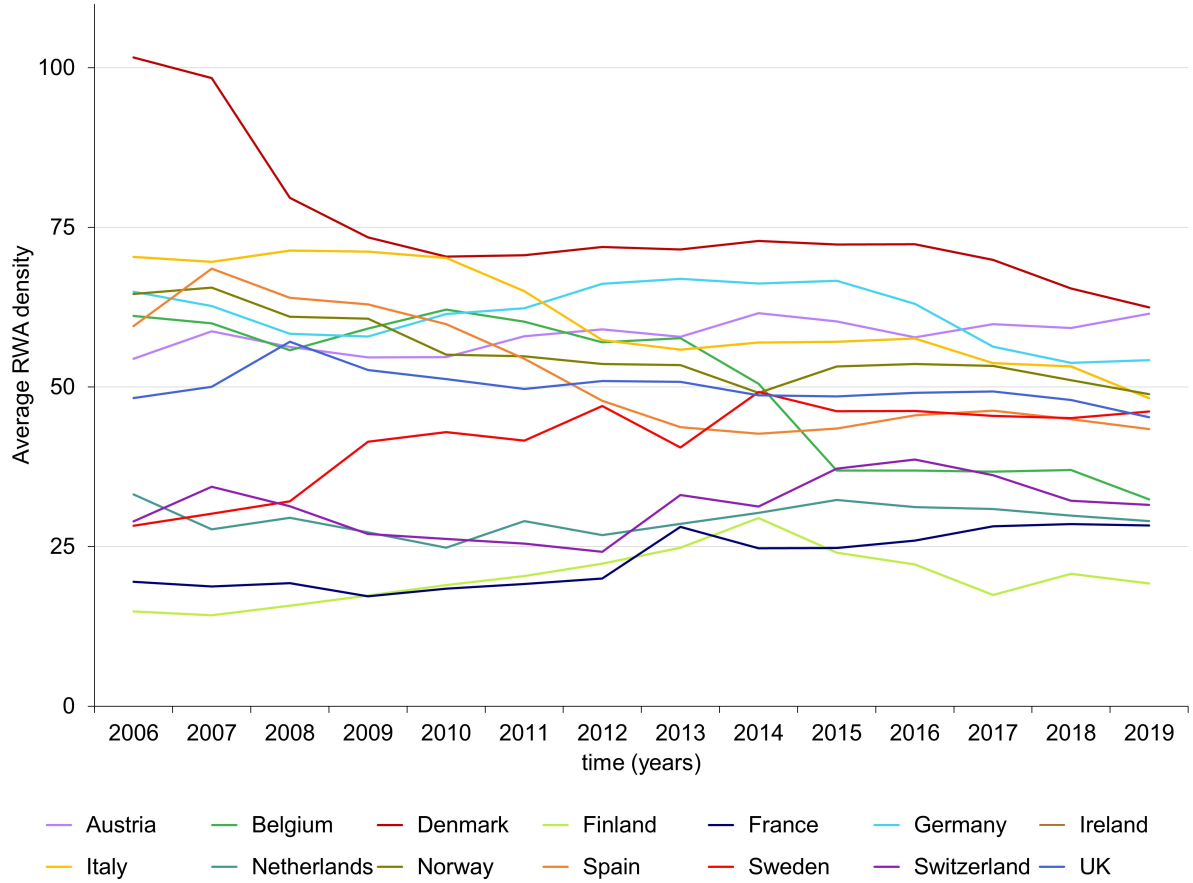

Notes: This figure illustrates the development of the quarterly mean risk-weighted asset (RWA) density relative to the quarter of approval $s = 0$. Panel A to D show the development for subgroups of countries classified as countries with less strict regulation, countries with strict supervision as well as high-risk, and the remaining countries.

Figure A.2: Banks' loan portfolio composition across country groups.



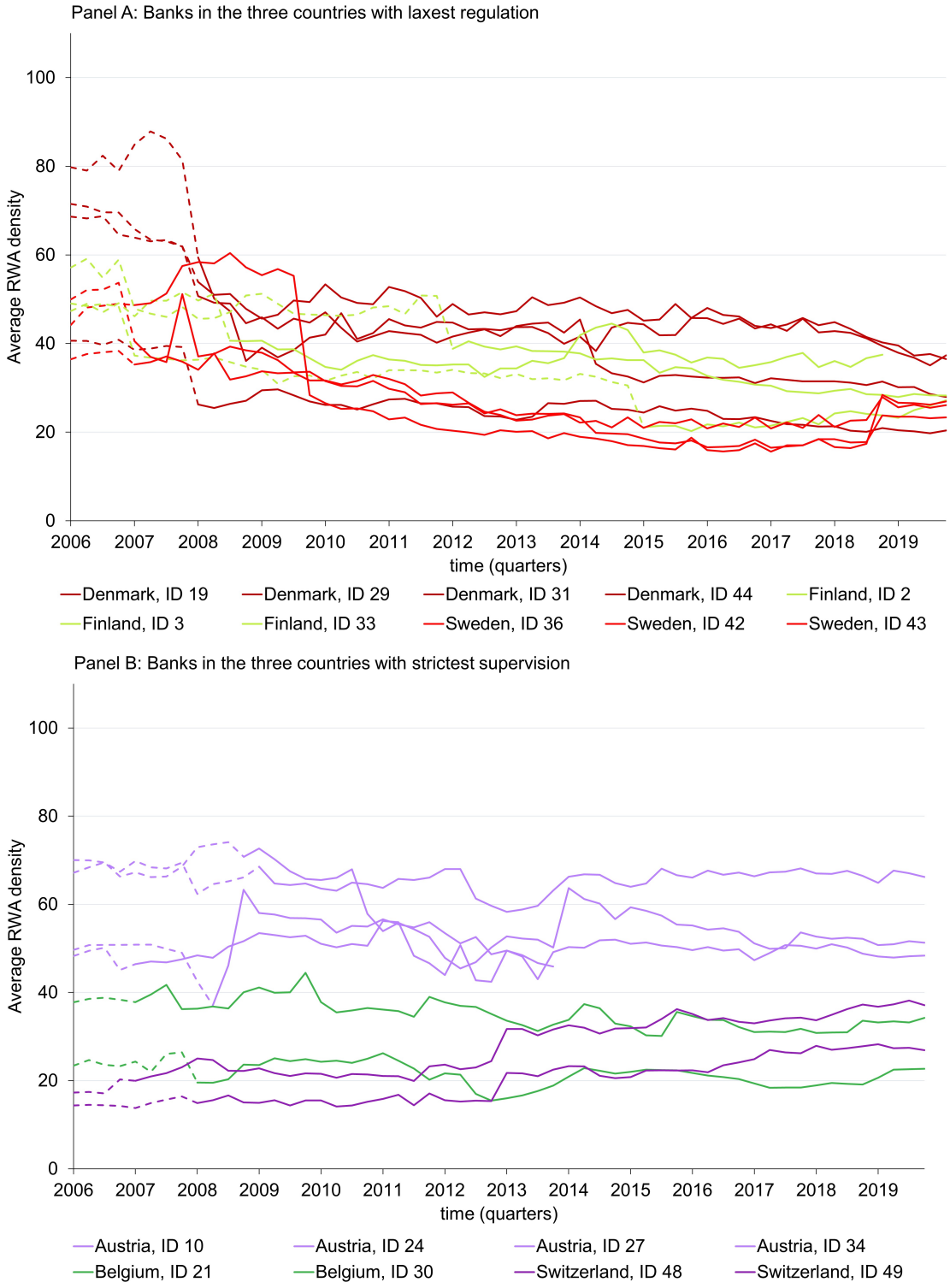

Notes: This figure illustrates the development of banks' asset composition over time. Panel A shows the development of banks' quarterly average loan share over time. Panel B focuses on the corporate loan share. "Lax regulation" and "Strict supervision" summarize countries with less strict regulation and strict supervision, respectively. "High-risk" refers to high-risk countries, and the remaining countries are classified as "Remaining countries".

Figure A.3: Country average risk-weighted asset density of banks using the standardized approach over time.



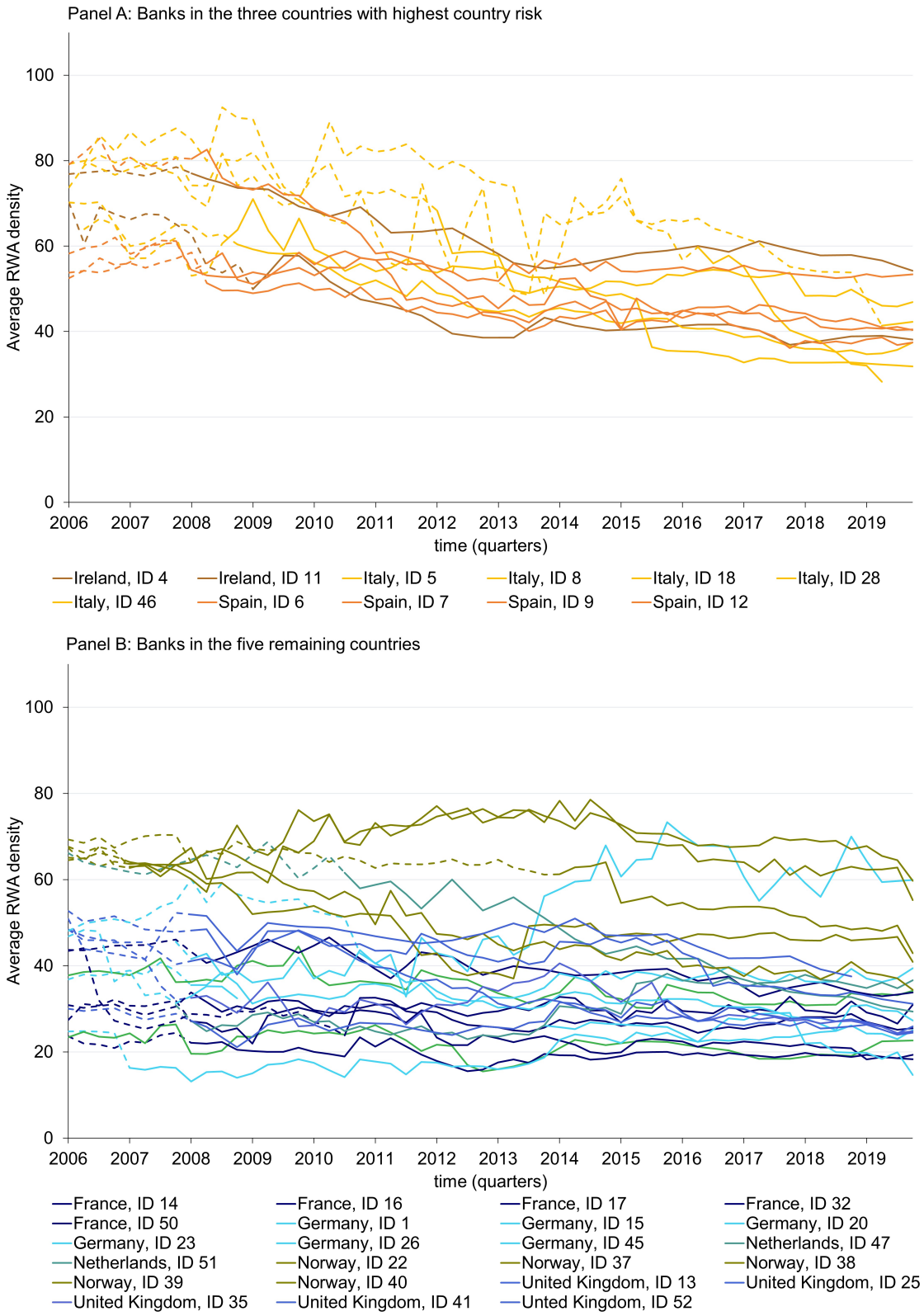

Notes: This figure illustrates the development of the country annual mean of risk-weighted asset (RWA) densities for banks using the standardized approach. In contrast to banks that use the internal ratings-based (IRB) approach, average RWA densities of banks using the standardized approach remain on a similar level over time in all countries. Solely the average RWA density of Danish banks was on a higher level at the beginning of our sample period, since Denmark had a unique way to introduce the Second Basel Accord (Imbierowicz, Kragh, and Rangvid, 2018). A detailed analysis of the RWA density of banks that use the standardized approach is beyond the scope of this study.

Figure A.4: Development of banks' risk-weighted asset densities over time (Part 1).



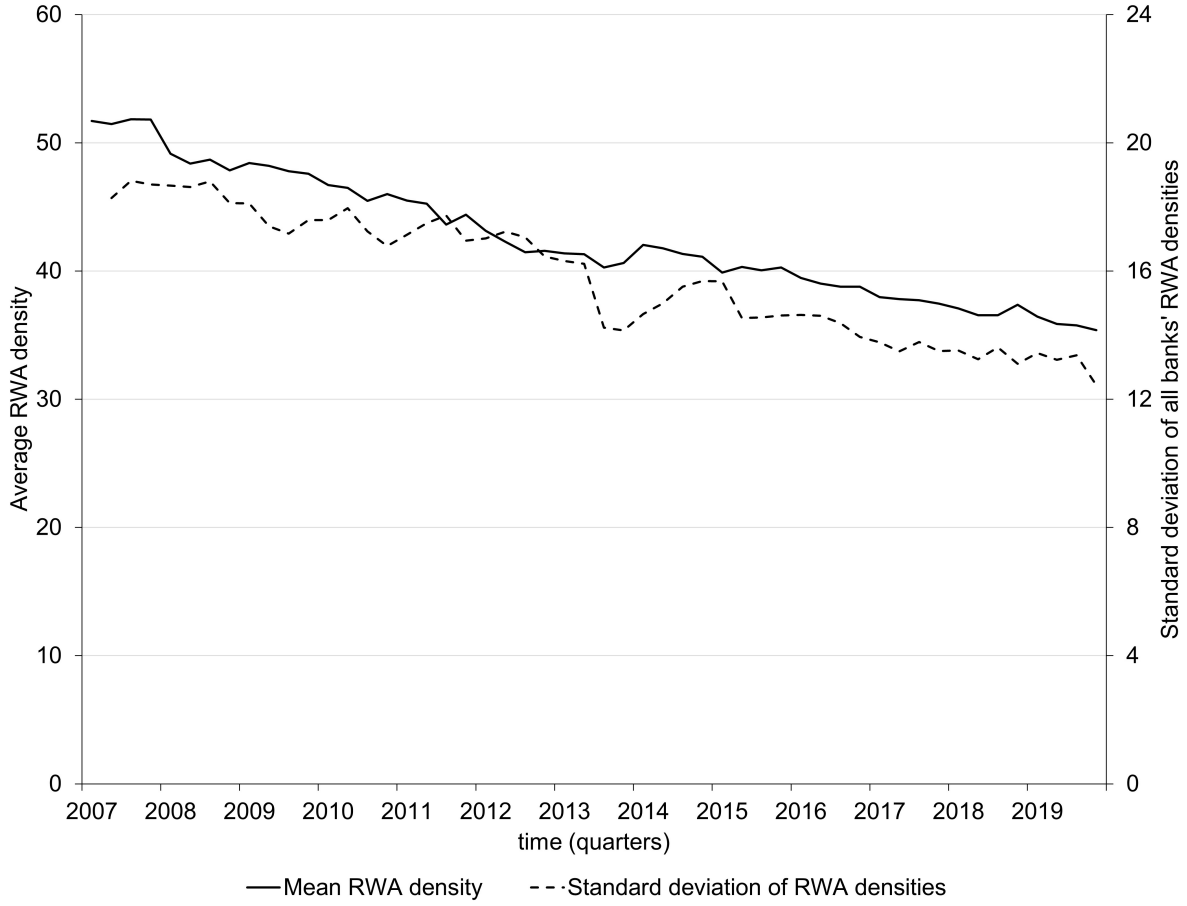

Notes: Complementing Figure A.5, this figure illustrates the risk-weighted asset (RWA) density development per bank. For each bank, the dashed line indicates that the bank still uses the standardized approach, the full line starts at the quarter the bank switches to the internal ratings-based (IRB) approach. Country average RWA densities are provided in Figure 1 in the main body of the paper.

Figure A.5: Development of banks' risk-weighted asset densities over time (Part 2).



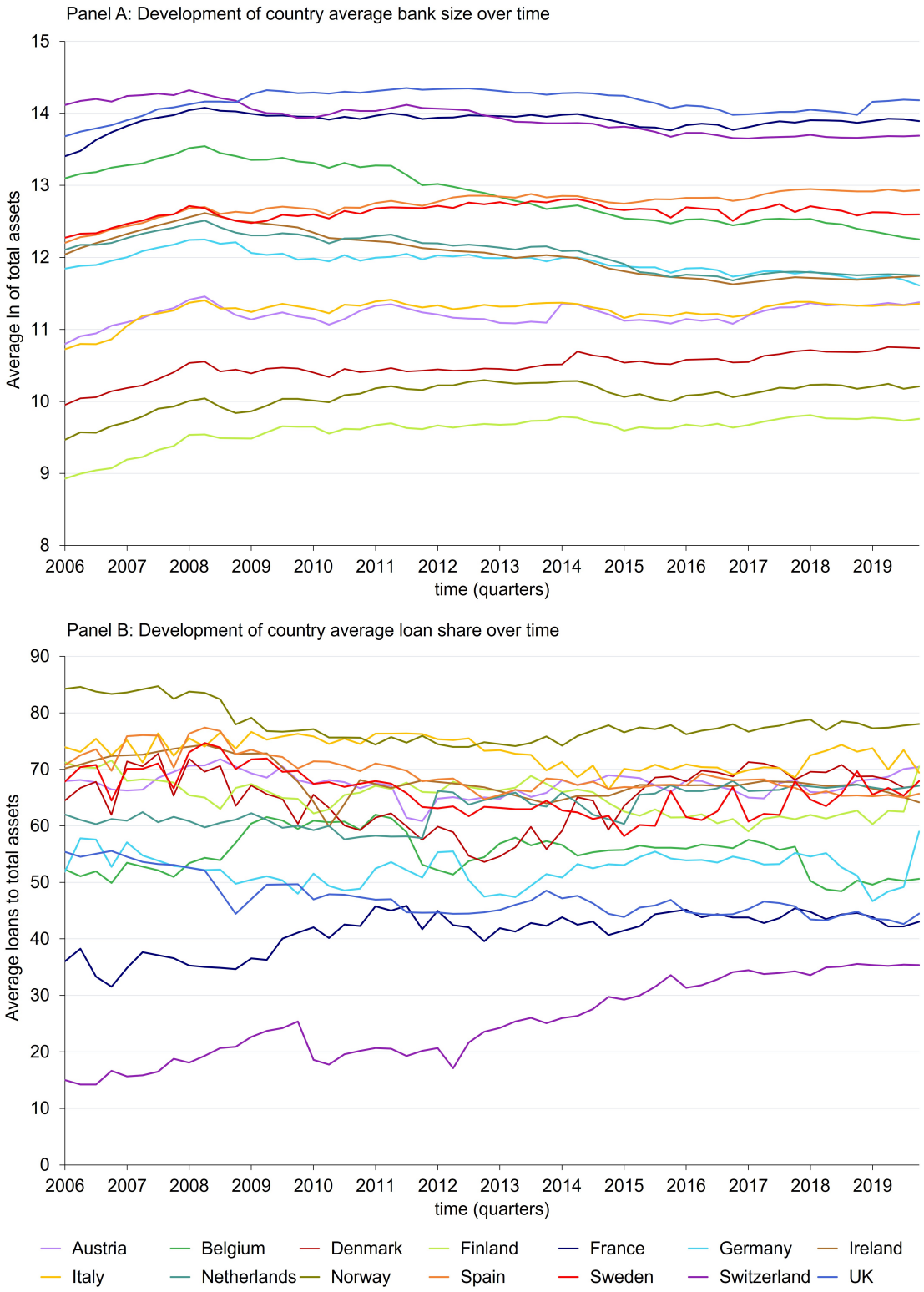

Notes: Complementing Figure A.4, this figure illustrates the risk-weighted asset (RWA) density development per bank. For each bank, the dashed line indicates that the bank still uses the standardized approach, the full line starts at the quarter the bank switches to the internal ratings-based (IRB) approach. Country average RWA densities are provided in Figure 1 in the main body of the paper.

Figure A.6: Mean and standard deviation of all banks' risk-weighted asset density.



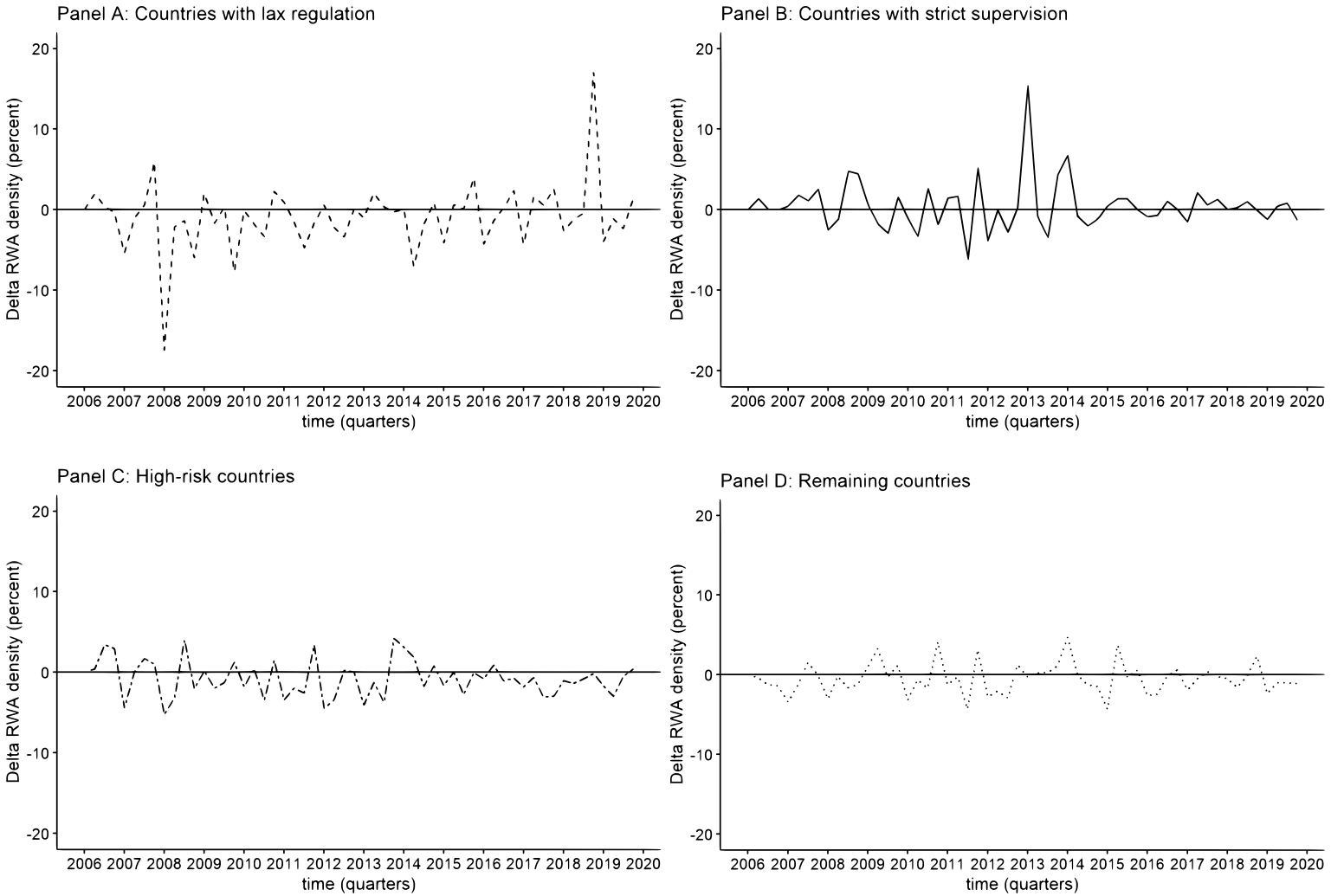

Notes: This figure illustrates the development of the mean and the standard deviation of risk-weighted asset (RWA) densities for banks using the internal ratings-based (IRB) approach over time.

Figure A.7: Development of banks' sizes and loan shares.



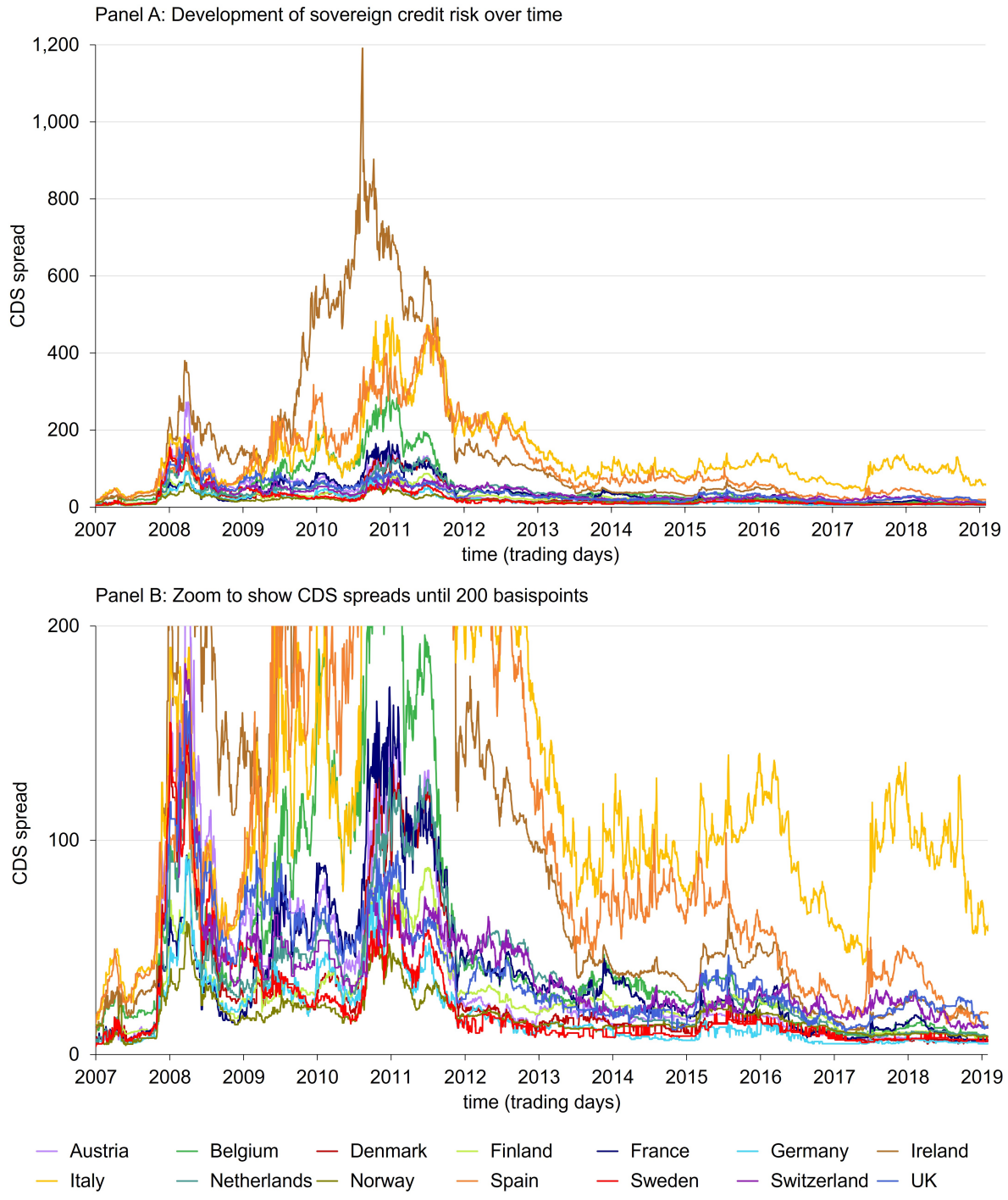

Notes: This figure illustrates the development of the country quarterly mean of internal ratings-based (IRB) approach banks' key variables. Panel A shows the evolution of the natural logarithm of banks' total assets and Panel B the banks' loans to total assets ratio.

Figure A.8: Development of banks' change in risk-weighted asset densities over time.



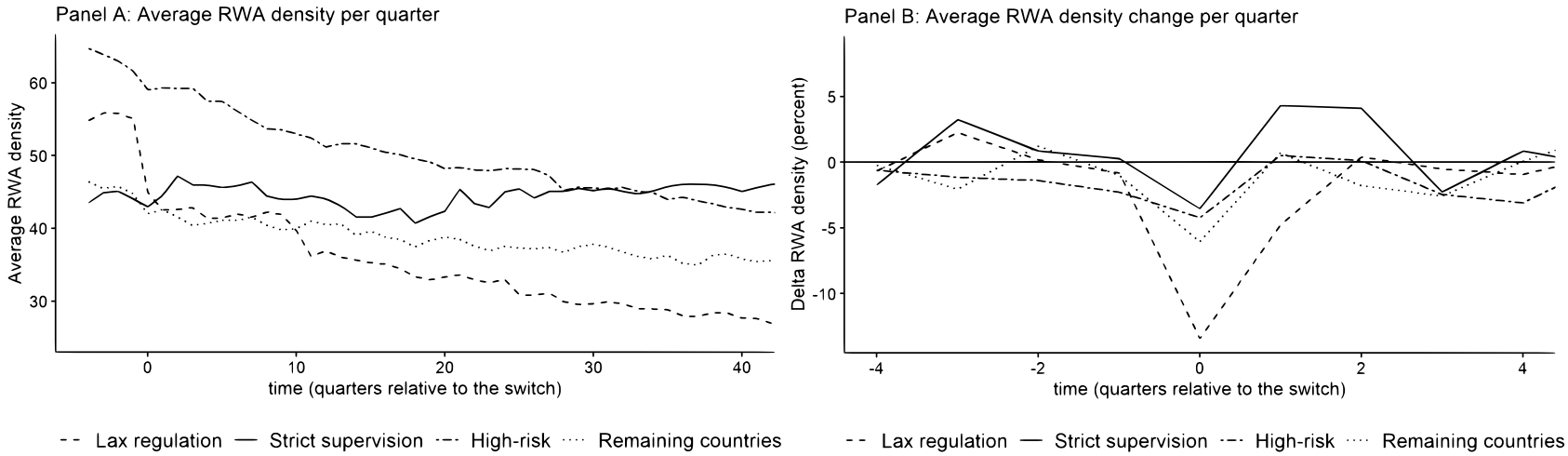

Notes: This figure illustrates the change in risk-weighted asset (RWA) densities across quarters. Panel A to D show the development for subgroups of countries classified as countries with less strict regulation, countries with strict supervision as well as high-risk, and the remaining countries.

Figure A.9: Sovereign credit risk by country.




Notes: This figure illustrates the development of the 5-year sovereign credit-default swap (CDS) spreads across countries and over time (Source: Refinitiv Datastream).

Figure A.10: Banks' risk-weighted asset density across country groups.




Notes: This figure illustrates the development pattern of banks' risk-weighted asset (RWA) density relative to the quarter of approval $s = 0$. Panel A shows the development of the quarterly average RWA density over time. Panel B focuses on the four quarters before and after the quarter of approval illustrating the quarterly RWA density change (in percent). "Lax regulation" and "Strict supervision" summarize countries with less strict regulation and strict supervision, respectively. "High-risk" refers to high-risk countries, and the remaining countries are classified as "Remaining countries".

## A.2 Stylized facts of RWA densities in banks

In the regulatory frame of Basel II, the IRB approach allows banks to rely on their internal estimates of relevant credit risk parameters for calculating their regulatory capital requirements (BCBS, 2004). During the 2008 financial crisis, the weaknesses in the banking sector were rapidly transmitted to the rest of the financial system and the real economy, resulting in a contraction of credit available. Thus, after the financial crisis, regulators keep increasing requirements regarding the minimum capital ratio to further ensure the resilience of banks and the stability of the banking sector (e.g., BCBS, 2011; EU, 2013; BCBS, 2017).

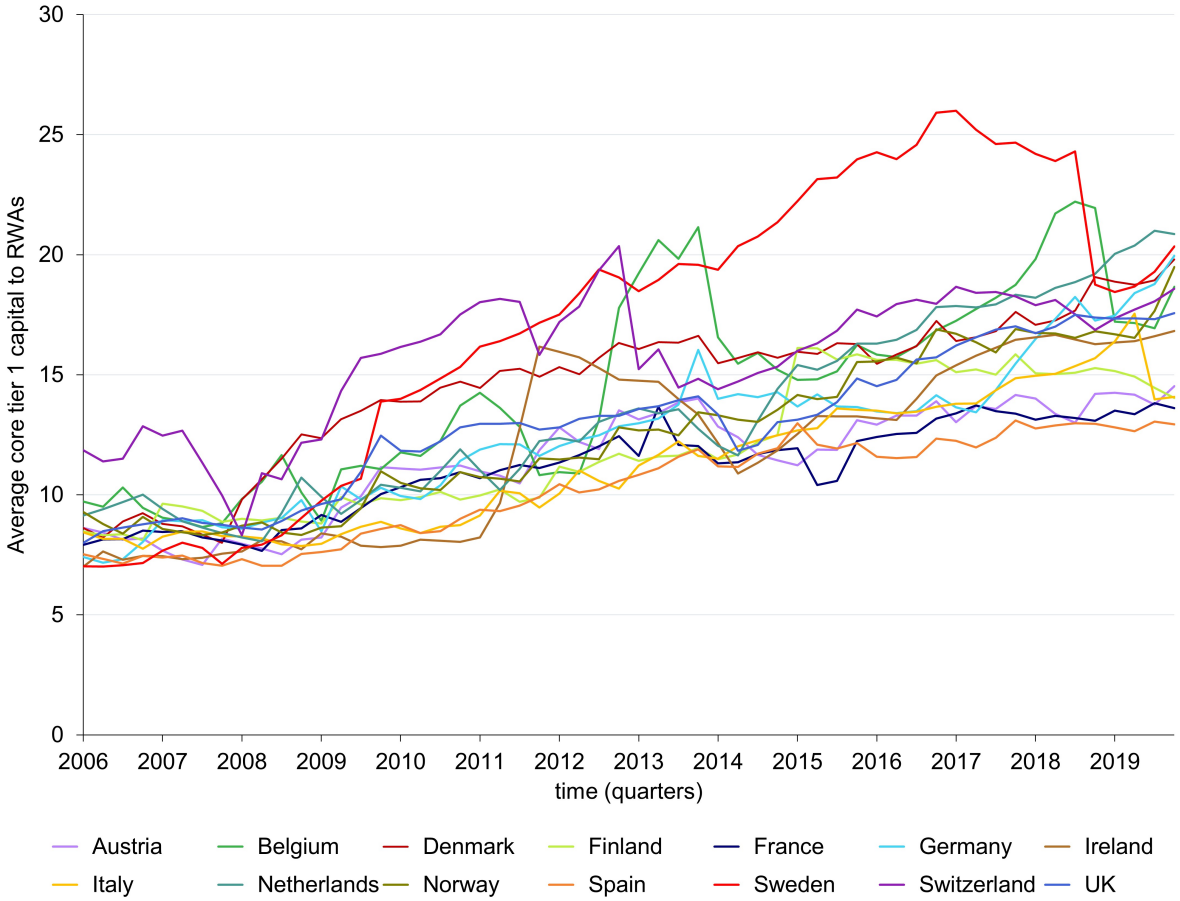
The regulatory authorities focus on the capital adequacy ratio, calculated as regulatory core tier 1 capital to RWAs.First, the regulatory frame of Basel II, especially the introduction of internal models, increased the risk-sensitivity of the denominator. Second, focusing on the amount and the quality of regulatory capital, Basel III addresses the numerator of banks' capital adequacy ratio. As a result, the pressure to increase the numerator to meet the increasing minimum capital requirements, created incentives to reduce the denominator, namely the RWAs (Gropp et al., 2019). Banks may reduce their RWAs in a "good" way where they use risk-mitigating techniques and change their asset composition or business model to reduce actual economic risk. Alternatively, a "bad" way to reduce RWAs would involve regulatory arbitrage where RWAs do not quantify precisely the banks' economic risk position.

As the RWA density and capital adequacy are closely connected, it is important to additionally take into account the banks' capital adequacy ratio. Another way to capture a bank's regulatory risk would be to require a high capital adequacy ratio. An increase in banks' minimum capital requirements may compensate decreasing RWA densities as observed in high-risk countries. Figure A.11 illustrates the evolution of the countries' quarterly mean capital adequacy ratio over time. As expected, capital adequacy ratios gradually increase, responding to the increasing minimum capital requirements implemented by the regulatory authorities. The development of the average across Belgian and Swiss banks for instance shows how the capital adequacy ratio depends on changing minimum capital requirements and how banks manage their capital adequacy ratios over time. The example of Belgium demonstrates that banks usually only have a high solvency for a couple of quarters before they adjust to meet their own target capital ratios. In the case of the Swedish banks strict regulation of liquidity risks may explain why the average capital adequacy ratio remains on a high level. Motivated by the perceived higher liquidity risk of Swedish banks from a combination of a large maturity mismatch, and a large dependence on liquidity in foreign currencies, Swedish authorities have implemented stricter liquidity measures than most other countries (Elliot and Lindblom, 2016; Petterson, 2016).

For banks under ECB supervision, Pillar II requirements may influence these banks' RWA densities. However, the process builds on the banks' internal estimates, and according to Lubberink (2020) such buffers are associated with a reduction of the banks' internal buffers. Hence, these measures can reduce but not eliminate the effect gained from reduction in RWA densities.

Moreover, even though gradual changes in regulatory requirements after the 2008 financial crisis have increased transparency, the global banking sector is still highly dependent on a few large banks. These banks still hold significant proportions of non-performing

Figure A.11: Country average capital adequacy ratio of banks using the internal ratings-based approach over time.




Notes: This figure illustrates the development of the country quarterly mean of internal ratings-based (IRB) approach banks' core tier 1 capital to risk-weighted assets (RWAs).

loans. A new risk factor is the sectors' low profitability that both limits regulators' ability to implement risk reducing regulations, and reduces the banks' ability to absorb losses (Bell and Hindmoor, 2018).

## A.3 Details on events in the European banking sector

Table A.1: Timeline of relevant events in the European banking sector.

| Time Period | Event | Affected Countries | Description | Reference |
|---|---|---|---|---|
| 2007 Q1 | Adoption of the IRB approach becomes possible | Austria, Belgium, Germany, Norway, Sweden, Switzerland | First bank(s) switch to IRB approach | Annual & disclosure reports |
| 2007 Q4 – 2009 Q2 | Macroeconomic shock: Financial crisis | All countries | Worldwide financial crisis causing a severe economic downturn | - |
| 2008 Q1 | Adoption of the IRB approach becomespossible | Denmark, France, Ireland, Netherlands, Spain, UK | First bank(s) switch to IRB approach | Annual & disclosure reports |
| 2008 Q3 | Adoption of the IRB approach becomes possible | Finland, Italy | First bank(s) switch to IRB approach | Annual & disclosure reports |
| 2009 Q1 – 2012 Q4 | Regulation change: Implementation of new requirements | Switzerland | Higher capital requirements for the two large Swiss banks (to be implemented until 2013) | Swiss Bankers Association (2009) |
| 2009 Q3 – 2013 Q1 | Macroeconomic shock: Sovereign debt crisis | Ireland, Italy, Spain (high-risk countries) | Crisis related to high government debt and collapsing financial institutions | - |
| 2010 Q4 – 2011 Q4 | Regulation change: Introduction of the Third Basel Accord | All countries | Higher capital requirements, banks anticipate introduction in their country | Basel Committee on Banking Supervision (BCBS) (2011) |
| until 2014 Q1 | Regulation change: Implementation of CRD IV | Euro countries | Higher capital requirements, implementation of the Third Basel Accord in the EU (to be implemented until Dec 31, 2013) | European Union (EU) (2013) |
| launched 2016 Q1 | Targeted review of internal models (TRIM) | Euro countries | Assessment of internal models used by banks under direct ECB supervision | European Central Bank (ECB) (2021) |
| since 2016 Q3 | Macroeconomic shock: "Brexit" | UK | Process of leavings the EU after referendum in June 2016 | - |
| 2018 Q1 | Regulation change: Introduction of IFRS 9 | All countries | Change of the International Financial Reporting Standard (IFRS) regarding financial instruments | International Accounting Standards Board |
| 2018 Q4 | Regulation change: Introduction of risk weight floor | Sweden | Implementation of an average institution-specific risk weight floor for Swedish mortgage exposures for credit institution with approval to use an internal credit risk model | Finansinspektionen Sweden (2018) |
| 2019 Q4 | Regulation change: Implementation of CRD IV | Norway | Removal of Basel I floor, introduction of a floor on mortgages for two years, and announcement to increase systemic risk buffer by 1.5 ppt from end 2020 | Ministry of Finance Norway (2019) |

This table provides an overview of macroeconomic shocks and regulation changes, representing relevant events in the European banking sector during our sample period. "IRB" refers to the internal ratings-based (IRB) approach."CRD" abbreviates Capital Requirements Directive.

## A.4 Sample description

Table A.2: Descriptive statistics of all banks one quarter before IRB adoption.

| Variable | N | Mean | SD | Min | p25 | Median | p75 | Max |
|---|---|---|---|---|---|---|---|---|
| ***Dependent variables*** | | | | | | | | |
| $\Delta RWAD_{i,j}^{s-1}$ | 52 | −1.094 | 5.498 | −13.286 | −4.277 | −0.436 | 1.789 | 18.507 |
| ***Explanatory variables*** | | | | | | | | |
| $LAX\_REGULATION_{j}^{s-1}$ | 52 | 0.135 | 0.345 | 0 | 0 | 0 | 0 | 1 |
| $REGULATION\_INDEX_{j}^{s-1}$ | 52 | 5.010 | 1.855 | 3.000 | 3.857 | 4.500 | 6.290 | 9.000 |
| $STRICT\_SUPERVISION_{j}^{s-1}$ | 52 | 0.115 | 0.323 | 0 | 0 | 0 | 0 | 1 |
| $SUPERVISION\_INDEX_{j}^{s-1}$ | 52 | 9.651 | 2.044 | 5.000 | 8.000 | 9.000 | 10.386 | 14.000 |
| $HIGH\_RISK_{j}^{s-1}$ | 52 | 0.212 | 0.412 | 0 | 0 | 0 | 0 | 1 |
| $CDS\_SOVEREIGN_{j}^{s-1}$ | 52 | 2.804 | 1.121 | 0.993 | 1.988 | 2.536 | 3.645 | 5.716 |
| $\Delta LOANS_{i,j}^{s-1}$ | 52 | 2.359 | 8.332 | −16.746 | −2.721 | 1.168 | 6.505 | 28.799 |
| $\Delta LLR_{i,j}^{s-1}$ | 48 | 0.009 | 0.105 | −0.200 | −0.015 | −0.006 | 0.004 | 0.457 |
| $\Delta RETURN\_ON\_RWA_{i,j}^{s-1}$ | 50 | −0.007 | 0.382 | −1.402 | −0.112 | −0.012 | 0.100 | 1.313 |
| $\Delta EQUITY_{i,j}^{s-1}$ | 52 | 0.033 | 0.283 | −0.757 | −0.121 | 0.046 | 0.146 | 0.754 |
| $SIZE_{i,j}^{s-1}$ | 52 | 12.042 | 1.967 | 7.407 | 10.568 | 12.426 | 13.693 | 14.861 |
| $DOMESTIC\_CREDIT_{j}^{s-1}$ | 52 | 106.800 | 34.575 | 64.900 | 84.500 | 91.300 | 114.100 | 182.500 |
| $\Delta GDP_{i,j}^{s-1}$ | 52 | 0.522 | 1.110 | −3.785 | 0.259 | 0.576 | 1.006 | 4.355 |

This table provides descriptive statistics for the panel variables at the quarter before the switch. N refers to the number of observations. "Mean" ("SD") describes the mean (standard deviation) of each variable across all observations, respectively. "p25" ("p75") refers to the 25th (75th) percentile of the distribution of each variable. Variable descriptions of the panel variables are provided in Table A.8 in the Internet Appendix. The variable descriptions in this table include the superscript $s-1$ as they provide the information of the quarter before the switch s. Due to limited data availability, information on banks' loan loss reserves to total assets (the return on risk-weighted assets) at the quarter before the switch $\Delta LLR_{i,j}^{s-1}$ ($\Delta RETURN\_ON\_RWA_{i,j}^{s-1}$) is only available for 48 (50) banks.

Table A.3: Risk-weighted asset density per year.

| Year | N | Mean | SD | Median | Min | Max |
|---|---|---|---|---|---|---|
| *2007* | 44 | 49.77 | 18.14 | 51.38 | 16.31 | 81.40 |
| *2008* | 183 | 47.41 | 18.61 | 48.43 | 13.16 | 105.54 |
| *2009* | 193 | 47.47 | 17.61 | 48.10 | 14.36 | 94.91 |
| *2010* | 192 | 46.18 | 17.57 | 47.28 | 14.13 | 89.60 |
| *2011* | 188 | 45.11 | 17.52 | 45.37 | 14.41 | 97.22 |
| *2012* | 185 | 42.24 | 17.27 | 42.45 | 15.29 | 87.51 |
| *2013* | 191 | 41.08 | 15.52 | 41.88 | 15.98 | 88.27 |
| *2014* | 188 | 41.87 | 15.51 | 42.40 | 17.06 | 78.56 |
| *2015* | 187 | 40.14 | 14.55 | 40.38 | 16.01 | 73.33 |
| *2016* | 186 | 39.27 | 14.42 | 37.65 | 15.67 | 70.39 |
| *2017* | 182 | 38.12 | 13.87 | 35.82 | 15.64 | 69.86 |
| *2018* | 160 | 36.38 | 13.77 | 33.80 | 16.42 | 70.01 |
| *2019* | 152 | 35.83 | 13.17 | 32.99 | 14.69 | 67.81 |
| **Total** | **2,231** | **42.10** | **16.44** | **40.68** | **13.16** | **105.54** |

This table provides descriptive statistics for the risk-weighted asset (RWA) density across years. N refers to the number of observations. "Mean" ("SD") describes the mean (standard deviation) of the variable across observations, respectively.

Table A.4: Data overview.

| **Key data** | **Definition** |
|---|---|
| Risk-weighted assets | Bank i's assets and off-balance sheet exposures calculated based on regulatory risk assessment which are used to determine the bank's minimum capital requirements |
| IRB approach approval date | Date where bank i obtains the supervisor's approval and is allowed to officially use the internal ratings-based (IRB) approach |
| IRB approach coverage | The share of a bank i's risk-weighted assets that are calculated using the internal ratings-based (IRB) approach |
| Bank CDS spreads | Bank i's 5-year sovereign credit default swap (CDS) spreads |
| Other bank-specific data | Information on bank i's total assets, equity, net income, net loans, and loan-loss reserves |
| Sovereign CDS spreads | Country j's 5-year sovereign credit default swap (CDS) spreads |
| Other country-specific data | Information on country j's real GDP growth and credit to private non-financial sector from banks in percent of GDP |
| Regulatory stringency | Index describing country j's regulatory stringency ranging from 0 to 10 where higher values indicate greater regulatory stringency |
| Supervisory power | Index describing country j's supervisory power ranging from 0 to 14 where higher values indicate greater supervisory power |

This table provides an overview of the basic data as detailed in Section 3.1 that are used to calculate the variables described in Tables A.7 and A.8.

Table A.5: List of all banks and their IRB adoption date.

| ID | Bank name | Country | IRB adoption date |
|---|---|---|---|
| 1 | Bank für Tirol und Vorarlberg AG | Austria | 01.01.2009 |
| 2 | Erste Group Bank AG | Austria | 01.01.2007 |
| 3 | Immigon Portfolioabbau AG | Austria | 01.04.2008 |
| 4 | Raiffeisen Bank International AG | Austria | 01.12.2008 |
| 5 | Dexia SA | Belgium | 01.01.2008 |
| 6 | KBC Group | Belgium | 01.01.2007 |
| 7 | Danske Bank A/S | Denmark | 01.01.2008 |
| 8 | Jyske Bank Group | Denmark | 01.01.2008 |
| 9 | Laan & Spar Bank A/S | Denmark | 01.01.2008 |
| 10 | Sydbank A/S | Denmark | 01.01.2008 |
| 11 | Aktia Bank Plc | Finland | 31.03.2015 |
| 12 | Alandsbanken Abp-Bank of Aland Plc | Finland | 31.03.2012 |
| 13 | OP Corporate Bank plc | Finland | 30.09.2008 |
| 14 | BNP Paribas | France | 01.01.2008 |
| 15 | Credit Agricole SA | France | 01.01.2008 |
| 16 | Credit Industriel et Commercial SA | France | 30.06.2008 |
| 17 | Natixis SA | France | 30.09.2010 |
| 18 | Societe Generale SA | France | 01.01.2008 |
| 19 | Aareal Bank AG | Germany | 31.12.2010 |
| 20 | Commerzbank AG | Germany | 01.01.2008 |
| 21 | Deutsche Bank AG | Germany | 01.01.2007 |
| 22 | DVB Bank SE | Germany | 01.01.2008 |
| 23 | HSBC Trinkaus & Burkhardt AG | Germany | 01.01.2008 |
| 24 | HVB UniCredit AG | Germany | 01.01.2008 |
| 25 | Allied Irish Banks plc | Ireland | 01.01.2008 |
| 26 | Bank of Ireland Group plc | Ireland | 31.03.2009 |
| 27 | Banca Popolare di Sondrio | Italy | 30.06.2019 |
| 28 | Banco di Sardegna SpA | Italy | 30.06.2016 |
| 29 | Credito Emiliano SpA | Italy | 01.07.2008 |
| 30 | Intesa Sanpaolo | Italy | 31.12.2008 |
| 31 | UBI Banca | Italy | 30.06.2012 |
| 32 | Van Lanschot NV | Netherlands | 01.07.2010 |
| 33 | ING Group | Netherlands | 01.01.2008 |
| 34 | DnB ASA | Norway | 01.01.2007 |
| 35 | Sparebank 1 Nord-Norge | Norway | 01.01.2007 |
| 36 | SpareBank 1 SMN | Norway | 01.01.2007 |
| 37 | Sparebanken More | Norway | 01.01.2014 |
| 38 | Sparebanken Vest | Norway | 01.01.2007 |
| 39 | Banco Bilbao Vizcaya Argentaria SA | Spain | 01.01.2008 |
| 40 | Banco de Sabadell SA | Spain | 01.01.2008 |
| 41 | Banco Santander SA | Spain | 01.06.2008 |
| 42 | Bankinter SA | Spain | 17.06.2008 |
| 43 | Skandinaviska Enskilda Banken AB | Sweden | 01.02.2007 |
| 44 | Svenska Handelsbanken | Sweden | 01.01.2007 |
| 45 | Swedbank AB | Sweden | 01.03.2007 |
| 46 | UBS Group AG | Switzerland | 01.01.2008 |
| 47 | Credit Suisse Group AG | Switzerland | 01.01.2007 |
| 48 | Barclays Plc | UK | 01.01.2008 |
| 49 | HSBC Holdings Plc | UK | 01.01.2008 |
| 50 | Royal Bank of Scotland Group Plc | UK | 01.01.2008 |
| 51 | Standard Chartered Plc | UK | 01.01.2008 |
| 52 | Lloyds Banking Group plc | UK | 01.01.2008 |

Table A.6: Sample across countries.

| **Country** | **Number of banks** | **Number of observations** | **% of total assets in the sample** |
|---|---|---|---|
| *Austria* | 4 | 164 | 0.15 |
| *Belgium* | 2 | 54 | 0.18 |
| *Denmark* | 4 | 188 | 6.38 |
| *Finland* | 3 | 92 | 13.51 |
| *France* | 5 | 245 | 18.19 |
| *Germany* | 6 | 228 | 7.24 |
| *Ireland* | 2 | 98 | 0.09 |
| *Italy* | 5 | 165 | 0.12 |
| *Netherlands* | 2 | 70 | 1.40 |
| *Norway* | 5 | 245 | 21.47 |
| *Spain* | 4 | 196 | 4.71 |
| *Sweden* | 3 | 147 | 0.20 |
| *Switzerland* | 2 | 98 | 4.25 |
| *UK* | 5 | 241 | 22.09 |
| **Total** | **52** | **2,231** | **100.00** |

This table presents the sample distribution by country. With a maximum of 52 quarters, a balanced panel would comprise 2,704 observations. Due to limited data availability and banks' merger activity, our final data set contains 2,395 bank-quarter observations.

Table A.7: Descriptions of the cross-sectional variables.

| Variable | Description | Source |
|---|---|---|
| ***Cross-section: dependent variables*** | | |
| $\Delta RWAD^{s}_{i,j}$ | Change in bank i's risk-weighted assets to total assets from the quarter before the switch to the quarter of the switch s in percent | Refinitiv Datastream |
| $\varnothing\Delta RWAD^{s+r}_{i,j}$ | Average change in bank i's risk-weighted assets to total assets across $r$ quarters after the quarter of switch s in percent | Refinitiv Datastream |
| ***Cross-section: independent variables*** | | |
| $LAX\_REGULATION_j$ | Indicator equal to 1 if country j is classified as country with less strict regulation and 0 otherwise (i.e., Denmark and Sweden) | World Bank |
| $REGULATION\_INDEX_j$ | Country j's inverted regulatory stringency index | World Bank |
| $STRICT\_SUPERVISION_j$ | Indicator equal to 1 if country j is classified as country with strict supervision and 0 otherwise (i.e., Austria and Switzerland) | World Bank |
| $SUPERVISION\_INDEX_j$ | Country j's supervisory power index | World Bank |
| $HIGH\_RISK_j$ | Indicator equal to 1 if country j is classified as high risk according to the sovereign credit-default swap spreads and 0 otherwise (i.e., Ireland, Italy, and Spain) | Refinitiv Datastream |
| $CDS\_SOVEREIGN_j$ | Natural logarithm of country j's sovereign credit-default swap spreads | Refinitiv Datastream |
| $REL\_MIN^{s-1}_{i,j}$ | Bank i's risk-weighted assets to total assets relative to country j's minimum risk-weighted assets density at the quarter before the switch s | Refinitiv Datastream |
| $\varnothing RWAD_{i,j}$ | Bank i's average risk-weighted assets to total assets across the sample period | Refinitiv Datastream |
| $IRB\_COVERAGE^{s}_{i,j}$ | Share of bank i's risk-weighted assets that are calculated using the internal ratings-based approach at the quarter of the switch s | Quarterly reports |
| $\varnothing HIGH\_IRB\_CVG_{i,j}$ | Indicator equal to 1 if bank i's average coverage of the internal ratings-based approach is larger than the third quartile of the average coverage of all banks across the sample period and 0 otherwise | Quarterly reports |
| $RETURN\_ON\_RWA^{s-1}_{i,j}$ | Bank i's net income to risk-weighted assets at the quarter before the switch s | Refinitiv Datastream |
| $LLR^{s-1}_{i,j}$ | Bank i's loan-loss reserves to total assets at the quarter before the switch s | Refinitiv Datastream |
| $PRE\_CRISIS_{i,j}$ | Indicator equal to 1 if bank i switches before the crisis (2008 Q3) and 0 otherwise | Annual & disclosure reports |
| $EURO_{i,j}$ | Indicator equal to 1 if bank i is headquartered in a euro country and 0 otherwise | Refinitiv Datastream |
| $G\_SIB_{i,j}$ | Indicator equal to 1 if bank i is a Global Systemically Important Bank (G-SIB) and 0 otherwise | Financial Stability Board |
| $EQUITY^{s-1}_{i,j}$ | Bank i's equity to total assets at the quarter before the switch s | Refinitiv Datastream |
| $\varnothing EQUITY_{i,j}$ | Bank i's average equity to total assets ratio across the sample period | Refinitiv Datastream |
| $SIZE^{s-1}_{i,j}$ | Bank i's natural logarithm of total assets at the quarter before the switch s | Refinitiv Datastream |
| $\varnothing SIZE_{i,j}$ | Bank i's average natural logarithm of total assets across the sample period | Refinitiv Datastream |
| $\varnothing DOMESTIC\_CREDIT_j$ | Country j's average credit to private non-financial sector from banks in percent of GDP across the sample period | World Bank |
| $\varnothing\Delta GDP_j$ | Country j's average real GDP growth across the sample period | IMF |

This table describes the variables used in the cross-sectional regression models.

Table A.8: Descriptions of the panel variables.

| Variable | Description | Source |
|---|---|---|
| ***Panel: dependent variable*** | | |
| $\Delta RWAD_{i,j,t}$ | Quarterly change in bank i's risk-weighted assets to total assets in percent | Refinitiv Datastream |
| ***Panel: independent variables*** | | |
| $LAX\_REGULATION_{j,t}$ | Indicator equal to 1 if country j is classified as country with less strict regulation and 0 otherwise | World Bank |
| $REGULATION\_INDEX_{j,t}$ | One over country j's regulatory stringency index initially calculated as suggested by Barth et al. (2013) where higher values indicate less stringent regulation | World Bank |
| $STRICT\_SUPERVISION_{j,t}$ | Indicator equal to 1 if country j is classified as country with strict supervision and 0 otherwise | World Bank |
| $SUPERVISION\_INDEX_{j,t}$ | Country j's supervisory power index calculated as suggested by Barth et al. (2013) where higher values indicate stricter supervision | World Bank |
| $CDS\_SOVEREIGN_{j,t}$ | Natural logarithm of country j's sovereign credit-default swap spreads | Refinitiv Datastream |
| $CDS\_BANK_{i,j,t}$ | Natural logarithm of bank i's credit-default swap spreads | Refinitiv Datastream |
| $IRB_{i,j,t}$ | Indicator equal to 1 if bank i uses the internal ratings-based approach in a quarter and 0 otherwise | Annual & disclosure reports |
| $IRB\_COVERAGE_{i,j,t}$ | Share of bank i's risk-weighted assets that are calculated using the internal ratings-based approach | Quarterly reports |
| $G\_SIB_{i,j,t}$ | Indicator equal to 1 if bank i is a Global Systemically Important Bank (G-SIB) and 0 otherwise | Financial Stability Board |
| $\Delta LOANS_{i,j,t}$ | Quarterly change of bank i's net loans in percent | Refinitiv Datastream |
| $\Delta CORPORATE\_LOANS_{i,j,t}$ | Quarterly change of bank i's corporate loans to total loans in percent | Quarterly reports |
| $\Delta RETURN\_ON\_RWA_{i,j,t}$ | Quarterly change of bank i's net income to risk-weighted assets in percent | Refinitiv Datastream |
| $\Delta LLR_{i,j,t}$ | Quarterly change of bank i's loan-loss reserves to total assets in percent | Refinitiv Datastream |
| $\Delta EQUITY_{i,j,t}$ | Quarterly change of bank i's equity to total assets in percent | Refinitiv Datastream |
| $SIZE_{i,j,t}$ | Bank i's natural logarithm of total assets | Refinitiv Datastream |
| $DOMESTIC\_CREDIT_{j,t}$ | Country j's credit to private non-financial sector from banks in percent of GDP | World Bank |
| $\Delta GDP_{j,t}$ | Quarterly growth rate of a country j's real GDP in percent | IMF |
| *q2 / q3 / q4* | Indicators equal to 1 in quarter 2, 3 or 4 and 0 otherwise | - |

This table describes the variables used in the panel regression models.

Table A.9: Summary statistics cross-section.

| Variable | N | Mean | SD | Min | p25 | Median | p75 | Max |
|---|---|---|---|---|---|---|---|---|
| ***Dependent variables*** | | | | | | | | |
| $\Delta RWAD^{s}_{i,j}$ | 52 | −7.699 | 10.925 | −33.149 | −12.982 | −5.747 | −0.488 | 12.721 |
| $\varnothing\Delta RWAD^{s+4}_{i,j}$ | 51 | −2.187 | 4.455 | −18.017 | −4.341 | −1.588 | −0.053 | 10.134 |
| $\varnothing\Delta RWAD^{s+8}_{i,j}$ | 50 | −1.149 | 2.229 | −7.203 | −2.163 | −1.119 | 0.361 | 4.741 |
| $\varnothing\Delta RWAD^{s+12}_{i,j}$ | 50 | −0.983 | 1.574 | −4.527 | −2.098 | −0.847 | 0.016 | 3.184 |
| $\varnothing\Delta RWAD^{s+16}_{i,j}$ | 49 | −0.895 | 1.147 | −3.053 | −1.769 | −0.888 | −0.061 | 2.046 |
| $\varnothing\Delta RWAD^{s+20}_{i,j}$ | 49 | −0.900 | 1.085 | −3.293 | −1.788 | −1.023 | −0.173 | 1.272 |
| $\varnothing\Delta RWAD^{s+24}_{i,j}$ | 48 | −0.785 | 1.137 | −3.671 | −1.391 | −0.718 | −0.149 | 1.719 |
| $\varnothing\Delta RWAD^{s+28}_{i,j}$ | 47 | −0.614 | 1.091 | −3.078 | −1.272 | −0.638 | 0.070 | 2.185 |
| $\varnothing\Delta RWAD^{s+32}_{i,j}$ | 46 | −0.547 | 1.105 | −2.791 | −1.307 | −0.436 | 0.129 | 2.201 |
| $\varnothing\Delta RWAD^{s+36}_{i,j}$ | 45 | −0.527 | 0.987 | −2.473 | −1.145 | −0.573 | 0.191 | 1.828 |
| $\varnothing\Delta RWAD^{s+40}_{i,j}$ | 41 | −0.500 | 0.883 | −2.182 | −1.060 | −0.597 | 0.071 | 1.443 |
| ***Explanatory variables*** | | | | | | | | |
| $LAX\_REGULATION_{j}$ | 52 | 0.135 | 0.345 | 0 | 0 | 0 | 0 | 1 |
| $REGULATION\_INDEX_{j}$ | 52 | 4.837 | 1.777 | 3.000 | 3.375 | 3.857 | 6.290 | 9.000 |
| $STRICT\_SUPERVISION_{j}$ | 52 | 0.115 | 0.323 | 0 | 0 | 0 | 0 | 1 |
| $SUPERVISION\_INDEX_{j}$ | 52 | 9.459 | 2.133 | 5.000 | 8.000 | 8.500 | 10.386 | 14.000 |
| $HIGH\_RISK_{j}$ | 52 | 0.212 | 0.412 | 0 | 0 | 0 | 0 | 1 |
| $CDS\_SOVEREIGN_{j}$ | 52 | 2.953 | 1.518 | 0.182 | 2.192 | 2.548 | 4.151 | 5.999 |
| $REL\_MIN^{s-1}_{i,j}$ | 52 | 25.922 | 14.379 | 2.622 | 16.034 | 26.200 | 32.658 | 76.911 |
| $\varnothing RWAD_{i,j}$ | 52 | 43.971 | 14.273 | 19.422 | 30.337 | 45.192 | 52.134 | 69.403 |
| $IRB\_COVERAGE^{s}_{i,j}$ | 52 | 0.604 | 0.259 | 0.000 | 0.498 | 0.625 | 0.817 | 1.000 |
| $\varnothing HIGH\_IRB\_CVG_{i,j}$ | 52 | 0.250 | 0.437 | 0 | 0 | 0 | 0.2 | 1 |
| $RETURN\_ON\_RWA^{s-1}_{i,j}$ | 52 | 0.326 | 0.439 | −1.193 | 0.179 | 0.340 | 0.505 | 1.842 |
| $LLR^{s-1}_{i,j}$ | 48 | 0.943 | 1.236 | 0.044 | 0.299 | 0.670 | 1.205 | 8.032 |
| $PRE\_CRISIS_{i,j}$ | 52 | 0.788 | 0.412 | 0 | 1 | 1 | 1 | 1 |
| $EURO_{i,j}$ | 52 | 0.635 | 0.486 | 0 | 0 | 1 | 1 | 1 |
| $G\_SIB_{i,j}$ | 52 | 0.269 | 0.448 | 0 | 0 | 0 | 1 | 1 |
| $EQUITY^{s-1}_{i,j}$ | 52 | 4.485 | 1.899 | 0.865 | 3.061 | 4.416 | 5.840 | 9.108 |
| $\varnothing EQUITY_{i,j}$ | 52 | 5.359 | 1.742 | 1.226 | 4.134 | 5.225 | 6.254 | 9.541 |
| $SIZE^{s-1}_{i,j}$ | 52 | 12.042 | 1.967 | 7.407 | 10.568 | 12.426 | 13.693 | 14.861 |
| $\varnothing SIZE_{i,j}$ | 52 | 12.019 | 1.909 | 7.658 | 10.277 | 12.475 | 13.562 | 14.727 |
| $\varnothing DOMESTIC\_CREDIT_{j}$ | 52 | 102.936 | 30.431 | 60.827 | 83.214 | 91.548 | 117.979 | 177.113 |
| $\varnothing\Delta GDP_{j}$ | 52 | 0.325 | 0.211 | −0.031 | 0.270 | 0.315 | 0.362 | 1.174 |

This table provides descriptive statistics for the variables in the cross-sectional data set. N refers to the number of observations. "Mean" ("SD") describes the mean (standard deviation) of each variable across all observations, respectively. "p25" ("p75") refers to the 25th (75th) percentile of the distribution of each variable. Comprehensive variable descriptions are provided in Table A.7 in the Internet Appendix. As several banks switch later during our sample period, the number of available banks to calculate the average risk-weighted asset densities ($\varnothing\Delta RWAD^{s+r}_{i,j}$) decreases. Due to limited data availability, information on banks' loan loss reserves to total assets at the quarter before the switch ($LLR^{s-1}_{i,j}$) is only available for 48 banks.

Table A.10: Summary statistics panel.

| Variable | N | Mean | SD | Min | p25 | Median | p75 | Max |
|---|---|---|---|---|---|---|---|---|
| ***Dependent variable*** | | | | | | | | |
| $\Delta RWAD_{i,j,t}$ | 2,231 | −0.542 | 5.232 | −17.672 | −3.205 | −0.704 | 1.803 | 17.355 |
| ***Explanatory variables*** | | | | | | | | |
| $LAX\_REGULATION_{j,t}$ | 2,231 | 0.494 | 0.500 | 0 | 0 | 0 | 1 | 1 |
| $REGULATION\_INDEX_{j,t}$ | 2,231 | 0.542 | 0.201 | 0.333 | 0.375 | 0.429 | 0.682 | 1.000 |
| $STRICT\_SUPERVISION_{j,t}$ | 2,231 | 0.509 | 0.500 | 0 | 0 | 1 | 1 | 1 |
| $SUPERVISION\_INDEX_{j,t}$ | 2,231 | 0.694 | 0.140 | 0.357 | 0.571 | 0.714 | 0.786 | 1.000 |
| $CDS\_SOVEREIGN_{j,t}$ | 2,231 | 3.391 | 0.998 | 1.609 | 2.623 | 3.216 | 4.077 | 6.595 |
| $CDS\_BANK_{i,j,t}$ | 1,371 | 4.640 | 0.776 | 2.694 | 4.153 | 4.592 | 5.072 | 7.269 |
| $\Delta LOANS_{i,j,t}$ | 2,231 | 0.145 | 7.514 | −22.378 | −3.700 | 0.000 | 3.482 | 28.799 |
| $\Delta CORPORATE\_LOANS_{i,j,t}$ | 1,408 | 1.879 | 41.988 | −91.506 | −1.800 | −0.252 | 1.282 | 32.132 |
| $\Delta LLR_{i,j,t}$ | 2,231 | 0.005 | 0.285 | −3.336 | −0.025 | −0.001 | 0.023 | 5.752 |
| $\Delta RETURN\_ON\_RWA_{i,j,t}$ | 2,231 | −0.002 | 0.357 | −3.287 | −0.095 | 0.002 | 0.091 | 3.287 |
| $\Delta EQUITY_{i,j,t}$ | 2,231 | 0.043 | 0.422 | −4.485 | −0.120 | 0.029 | 0.196 | 3.633 |
| $IRB_{i,j,t}$ | 2,231 | 0.909 | 0.287 | 0 | 1 | 1 | 1 | 1 |
| $IRB\_COVERAGE_{i,j,t}$ | 2,119 | 0.617 | 0.259 | 0.000 | 0.528 | 0.674 | 0.815 | 1.000 |
| $G\_SIB_{i,j,t}$ | 2,231 | 0.197 | 0.398 | 0 | 0 | 0 | 0 | 1 |
| $SIZE_{i,j,t}$ | 2,231 | 12.128 | 1.907 | 7.312 | 10.546 | 12.532 | 13.729 | 14.861 |
| $DOMESTIC\_CREDIT_{j,t}$ | 2,231 | 105.801 | 34.110 | 38.825 | 84.100 | 92.150 | 123.825 | 198.050 |
| $\Delta GDP_{j,t}$ | 2,231 | 0.281 | 1.166 | −6.842 | −0.033 | 0.331 | 0.679 | 22.657 |

This table provides descriptive statistics for the variables in the panel data set. N refers to the number of observations. "Mean" ("SD") describes the mean (standard deviation) of each variable across all observations, respectively. "p25" ("p75") refers to the 25th (75th) percentile of the distribution of each variable. Comprehensive variable descriptions are provided in Table A.8 in the Internet Appendix. Due to limited data availability, information on banks' credit-default swap spreads ($CDS\_BANK_{i,j,t}$) and on the share of banks' coverage of the internal ratings-based approach ($IRB\_COVERAGE_{i,j,t}$) are not available for all bank-quarter observations.

Table A.11: Correlation matrix cross-section (Part 1).

| **Variable** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** | **(9)** |
|---|---|---|---|---|---|---|---|---|---|
| **(1)** $\Delta RWAD^{s}_{i,j}$ | 1 | -0.018 | 0.019 | 0.022 | 0.073 | 0.069 | -0.208 | -0.291 | 0.004 |
| **(2)** $REL\_MIN^{s-1}_{i,j}$ | -0.018 | 1 | 0.630 | -0.625 | -0.015 | 0.195 | -0.004 | 0.142 | -0.015 |
| **(3)** $EQUITY^{s-1}_{i,j}$ | 0.019 | 0.630 | 1 | -0.306 | 0.130 | 0.281 | -0.226 | 0.111 | -0.220 |
| **(4)** $SIZE^{s-1}_{i,j}$ | 0.022 | -0.625 | -0.306 | 1 | 0.103 | -0.117 | 0.048 | -0.035 | 0.040 |
| **(5)** $RETURN\_ON\_RWA^{s-1}_{i,j}$ | 0.073 | -0.015 | 0.130 | 0.103 | 1 | 0.079 | -0.170 | 0.017 | 0.175 |
| **(6)** $LLR^{s-1}_{i,j}$ | 0.069 | 0.195 | 0.281 | -0.117 | 0.079 | 1 | 0.001 | 0.219 | -0.038 |
| **(7)** $IRB\_COVERAGE^{s}_{i,j}$ | -0.208 | -0.004 | -0.226 | 0.048 | -0.170 | 0.001 | 1 | 0.093 | 0.028 |
| **(8)** $\varnothing DOMESTIC\_CREDIT_{j}$ | -0.291 | 0.142 | 0.111 | -0.035 | 0.017 | 0.219 | 0.093 | 1 | 0.072 |
| **(9)** $\varnothing \Delta GDP_{j}$ | 0.004 | -0.015 | -0.220 | 0.040 | 0.175 | -0.038 | 0.028 | 0.072 | 1 |

This table reports correlation coefficients between all non-binary variables of the cross-sectional data set, used in the analysis at the quarter of the switch. Comprehensive variable descriptions are provided in Table A.7 in the Internet Appendix.

Table A.12: Correlation matrix cross-section (Part 2).

| **Variable** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** | **(9)** | **(10)** |
|---|---|---|---|---|---|---|---|---|---|---|
| **(1)** $\varnothing\Delta RWAD_{i,j}^{s+8}$ | 1 | 0.573 | 0.291 | 0.221 | 0.231 | 0.063 | -0.130 | 0.191 | -0.411 | -0.024 |
| **(2)** $\varnothing\Delta RWAD_{i,j}^{s+16}$ | 0.573 | 1 | 0.701 | 0.681 | 0.682 | 0.030 | -0.138 | 0.118 | -0.407 | -0.146 |
| **(3)** $\varnothing\Delta RWAD_{i,j}^{s+24}$ | 0.291 | 0.701 | 1 | 0.886 | 0.859 | -0.070 | -0.028 | 0.195 | -0.146 | -0.111 |
| **(4)** $\varnothing\Delta RWAD_{i,j}^{s+32}$ | 0.221 | 0.681 | 0.886 | 1 | 0.972 | -0.126 | -0.146 | 0.202 | -0.163 | 0.001 |
| **(5)** $\varnothing\Delta RWAD_{i,j}^{s+40}$ | 0.231 | 0.682 | 0.859 | 0.972 | 1 | -0.169 | -0.166 | 0.207 | -0.119 | 0.048 |
| **(6)** $\varnothing RWAD_{i,j}$ | 0.063 | 0.030 | -0.070 | -0.126 | -0.169 | 1 | 0.650 | -0.691 | -0.120 | 0.099 |
| **(7)** $\varnothing EQUITY_{i,j}$ | -0.130 | -0.138 | -0.028 | -0.146 | -0.166 | 0.650 | 1 | -0.363 | 0.117 | 0.153 |
| **(8)** $\varnothing SIZE_{i,j}$ | 0.191 | 0.118 | 0.195 | 0.202 | 0.207 | -0.691 | -0.363 | 1 | -0.086 | -0.031 |
| **(9)** $\varnothing DOMESTIC\_CREDIT_{j}$ | -0.411 | -0.407 | -0.146 | -0.163 | -0.119 | -0.120 | 0.117 | -0.086 | 1 | 0.039 |
| **(10)** $\varnothing\Delta GDP_{j}$ | -0.024 | -0.146 | -0.111 | 0.001 | 0.048 | 0.099 | 0.153 | -0.031 | 0.039 | 1 |

This table reports correlation coefficients between all non-binary variables of the cross-sectional data set, used in the analysis of the long-term development after the switch. Comprehensive variable descriptions are provided in Table A.7 in the Internet Appendix.

Table A.13: Correlation matrix panel.

| **Variable** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** | **(9)** | **(10)** | **(11)** | **(12)** | **(13)** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **(1)** $\Delta RWAD_{i,j,t}$ | 1 | -0.025 | 0.032 | -0.073 | -0.061 | -0.078 | 0.061 | 0.001 | 0.265 | 0.001 | 0.071 | -0.0005 | 0.027 |
| **(2)** $REGULATION\_INDEX_{j,t}$ | -0.025 | 1 | -0.163 | -0.068 | -0.031 | -0.054 | 0.059 | -0.016 | 0.010 | 0.142 | 0.021 | 0.047 | -0.008 |
| **(3)** $SUPERVISION\_INDEX_{j,t}$ | 0.032 | -0.163 | 1 | -0.010 | -0.028 | -0.012 | 0.064 | 0.020 | 0.005 | -0.015 | -0.025 | 0.338 | -0.127 |
| **(4)** $CDS\_SOVEREIGN_{j,t}$ | -0.073 | -0.068 | -0.010 | 1 | 0.769 | -0.048 | 0.124 | -0.007 | -0.020 | -0.356 | -0.056 | 0.161 | -0.167 |
| **(5)** $CDS\_BANK_{i,j,t}$ | -0.061 | -0.031 | -0.028 | 0.769 | 1 | -0.064 | 0.116 | 0.012 | 0.025 | -0.214 | -0.149 | 0.034 | -0.135 |
| **(6)** $\Delta LOANS_{i,j,t}$ | -0.078 | -0.054 | -0.012 | -0.048 | -0.064 | 1 | -0.014 | 0.058 | -0.079 | -0.042 | 0.014 | 0.027 | -0.005 |
| **(7)** $\Delta LLR_{i,j,t}$ | 0.061 | 0.059 | 0.064 | 0.124 | 0.116 | -0.014 | 1 | -0.027 | 0.090 | -0.046 | -0.021 | 0.097 | -0.196 |
| **(8)** $\Delta RETURN\_ON\_RWA_{i,j,t}$ | 0.001 | -0.016 | 0.020 | -0.007 | 0.012 | 0.058 | -0.027 | 1 | 0.152 | 0.024 | -0.008 | 0.003 | 0.052 |
| **(9)** $\Delta EQUITY_{i,j,t}$ | 0.265 | 0.010 | 0.005 | -0.020 | 0.025 | -0.079 | 0.090 | 0.152 | 1 | 0.025 | -0.024 | 0.006 | 0.074 |
| **(10)** $IRB\_COVERAGE_{i,j,t}$ | 0.001 | 0.142 | -0.015 | -0.356 | -0.214 | -0.042 | -0.046 | 0.024 | 0.025 | 1 | 0.110 | -0.032 | 0.053 |
| **(11)** $SIZE_{i,j,t}$ | 0.071 | 0.021 | -0.025 | -0.056 | -0.149 | 0.014 | -0.021 | -0.008 | -0.024 | 0.110 | 1 | -0.022 | -0.060 |
| **(12)** $\varnothing DOMESTIC\_CREDIT_{j}$ | -0.0005 | 0.047 | 0.338 | 0.161 | 0.034 | 0.027 | 0.097 | 0.003 | 0.006 | -0.032 | -0.022 | 1 | -0.091 |
| **(13)** $\varnothing \Delta GDP_{j}$ | 0.027 | -0.008 | -0.127 | -0.167 | -0.135 | -0.005 | -0.196 | 0.052 | 0.074 | 0.053 | -0.060 | -0.091 | 1 |

This table reports correlation coefficients between the variables of the panel data set. Comprehensive variable descriptions are provided in Table A.8 in the Internet Appendix.

Table A.14: Summary statistics for the risk-weighted asset densities over time across banks for each country group.

| **Variable** | **N** | **Mean** | **SD** | **Median** |
|---|---|---|---|---|
| Countries with less strict regulation | 335 | -0.94 | 5.88 | -1.00 |
| Countries with strict supervision | 262 | 0.21 | 5.08 | -0.13 |
| High-risk countries | 459 | -0.84 | 4.40 | -1.02 |
| Remaining countries | 1,175 | -0.48 | 5.35 | -0.72 |
| **Total** | **2,231** | **-0.54** | **5.23** | **-0.70** |

This table provides descriptive statistics for the change in risk-weighted asset density ($\Delta RWAD_{i,j,t}$) across country groups as defined in Section 3.2. N refers to the number of observations. "Mean" ("SD") describes the mean (standard deviation) of the variable across observations, respectively. Comprehensive variable descriptions are provided in Table A.8 in the Internet Appendix.

## A.5 Details on the indices suggested by Barth et al. (2013)

Table A.15: Overview of the Capital Regulatory Index.

| | Description | True | False |
|---|---|---|---|
| | ***Overall Capital Stringency*** | | |
| 1 | Capital adequacy regulations are in line with Basel I guidelines | 1 | 0 |
| 2 | Credit risk is covered by regulatory minimum capital requirements | 1 | 0 |
| 3 | Market risk is covered by regulatory minimum capital requirements | 1 | 0 |
| 4 | Unrealized losses are deducted from regulatory capital | 3 | 0 |
| 5 | Less than 75% revaluation gains are allowed as part of capital | 1 | 0 |
| | ***Initial Capital Stringency*** | | |
| 6 | Sources of funds to be used as capital are verified by the regulatory/ supervisory authorities | 1 | 0 |
| 7 | Initial disbursement or subsequent injections of capital can be done with assets other than cash or government securities | 0 | 1 |
| 8 | Initial capital contributions by prospective shareholders can be done in the form of borrowed funds | 0 | 1 |
| | ***Capital Regulatory Index*** | | |
| $\Sigma$ | Higher values indicate greater stringency | max. 10 | |

The Capital Regulatory Index has been suggested by Barth et al. (2013) and is created based on the World Bank's Bank Regulation and Supervision Survey. This table summarizes the categories from the 2007, 2011, and 2019 surveys. The columns "True" and "False" indicate the respective score added to the index if the corresponding description is "True" or "False", respectively. The index is computed as the simple sum of the scores for each country.

Table A.16: Overview of the Supervisory Power Index.

| | Description | True | False |
|---|---|---|---|
| | ***Supervisors' Enforcement Powers*** | | |
| 1 | The banking supervisor has the right to meet with external auditors to discuss their report without the approval of the bank | 1 | 0 |
| 2 | Auditors are required by law to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse | 1 | 0 |
| 3 | In cases where the supervisor identifies that the bank has received an inadequate audit, the supervisor has the power to take actions against the external auditor | 1 | 0 |
| 4 | The supervisory authority can force a bank to change its internal organizational structure | 1 | 0 |
| 5 | Banks disclose off-balance sheet items to the supervisors | 1 | 0 |
| 6 | The supervisory agency cam require banks to constitute provisions to cover actual or potential losses | 1 | 0 |
| 7 | The supervisory agency can require banks to reduce or suspend dividends to shareholders | 1 | 0 |
| 8 | The supervisory agency can require banks to reduce or suspend bonuses and other remuneration to bank directors and managers | 2 | 0 |
| | ***Bank Resolution Activities*** | | |
| 9 | The following authority has the powers to declare insolvency | max. 1 | |
| | Bank supervisor | 1 | 0 |
| | Deposit insurance agency | 0.5 | 0 |
| | Bank restructuring or Asset Management Agency | 0.5 | 0 |
| 10 | The following authority has the powers so supersede | max. 2 | |
| | Bank supervisor | 2 | 0 |
| | Deposit insurance agency | 1 | 0 |
| | Bank restructuring or Asset Management Agency | 1 | 0 |
| 11 | The following authority has the powers to remove and replace senior management and directors | max. 2 | |
| | Bank supervisor | 2 | 0 |
| | Deposit insurance agency | 1 | 0 |
| | Bank restructuring or Asset Management Agency | 1 | 0 |
| | ***Official Supervisory Power Index*** | | |
| $\Sigma$ | Higher values indicate greater power | max. 14 | |

The Supervisory Power Index has been suggested by Barth et al. (2013) and is created based on the World Bank's Bank Regulation and Supervision Survey. This table summarizes the categories from the 2007, 2011, and 2019 surveys. The columns "True" and "False" indicate the respective score added to the index if the corresponding description is "True" or "False", respectively. The index is computed as the simple sum of the scores for each country.

## A.6 Convergence tests

Table A.17: Convergence test: overview of the country × quarter-fixed effects coefficients' significance (Part 1).

| | High-risk countries | | | Countries with strict supervision | | Countries with less strict regulation | |
|---|---|---|---|---|---|---|---|
| **Quarter** | **Ireland** | **Italy** | **Spain** | **Switzerland** | **Austria** | **Sweden** | **Denmark** |
| *2007q1* | | | | | | | |
| *2007q2* | +++ | ++ | o | ++ | | o | o |
| *2007q3* | ++ | +++ | ++ | +++ | o | o | o |
| *2007q4* | o | +++ | ++ | +++ | o | o | o |
| *2008q1* | o | o | o | o | o | o | − − − |
| *2008q2* | o | o | o | o | o | o | − − |
| *2008q3* | o | +++ | o | o | o | o | o |
| *2008q4* | o | + | o | o | o | − − | − − |
| *2009q1* | o | ++ | o | o | o | o | o |
| *2009q2* | + | o | o | o | − − − | o | − − − |
| *2009q3* | o | o | o | o | − − | − − | o |
| *2009q4* | o | + | o | ++ | o | o | o |
| *2010q1* | o | o | − − − | +++ | − − | − − − | o |
| *2010q2* | o | o | o | o | o | − − − | o |
| *2010q3* | o | o | o | + | ++ | o | − − − |
| *2010q4* | o | o | o | +++ | o | o | o |
| *2011q1* | − | o | − | + | o | − − − | ++ |
| *2011q2* | o | o | o | ++ | o | − | o |
| *2011q3* | o | o | − − − | − − − | − | − − − | o |
| *2011q4* | o | o | o | +++ | − | − − | o |
| *2012q1* | o | o | − − | o | o | − − − | o |
| *2012q2* | o | o | o | o | o | − − | o |
| *2012q3* | − − − | o | o | ++ | o | − − − | o |
| *2012q4* | o | o | o | o | o | o | o |
| *2013q1* | o | o | o | +++ | o | − − − | o |
| *2013q2* | o | o | o | +++ | o | − − | o |
| *2013q3* | o | o | − − − | − − − | o | o | o |
| *2013q4* | o | o | + | +++ | o | o | − − − |
| *2014q1* | o | o | o | +++ | o | − − − | o |
| *2014q2* | o | o | o | +++ | o | o | − − − |
| *2014q3* | o | o | o | − − | o | − − − | o |
| *2014q4* | o | o | o | o | − | o | o |
| *2015q1* | +++ | ++ | − − | +++ | o | − − − | o |
| *2015q2* | ++ | o | o | ++ | o | o | o |
| *2015q3* | +++ | o | o | + | o | − − − | o |
| *2015q4* | +++ | o | o | + | − − | o | o |
| *2016q1* | +++ | o | o | o | o | − − − | o |
| *2016q2* | ++ | o | o | − − − | o | o | o |
| *2016q3* | +++ | o | o | +++ | o | o | o |
| *2016q4* | +++ | o | o | o | o | +++ | o |
| *2017q1* | o | o | o | + | − − − | − − − | o |
| *2017q2* | o | o | o | +++ | o | o | o |
| *2017q3* | o | o | − − − | o | o | − | o |
| *2017q4* | o | o | o | ++ | o | +++ | o |
| *2018q1* | +++ | | o | o | − − − | − − | o |
| *2018q2* | ++ | | − − − | o | o | o | o |
| *2018q3* | +++ | | o | +++ | o | o | o |
| *2018q4* | +++ | | o | +++ | − − − | +++ | o |
| *2019q1* | +++ | | o | +++ | − − − | − − − | o |
| *2019q2* | +++ | | o | o | o | − | o |
| *2019q3* | o | | o | +++ | o | − − − | o |
| *2019q4* | | | | | | | |

Complementing Table A.18, this table summarizes the results of the convergence test based on a panel analysis with country × quarter-fixed effects as provided in Table A.19. +, ++, and +++ denote positive coefficients with a statistical significance at the 10%, 5%, and 1% levels, −, − −, and − − − denote negative coefficients, respectively. o refers to insignificant coefficients.

Table A.18: Convergence test: overview of the country × quarter-fixed effects coefficients' significance (Part 2).

| | Remaining countries | | | | | | |
|---|---|---|---|---|---|---|---|
| **Quarter** | **Belgium** | **Finland** | **France** | **Germany** | **Netherlands** | **Norway** | **UK** |
| *2007q1* | | | | | | | |
| *2007q2* | − − | o | o | o | | +++ | o |
| *2007q3* | o | o | o | o | | +++ | o |
| *2007q4* | − − | o | o | o | | +++ | o |
| *2008q1* | − − | o | o | o | | +++ | o |
| *2008q2* | − − − | + | − − | o | | ++ | o |
| *2008q3* | − − − | o | o | o | o | +++ | − − − |
| *2008q4* | o | o | o | o | o | +++ | − − − |
| *2009q1* | − − − | o | o | o | +++ | +++ | +++ |
| *2009q2* | − − | − − | + | o | +++ | +++ | +++ |
| *2009q3* | − − − | o | − | o | − − | +++ | o |
| *2009q4* | o | o | o | o | − − | +++ | o |
| *2010q1* | − − − | o | − − | o | +++ | +++ | − |
| *2010q2* | − − − | o | o | o | +++ | +++ | o |
| *2010q3* | − − − | +++ | − − − | o | − | ++ | − − |
| *2010q4* | − − − | o | o | o | − − − | +++ | o |
| *2011q1* | − − − | ++ | − − − | o | o | ++ | − − − |
| *2011q2* | − − − | o | o | o | o | +++ | − − |
| *2011q3* | − − − | o | − | o | − − − | ++ | − − − |
| *2011q4* | − − − | o | o | ++ | − − − | +++ | o |
| *2012q1* | − − − | o | − − | o | +++ | +++ | o |
| *2012q2* | − − − | o | − − − | o | +++ | +++ | − − − |
| *2012q3* | − − − | o | − − − | o | − − | +++ | o |
| *2012q4* | − − − | o | o | o | − − | +++ | o |
| *2013q1* | − − − | +++ | o | o | o | +++ | − − |
| *2013q2* | − − − | − − − | o | o | o | +++ | o |
| *2013q3* | − − − | o | o | o | − − | ++ | o |
| *2013q4* | − − − | o | o | o | o | +++ | o |
| *2014q1* | ++ | o | o | +++ | o | +++ | o |
| *2014q2* | o | − − − | − − | o | − − − | +++ | o |
| *2014q3* | − − − | ++ | o | o | − | +++ | − − − |
| *2014q4* | − − − | − − − | o | o | − − − | +++ | − |
| *2015q1* | − − − | o | o | o | o | ++ | − − − |
| *2015q2* | − − − | o | o | + | ++ | +++ | ++ |
| *2015q3* | − − − | o | o | o | o | +++ | o |
| *2015q4* | − − − | o | o | o | − − − | +++ | o |
| *2016q1* | − − − | o | − − | o | o | +++ | − − |
| *2016q2* | − − − | o | − − | o | o | +++ | − − − |
| *2016q3* | − − − | − − | o | o | − − | +++ | − |
| *2016q4* | − − − | o | o | o | − − − | +++ | o |
| *2017q1* | − − − | o | − | o | o | +++ | − − |
| *2017q2* | − − − | o | − | o | o | +++ | o |
| *2017q3* | − − − | o | o | o | o | +++ | o |
| *2017q4* | − − − | o | o | o | o | +++ | − − |
| *2018q1* | − − − | +++ | o | o | o | +++ | o |
| *2018q2* | − − − | +++ | o | o | o | +++ | − − − |
| *2018q3* | − − − | − − − | o | o | o | +++ | o |
| *2018q4* | − − − | − − − | − − | ++ | o | +++ | o |
| *2019q1* | | − − − | − | o | o | +++ | − |
| *2019q2* | | +++ | o | o | − − − | +++ | − − − |
| *2019q3* | | − − − | o | o | o | +++ | − − − |
| *2019q4* | | | | | | | |

Complementing Table A.17, this table summarizes the results of the convergence test based on a panel analysis with country × quarter-fixed effects as provided in Table A.19. +, ++, and +++ denote positive coefficients with a statistical significance at the 10%, 5%, and 1% levels, −, − −, and − − − denote negative coefficients, respectively. o refers to insignificant coefficients.

Table A.19: Convergence test: regression results of the corresponding panel analysis.

| | *Dependent variable:* $\Delta RWAD_{i,j,t}$ |
|---|---|
| | 2007 Q1 – 2019 Q4 |
| $IRB_{i,j,t-1}$ | 1.945** |
| | (0.875) |
| $\Delta LOANS_{i,j,t-4}$ | 0.023 |
| | (0.032) |
| $\Delta RETURN\_ON\_RWA_{i,j,t-4}$ | −0.282 |
| | (0.302) |
| $\Delta LLR_{i,j,t-4}$ | 0.070 |
| | (0.638) |
| $\Delta EQUITY_{i,j,t-4}$ | −0.739* |
| | (0.411) |
| $SIZE_{i,j,t-4}$ | 1.380 |
| | (0.904) |
| Bank and country × quarter-fixed effects | Yes |
| Observations | 2,366 |
| $R^2$ | 0.435 |
| Adjusted $R^2$ | 0.177 |
| F Statistic | 1.811*** |
| | (df = 691; 1623) |

This table reports regression results of the panel analysis using country × quarter-fixed effects with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD_{i,j,t}$ is calculated as the quarterly change in bank i's risk-weighted assets to total assets in percent. $IRB_{i,j,t}$ is an indicator variable equal to 1 if bank i uses the internal ratings-based approach in a quarter and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.8 in the Internet Appendix. An overview of the country × quarter-fixed effects coefficients' significance is provided in Tables A.17 and A.18.

## A.7 Robustness tests

Table A.20: Robustness test cross-section: role of regulatory strictness (at the quarter of the switch).

| | *Dependent variable:* $\Delta RWAD^{s}_{i,j}$ | | | |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| $LAX\_REGULATION_j$ | | | | −12.129* |
| | | | | (7.060) |
| $STRICT\_SUPERVISION_j$ | | | 12.544*** | 9.625* |
| | | | (4.853) | (5.114) |
| $HIGH\_RISK_j$ | | 8.267* | 11.408** | 8.801* |
| | | (4.279) | (4.676) | (4.913) |
| $PRE\_CRISIS_{i,j}$ | 5.029 | 5.661 | 3.823 | 4.240 |
| | (3.976) | (4.126) | (4.559) | (4.364) |
| $EURO_{i,j}$ | −3.359 | −5.744* | −7.214** | −8.705*** |
| | (3.228) | (3.233) | (3.437) | (3.110) |
| $REL\_MIN^{s-1}_{i,j}$ | 0.028 | 0.040 | 0.228 | 0.246 |
| | (0.175) | (0.182) | (0.182) | (0.171) |
| $EQUITY^{s-1}_{i,j}$ | 0.977 | 0.257 | −0.655 | −0.402 |
| | (1.004) | (1.082) | (1.150) | (1.165) |
| $SIZE^{s-1}_{i,j}$ | 0.328 | 0.103 | 0.702 | 0.509 |
| | (1.083) | (0.980) | (1.002) | (0.990) |
| $\varnothing DOMESTIC\_CREDIT_j$ | −0.137** | −0.159*** | −0.185*** | −0.101 |
| | (0.055) | (0.051) | (0.048) | (0.070) |
| $\varnothing \Delta GDP_j$ | 3.269 | 2.369 | −2.040 | −1.461 |
| | (4.660) | (5.383) | (5.777) | (5.575) |
| *Constant* | −5.558 | 1.863 | −1.684 | −6.701 |
| | (13.326) | (12.090) | (11.737) | (11.595) |
| Observations | 52 | 52 | 52 | 52 |
| $R^2$ | 0.136 | 0.202 | 0.302 | 0.355 |
| Adjusted $R^2$ | −0.002 | 0.054 | 0.152 | 0.198 |
| Residual Std. Error | 10.935 | 10.628 | 10.058 | 9.784 |
| | (df = 44) | (df = 43) | (df = 42) | (df = 41) |
| F Statistic | 0.987 | 1.360 | 2.019* | 2.259** |
| | (df = 7; 44) | (df = 8; 43) | (df = 9; 42) | (df = 10; 41) |

This table reports regression results of the cross-sectional analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD^{s}_{i,j}$ is calculated as the change in bank i's risk-weighted assets to total assets from the quarter before the switch to the quarter of the switch s in percent. $LAX\_REGULATION_j$, $STRICT\_SUPERVISION_j$, and $HIGH\_RISK_j$ are indicator variables equal to 1 if country j is classified as country with less strict regulation, strict supervision, and high country risk, respectively, and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.7 in the Internet Appendix.

Table A.21: Robustness test cross-section: identical sample size (development over time).

| | *Dependent variable:* $\varnothing\Delta RWAD_{i,j}^{s+r}$ | | | | |
|---|---|---|---|---|---|
| | $r = 8$ | $r = 16$ | $r = 24$ | $r = 32$ | $r = 40$ |
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
| $LAX\_REGULATION_j$ | 0.233 | −2.008** | −2.419*** | −2.651*** | −2.151*** |
| | (1.682) | (0.943) | (0.566) | (0.637) | (0.481) |
| $STRICT\_SUPERVISION_j$ | 2.138** | 0.159 | 0.537 | 0.341 | 0.487 |
| | (1.058) | (0.919) | (0.446) | (0.503) | (0.377) |
| $HIGH\_RISK_j$ | 0.784 | −0.658 | −0.497 | −0.989* | −0.812* |
| | (1.292) | (0.704) | (0.709) | (0.579) | (0.420) |
| $PRE\_CRISIS_{i,j}$ | 0.457 | 0.576 | −0.139 | 0.043 | 0.217 |
| | (0.824) | (0.645) | (0.479) | (0.461) | (0.356) |
| $EURO_{i,j}$ | −0.827 | −0.288 | −0.610 | −0.127 | 0.021 |
| | (0.776) | (0.428) | (0.501) | (0.441) | (0.315) |
| $\varnothing RWAD_{i,j}$ | 0.057 | 0.0001 | −0.021 | −0.016 | −0.018 |
| | (0.049) | (0.033) | (0.030) | (0.025) | (0.019) |
| $\varnothing EQUITY_{i,j}$ | −0.321 | −0.006 | 0.131 | 0.020 | 0.007 |
| | (0.290) | (0.163) | (0.181) | (0.139) | (0.103) |
| $\varnothing SIZE_{i,j}$ | 0.393 | −0.043 | −0.042 | −0.072 | −0.088 |
| | (0.341) | (0.200) | (0.173) | (0.143) | (0.110) |
| $\varnothing DOMESTIC\_CREDIT_j$ | −0.028* | 0.0005 | 0.008 | 0.014** | 0.012*** |
| | (0.016) | (0.009) | (0.006) | (0.005) | (0.004) |
| $\varnothing\Delta GDP_j$ | −0.173 | −0.262 | −0.572 | 0.350 | 0.573** |
| | (1.155) | (0.578) | (0.473) | (0.356) | (0.278) |
| *Constant* | −3.890 | −0.197 | 0.255 | 0.019 | 0.029 |
| | (5.637) | (3.790) | (2.740) | (2.081) | (1.699) |
| Observations | 41 | 41 | 41 | 41 | 41 |
| $R^2$ | 0.365 | 0.426 | 0.413 | 0.491 | 0.560 |
| Adjusted $R^2$ | 0.154 | 0.234 | 0.217 | 0.321 | 0.413 |
| Residual Std. Error | 1.837 (df = 30) | 0.963 (df = 30) | 1.018 (df = 30) | 0.897 (df = 30) | 0.677 (df = 30) |
| F Statistic (df = 10; 30) | 1.726 (df = 10; 30) | 2.223** (df = 10; 30) | 2.110* (df = 10; 30) | 2.895** (df = 10; 30) | 3.811*** (df = 10; 30) |

This table reports regression results of the cross-sectional analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\varnothing\Delta RWAD_{i,j}^{s+r}$ is calculated as the average change in bank i's risk-weighted assets to total assets across r quarters after the quarter of switch s in percent. $LAX\_REGULATION_j$, $STRICT\_SUPERVISION_j$, and $HIGH\_RISK_j$ are indicator variables equal to 1 if country j is classified as country with less strict regulation, strict supervision, and high country risk, respectively, and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.7 in the Internet Appendix.

Table A.22: Robustness test cross-section: categorical variables of regulatory strictness (at the quarter of the switch).

| | *Dependent variable:* $\Delta RWAD^{s}_{i,j}$ | |
|---|---|---|
| | **(1)** | **(2)** |
| $LAX\_REGULATION_j$ | −12.129* | |
| | (7.060) | |
| $REGULATION\_INDEX_j$ | | −2.330** |
| | | (1.082) |
| $STRICT\_SUPERVISION_j$ | 9.625* | |
| | (5.114) | |
| $SUPERVISION\_INDEX_j$ | | 1.548* |
| | | (0.852) |
| $HIGH\_RISK_j$ | 8.801* | |
| | (4.913) | |
| $CDS\_SOVEREIGN_j$ | | 2.163 |
| | | (1.577) |
| $PRE\_CRISIS_{i,j}$ | 4.240 | 11.437** |
| | (4.364) | (5.611) |
| $EURO_{i,j}$ | −8.705*** | −4.508 |
| | (3.110) | (2.908) |
| $REL\_MIN^{s-1}_{i,j}$ | 0.246 | 0.019 |
| | (0.171) | (0.157) |
| $EQUITY^{s-1}_{i,j}$ | −0.402 | 0.712 |
| | (1.165) | (1.236) |
| $SIZE^{s-1}_{i,j}$ | 0.509 | −1.029 |
| | (0.990) | (1.296) |
| $\varnothing DOMESTIC\_CREDIT_j$ | −0.101 | −0.198*** |
| | (0.070) | (0.056) |
| $\varnothing \Delta GDP_j$ | −1.461 | 10.318 |
| | (5.575) | (7.612) |
| *Constant* | −6.701 | 2.123 |
| | (11.595) | (13.410) |
| Observations | 52 | 52 |
| $R^2$ | 0.355 | 0.351 |
| Adjusted $R^2$ | 0.198 | 0.193 |
| Residual Std. Error | 9.784 | 9.814 |
| | (df = 41) | (df = 41) |
| F Statistic | 2.259** | 2.219** |
| | (df = 10; 41) | (df = 10; 41) |

This table reports regression results of the cross-sectional analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD^{s}_{i,j}$ is calculated as the change in bank i's risk-weighted assets to total assets from the quarter before the switch to the quarter of the switch s in percent. $LAX\_REGULATION_j$, $STRICT\_SUPERVISION_j$, and $HIGH\_RISK_j$ are indicator variables equal to 1 if country j is classified as country with less strict regulation, strict supervision, and high country risk, respectively, and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.7 in the Internet Appendix.

Table A.23: Robustness test cross-section: categorical variables of regulatory strictness (development over time).

| | *Dependent variable:* $\varnothing\Delta RWAD_{i,j}^{s+r}$ | | | | |
|---|---|---|---|---|---|
| | $r = 8$ | $r = 16$ | $r = 24$ | $r = 32$ | $r = 40$ |
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
| $REGULATION\_INDEX_j$ | −0.167 | −0.285*** | −0.250** | −0.255** | −0.276*** |
| | (0.160) | (0.088) | (0.111) | (0.113) | (0.084) |
| $SUPERVISION\_INDEX_j$ | 0.178 | 0.188** | 0.268*** | 0.315*** | 0.260*** |
| | (0.162) | (0.081) | (0.091) | (0.093) | (0.079) |
| $CDS\_SOVEREIGN_j$ | 0.096 | −0.092 | 0.061 | −0.003 | −0.079 |
| | (0.277) | (0.157) | (0.131) | (0.138) | (0.118) |
| $\varnothing RWAD_{i,j}$ | 0.023 | −0.029 | −0.039 | −0.037 | −0.045** |
| | (0.043) | (0.022) | (0.027) | (0.026) | (0.022) |
| $PRE\_CRISIS_{i,j}$ | 2.197* | 1.051* | 0.956 | 0.790 | −0.291 |
| | (1.285) | (0.626) | (0.660) | (0.833) | (0.517) |
| $EURO_{i,j}$ | −0.345 | −0.210 | −0.540 | −0.368 | −0.179 |
| | (0.613) | (0.320) | (0.398) | (0.432) | (0.347) |
| $\varnothing EQUITY_{i,j}$ | −0.153 | 0.178 | 0.219 | 0.151 | 0.190 |
| | (0.273) | (0.155) | (0.182) | (0.177) | (0.128) |
| $\varnothing SIZE_{i,j}$ | 0.078 | −0.144 | −0.125 | −0.122 | −0.144 |
| | (0.363) | (0.167) | (0.175) | (0.173) | (0.147) |
| $\varnothing DOMESTIC\_CREDIT_j$ | −0.030*** | −0.023*** | −0.020*** | −0.020*** | −0.015*** |
| | (0.011) | (0.006) | (0.007) | (0.006) | (0.005) |
| $\varnothing\Delta GDP_j$ | 1.579 | 0.297 | 0.142 | 0.393 | 0.391 |
| | (1.345) | (0.571) | (0.863) | (0.945) | (0.658) |
| *Constant* | −2.371 | 2.631 | 1.339 | 1.512 | 3.105 |
| | (4.376) | (2.160) | (2.545) | (2.584) | (2.299) |
| Observations | 50 | 49 | 48 | 46 | 41 |
| $R^2$ | 0.302 | 0.396 | 0.293 | 0.349 | 0.436 |
| Adjusted $R^2$ | 0.123 | 0.237 | 0.102 | 0.164 | 0.248 |
| Residual Std. | 2.087 | 1.002 | 1.078 | 1.011 | 0.766 |
| Error | (df = 39) | (df = 38) | (df = 37) | (df = 35) | (df = 30) |
| F Statistic | 1.686 | 2.494** | 1.531 | 1.880* | 2.322** |
| | (df = 10; 39) | (df = 10; 38) | (df = 10; 37) | (df = 10; 35) | (df = 10; 30) |

This table reports regression results of the cross-sectional analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\varnothing\Delta RWAD_{i,j}^{s+r}$ is calculated as the average change in bank i's risk-weighted assets to total assets across r quarters after the quarter of switch s in percent. $REGULATION\_INDEX_j$ ($SUPERVISION\_INDEX_j$) is country j's inverted regulatory stringency index (country j's supervisory power index). $CDS\_SOVEREIGN_j$ is defined as the natural logarithm of country j's sovereign credit-default swap spreads. Comprehensive variable descriptions of all other variables are provided in Table A.7 in the Internet Appendix.

Table A.24: Robustness cross-section: IRB approach coverage (development over time).

| | *Dependent variable:* $\varnothing\Delta RWAD_{i,j}^{s+r}$ | | | | |
|---|---|---|---|---|---|
| | $r = 8$ | $r = 16$ | $r = 24$ | $r = 32$ | $r = 40$ |
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
| $LAX\_REGULATION_j$ | 0.430 | −1.511* | −1.701*** | −2.120*** | −2.103*** |
| | (1.568) | (0.832) | (0.604) | (0.640) | (0.499) |
| $STRICT\_SUPERVISION_j$ | 2.756** | 0.804 | 1.043** | 0.791 | 0.428 |
| | (1.314) | (0.784) | (0.491) | (0.501) | (0.388) |
| $HIGH\_RISK_j$ | −0.152 | −0.440 | −0.458 | −0.779 | −0.923** |
| | (1.090) | (0.629) | (0.567) | (0.561) | (0.419) |
| $\varnothing HIGH\_IRB\_CVG_{i,j}$ | −1.405* | −0.169 | −0.727* | −0.296 | −0.309 |
| | (0.813) | (0.433) | (0.417) | (0.449) | (0.385) |
| $PRE\_CRISIS_{i,j}$ | 1.702** | 1.023** | 0.696* | 1.035* | 0.122 |
| | (0.806) | (0.421) | (0.419) | (0.613) | (0.379) |
| $EURO_{i,j}$ | −0.090 | −0.223 | −0.442 | −0.100 | 0.078 |
| | (0.719) | (0.440) | (0.397) | (0.412) | (0.302) |
| $\varnothing RWAD_{i,j}$ | 0.046 | 0.003 | −0.018 | −0.012 | −0.021 |
| | (0.040) | (0.025) | (0.026) | (0.024) | (0.019) |
| $\varnothing EQUITY_{i,j}$ | −0.250 | −0.024 | 0.124 | −0.006 | 0.016 |
| | (0.203) | (0.121) | (0.129) | (0.129) | (0.096) |
| $\varnothing SIZE_{i,j}$ | 0.170 | −0.032 | −0.043 | −0.043 | −0.125 |
| | (0.263) | (0.142) | (0.148) | (0.140) | (0.123) |
| $\varnothing DOMESTIC\_CREDIT_j$ | −0.025* | −0.004 | 0.004 | 0.010 | 0.013*** |
| | (0.014) | (0.007) | (0.006) | (0.006) | (0.005) |
| $\varnothing\Delta GDP_j$ | 0.729 | −0.270 | −0.267 | 0.717 | 0.553* |
| | (0.813) | (0.411) | (0.494) | (0.498) | (0.286) |
| *Constant* | −2.849 | −0.412 | −0.331 | −1.154 | 0.684 |
| | (4.240) | (2.539) | (2.661) | (2.159) | (2.036) |
| Observations | 50 | 49 | 48 | 46 | 41 |
| $R^2$ | 0.483 | 0.443 | 0.482 | 0.492 | 0.574 |
| Adjusted $R^2$ | 0.334 | 0.277 | 0.324 | 0.328 | 0.413 |
| Residual Std. Error | 1.819 (df = 38) | 0.975 (df = 37) | 0.935 (df = 36) | 0.906 (df = 34) | 0.676 (df = 29) |
| F Statistic | 3.231*** (df = 11; 38) | 2.671** (df = 11; 37) | 3.048*** (df = 11; 36) | 2.996*** (df = 11; 34) | 3.560*** (df = 11; 29) |

This table reports regression results of the cross-sectional analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\varnothing\Delta RWAD_{i,j}^{s+r}$ is calculated as the average change in bank i's risk-weighted assets to total assets across r quarters after the quarter of switch s in percent. $LAX\_REGULATION_j$, $STRICT\_SUPERVISION_j$, and $HIGH\_RISK_j$ are indicator variables equal to 1 if country j is classified as country with less strict regulation, strict supervision, and high country risk, respectively, and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.7 in the Internet Appendix.

Table A.25: Robustness test cross-section: alternative dependent variables (development over time).

| | *Dependent variable:* $\varnothing\Delta RWAD_{i,j}^{s+r}$ | | | | |
|---|---|---|---|---|---|
| | $r = 4$ | $r = 12$ | $r = 20$ | $r = 28$ | $r = 36$ |
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
| $LAX\_REGULATION_j$ | 4.690* | −1.817** | −1.801*** | −1.873*** | −2.110*** |
| | (2.699) | (0.783) | (0.659) | (0.540) | (0.536) |
| $STRICT\_SUPERVISION_j$ | 7.559*** | 1.214 | 0.646 | 1.060** | 0.803* |
| | (2.469) | (0.909) | (0.534) | (0.449) | (0.437) |
| $HIGH\_RISK_j$ | 4.419** | −0.446 | −0.513 | −0.233 | −0.566 |
| | (2.205) | (0.762) | (0.581) | (0.554) | (0.461) |
| $PRE\_CRISIS_{i,j}$ | −0.848 | 1.500** | 0.526 | 0.634 | 0.910* |
| | (2.319) | (0.644) | (0.455) | (0.509) | (0.487) |
| $EURO_{i,j}$ | −0.272 | −0.145 | −0.465 | −0.500 | −0.092 |
| | (1.407) | (0.479) | (0.359) | (0.416) | (0.354) |
| $\varnothing RWAD_{i,j}$ | 0.106 | 0.014 | 0.001 | −0.009 | −0.020 |
| | (0.085) | (0.030) | (0.024) | (0.024) | (0.021) |
| $\varnothing EQUITY_{i,j}$ | −1.193*** | −0.108 | 0.105 | 0.004 | −0.010 |
| | (0.432) | (0.168) | (0.140) | (0.136) | (0.118) |
| $\varnothing SIZE_{i,j}$ | 0.558 | 0.044 | −0.012 | 0.005 | −0.080 |
| | (0.649) | (0.186) | (0.147) | (0.123) | (0.115) |
| $\varnothing DOMESTIC\_CREDIT_j$ | −0.082*** | −0.007 | −0.001 | 0.003 | 0.009* |
| | (0.029) | (0.009) | (0.007) | (0.005) | (0.005) |
| $\varnothing\Delta GDP_j$ | 2.136 | 0.507 | −0.127 | 0.024 | 0.660** |
| | (1.482) | (0.538) | (0.532) | (0.386) | (0.332) |
| *Constant* | −0.929 | −1.859 | −1.087 | −0.740 | −0.296 |
| | (9.584) | (3.191) | (2.684) | (1.984) | (1.786) |
| Observations | 51 | 50 | 49 | 47 | 45 |
| $R^2$ | 0.419 | 0.489 | 0.393 | 0.458 | 0.527 |
| Adjusted $R^2$ | 0.274 | 0.358 | 0.233 | 0.307 | 0.388 |
| Residual Std. Error | 3.796 (df = 40) | 1.262 (df = 39) | 0.950 (df = 38) | 0.908 (df = 36) | 0.773 (df = 34) |
| F Statistic | 2.888*** (df = 10; 40) | 3.730*** (df = 10; 39) | 2.459** (df = 10; 38) | 3.041*** (df = 10; 36) | 3.785*** (df = 10; 34) |

This table reports regression results of the cross-sectional analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\varnothing\Delta RWAD_{i,j}^{s+r}$ is calculated as the average change in bank i's risk-weighted assets to total assets across r quarters after the quarter of switch s in percent. $LAX\_REGULATION_j$, $STRICT\_SUPERVISION_j$, and $HIGH\_RISK_j$ are indicator variables equal to 1 if country j is classified as country with less strict regulation, strict supervision, and high country risk, respectively, and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.7 in the Internet Appendix.

Table A.26: Robustness test cross-section: alternative country grouping (development over time).

| | *Dependent variable:* $\varnothing\Delta RWAD_{i,j}^{s+r}$ | | | | |
|---|---|---|---|---|---|
| | $r = 8$ | $r = 16$ | $r = 24$ | $r = 32$ | $r = 40$ |
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
| $LAX\_REGULATION_j$ | −1.149 | −1.634** | −1.824*** | −1.974*** | −2.212*** |
| | (1.424) | (0.672) | (0.621) | (0.657) | (0.487) |
| $STRICT\_SUPERVISION_j$ | 1.940** | 0.340 | 0.703 | 0.529 | 0.174 |
| | (0.868) | (0.605) | (0.447) | (0.469) | (0.344) |
| $HIGH\_RISK_j$ | −0.305 | −0.498 | −0.393 | −0.736 | −0.996** |
| | (1.050) | (0.555) | (0.585) | (0.558) | (0.415) |
| $PRE\_CRISIS_{i,j}$ | 1.389 | 0.903** | 0.482 | 0.806 | 0.239 |
| | (0.909) | (0.407) | (0.500) | (0.648) | (0.320) |
| $EURO_{i,j}$ | −0.397 | −0.139 | −0.449 | −0.033 | 0.159 |
| | (0.682) | (0.368) | (0.436) | (0.426) | (0.328) |
| $\varnothing RWAD_{i,j}$ | 0.047 | −0.013 | −0.020 | −0.018 | −0.026 |
| | (0.057) | (0.035) | (0.030) | (0.026) | (0.020) |
| $\varnothing EQUITY_{i,j}$ | −0.222 | 0.046 | 0.145 | 0.030 | 0.077 |
| | (0.251) | (0.145) | (0.162) | (0.142) | (0.100) |
| $\varnothing SIZE_{i,j}$ | 0.207 | −0.141 | −0.042 | −0.086 | −0.145 |
| | (0.408) | (0.214) | (0.182) | (0.156) | (0.118) |
| $\varnothing DOMESTIC\_CREDIT_j$ | −0.012 | −0.005 | 0.004 | 0.008 | 0.013*** |
| | (0.011) | (0.006) | (0.005) | (0.005) | (0.004) |
| $\varnothing\Delta GDP_j$ | 0.635 | −0.480 | −0.555 | 0.356 | 0.442* |
| | (0.804) | (0.365) | (0.472) | (0.466) | (0.259) |
| *Constant* | −4.391 | 1.502 | −0.261 | −0.135 | 0.783 |
| | (6.244) | (3.721) | (2.784) | (2.292) | (1.779) |
| Observations | 50 | 49 | 48 | 46 | 41 |
| $R^2$ | 0.431 | 0.429 | 0.411 | 0.465 | 0.580 |
| Adjusted $R^2$ | 0.285 | 0.278 | 0.252 | 0.312 | 0.440 |
| Residual Std. | 1.884 | 0.974 | 0.983 | 0.916 | 0.661 ) |
| Error | (df = 39) | (df = 38) | (df = 37) | (df = 35) | (df = 30 |
| F Statistic | 2.955*** | 2.852*** | 2.587** | 3.043*** | 4.142*** |
| | (df = 10; 39) | (df = 10; 38) | (df = 10; 37) | (df = 10; 35) | (df = 10; 30) |

This table reports regression results of the cross-sectional analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\varnothing\Delta RWAD_{i,j}^{s+r}$ is calculated as the average change in bank i's risk-weighted assets to total assets across r quarters after the quarter of switch s in percent. $LAX\_REGULATION_j$, $STRICT\_SUPERVISION_j$, and $HIGH\_RISK_j$ are indicator variables equal to 1 if country j is classified as country with less strict regulation, strict supervision, and high country risk, respectively, and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.7 in the Internet Appendix.

Table A.27: Robustness test panel: categorical variables of regulatory strictness.

| | *Dependent variable:* $\Delta RWAD_{i,j,t}$ | | | |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| $REGULATION\_INDEX_{j,t-1} \times IRB_{i,j,t-1}$ | | 4.784** | | |
| | | (2.328) | | |
| $SUPERVISION\_INDEX_{j,t-1} \times IRB_{i,j,t-1}$ | | | 7.711*** | |
| | | | (2.697) | |
| $CDS\_SOVEREIGN_{j,t-1} \times IRB_{i,j,t-1}$ | | | | 0.175 |
| | | | | (0.550) |
| $REGULATION\_INDEX_{j,t-1}$ | -1.172* | -5.552** | -1.166* | -1.163* |
| | (0.596) | (2.260) | (0.594) | (0.599) |
| $SUPERVISION\_INDEX_{j,t-1}$ | 0.241 | 0.396 | -6.297** | 0.210 |
| | (0.811) | (0.901) | (2.487) | (0.846) |
| $CDS\_SOVEREIGN_{j,t-1}$ | -0.830*** | -0.880*** | -0.842*** | -0.988* |
| | (0.294) | (0.299) | (0.294) | (0.551) |
| $IRB_{i,j,t-1}$ | 1.230* | -1.366 | -3.800** | 0.651 |
| | (0.617) | (1.265) | (1.694) | (2.151) |
| $G\_SIB_{i,j,t}$ | 0.386 | 0.491 | 0.371 | 0.383 |
| | (0.365) | (0.345) | (0.356) | (0.363) |
| $\Delta LOANS_{i,j,t-4}$ | -0.0273 | -0.0265 | -0.0271 | -0.0274 |
| | (0.0264) | (0.0265) | (0.0266) | (0.0265) |
| $\Delta RETURN\_ON\_RWA_{i,j,t-4}$ | 0.504 | 0.495 | 0.506 | 0.505 |
| | (0.304) | (0.307) | (0.306) | (0.305) |
| $\Delta LLR_{i,j,t-4}$ | -0.225 | -0.249 | -0.211 | -0.227 |
| | (0.477) | (0.472) | (0.482) | (0.477) |
| $\Delta EQUITY_{i,j,t-4}$ | 1.236** | 1.250** | 1.241** | 1.234** |
| | (0.514) | (0.513) | (0.509) | (0.513) |
| $SIZE_{i,j,t-4}$ | 0.568 | 0.512 | 0.680 | 0.572 |
| | (0.542) | (0.545) | (0.527) | (0.539) |
| $DOMESTIC\_CREDIT_{j,t-4}$ | 0.0100 | 0.00967 | 0.00930 | 0.00990 |
| | (0.00668) | (0.00643) | (0.00657) | (0.00675) |
| $\Delta GDP_{j,t-4}$ | 0.124* | 0.120* | 0.130** | 0.124** |
| | (0.0619) | (0.0619) | (0.0610) | (0.0618) |
| *q2* | 0.776 | 0.776 | 0.772 | 0.777 |
| | (0.741) | (0.742) | (0.742) | (0.742) |
| *q3* | 0.363 | 0.344 | 0.355 | 0.369 |
| | (0.619) | (0.620) | (0.621) | (0.623) |
| *q4* | 0.933 | 0.918 | 0.927 | 0.939 |
| | (1.326) | (1.326) | (1.327) | (1.328) |
| Bank and quarter-fixed effects | Yes | Yes | Yes | Yes |
| Observations | 2,231 | 2,231 | 2,231 | 2,231 |
| $R^2$ | 0.109 | 0.111 | 0.112 | 0.109 |
| Adjusted $R^2$ | 0.0844 | 0.0859 | 0.0873 | 0.0841 |

This table reports regression results of the panel analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD_{i,j,t}$ is calculated as the quarterly change in bank i's risk-weighted assets to total assets in percent. $REGULATION\_INDEX_{j,t}$ ($SUPERVISION\_INDEX_{j,t}$) is computed as one over country j's regulatory stringency index where higher values indicate less stringent regulation (country j's supervisory power index where higher values indicate stricter supervision). $CDS\_SOVEREIGN_{j,t}$ is defined as the natural logarithm of country j's sovereign credit-default swap spreads. $IRB_{i,j,t}$ is an indicator variable equal to 1 if bank i uses the internal ratings-based approach in a quarter and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.8 in the Internet Appendix.

Table A.28: Robustness test panel: time period 2009 Q3 until 2019 Q4.

| | *Dependent variable:* $\Delta RWAD_{i,j,t}$ | | | |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| $LAX\_REGULATION_{j,t-1}$×g $IRB_{i,j,t-1}$ | | -0.442 (1.018) | | |
| $STRICT\_SUPERVISION_{j,t-1}$× $IRB_{i,j,t-1}$ | | | 2.203* (1.210) | |
| $CDS\_SOVEREIGN_{j,t-1}$× $IRB_{i,j,t-1}$ | | | | 1.114** (0.515) |
| $LAX\_REGULATION_{j,t-1}$ | -0.370 (0.285) | 0.0636 (1.091) | -0.340 (0.287) | -0.370 (0.286) |
| $STRICT\_SUPERVISION_{j,t-1}$ | 0.361 (0.257) | 0.359 (0.256) | -1.749 (1.177) | 0.325 (0.266) |
| $CDS\_SOVEREIGN_{j,t-1}$ | -0.937** (0.375) | -0.934** (0.376) | -0.884** (0.364) | -2.027*** (0.648) |
| $IRB_{i,j,t-1}$ | 0.975* (0.513) | 1.208 (0.901) | 0.488 (0.529) | -3.081 (1.979) |
| $G\_SIB_{i,j,t}$ | 0.237 (0.386) | 0.227 (0.392) | 0.144 (0.385) | 0.255 (0.390) |
| $\Delta LOANS_{i,j,t-4}$ | -0.0474 (0.0326) | -0.0473 (0.0325) | -0.0476 (0.0327) | -0.0483 (0.0327) |
| $\Delta RETURN\_ON\_RWA_{i,j,t-4}$ | 0.752** (0.347) | 0.753** (0.348) | 0.740** (0.351) | 0.762** (0.345) |
| $\Delta LLR_{i,j,t-4}$ | -0.456 (0.446) | -0.456 (0.446) | -0.445 (0.454) | -0.456 (0.446) |
| $\Delta EQUITY_{i,j,t-4}$ | 1.090* (0.574) | 1.088* (0.574) | 1.107* (0.571) | 1.082* (0.575) |
| $SIZE_{i,j,t-4}$ | 0.335 (0.521) | 0.335 (0.522) | 0.403 (0.516) | 0.382 (0.530) |
| $DOMESTIC\_CREDIT_{j,t-4}$ | 0.00816 (0.00795) | 0.00830 (0.00795) | 0.00765 (0.00790) | 0.00809 (0.00799) |
| $\Delta GDP_{j,t-4}$ | 0.0522 (0.0608) | 0.0526 (0.0609) | 0.0544 (0.0606) | 0.0561 (0.0605) |
| *q2* | 0.737 (0.742) | 0.738 (0.743) | 0.738 (0.741) | 0.736 (0.741) |
| *q3* | 0.411 (0.634) | 0.414 (0.635) | 0.419 (0.633) | 0.422 (0.636) |
| *q4* | 0.954 (1.345) | 0.957 (1.347) | 0.961 (1.345) | 0.963 (1.347) |
| Bank and quarter-fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1,909 | 1,909 | 1,909 | 1,909 |
| $R^2$ | 0.124 | 0.124 | 0.125 | 0.125 |
| Adjusted $R^2$ | 0.0990 | 0.0985 | 0.0999 | 0.0996 |

This table reports regression results of the panel analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD_{i,j,t}$ is calculated as the quarterly change in bank i's risk-weighted assets to total assets in percent. $LAX\_REGULATION_{j,t}$ ($STRICT\_SUPERVISION_{j,t}$) is an indicator variables equal to 1 if country j is classified as country with less strict regulation (strict supervision) and 0 otherwise. $CDS\_SOVEREIGN_{j,t}$ is defined as the natural logarithm of country j's sovereign credit-default swap spreads. $IRB_{i,j,t}$ is an indicator variable equal to 1 if bank i uses the internal ratings-based approach in a quarter and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.8 in the Internet Appendix.

Table A.29: Robustness test panel: time period 2007 Q1 until 2012 Q4.

| | *Dependent variable:* $\Delta RWAD_{i,j,t}$ | | | |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| $LAX\_REGULATION_{j,t-1} \times IRB_{i,j,t-1}$ | | 2.368* | | |
| | | (1.372) | | |
| $STRICT\_SUPERVISION_{j,t-1} \times IRB_{i,j,t-1}$ | | | 2.760** | |
| | | | (1.346) | |
| $CDS\_SOVEREIGN_{j,t-1} \times IRB_{i,j,t-1}$ | | | | 0.217 |
| | | | | (0.685) |
| $LAX\_REGULATION_{j,t-1}$ | 1.607 | -0.643 | 1.705 | 1.628 |
| | (1.243) | (1.658) | (1.261) | (1.250) |
| $STRICT\_SUPERVISION_{j,t-1}$ | -0.667 | -0.600 | -2.960** | -0.657 |
| | (0.483) | (0.494) | (1.292) | (0.485) |
| $CDS\_SOVEREIGN_{j,t-1}$ | -0.978** | -1.062*** | -1.087** | -1.153* |
| | (0.392) | (0.392) | (0.409) | (0.594) |
| $IRB_{i,j,t-1}$ | 1.780* | 0.507 | 0.591 | 1.079 |
| | (0.956) | (1.101) | (0.948) | (2.749) |
| $G\_SIB_{i,j,t}$ | -0.527 | -0.322 | -0.542 | -0.543 |
| | (0.709) | (0.702) | (0.695) | (0.708) |
| $\Delta LOANS_{i,j,t-4}$ | -0.0261 | -0.0253 | -0.0251 | -0.0265 |
| | (0.0331) | (0.0333) | (0.0334) | (0.0334) |
| $\Delta RETURN\_ON\_RWA_{i,j,t-4}$ | 0.400 | 0.384 | 0.400 | 0.403 |
| | (0.410) | (0.421) | (0.419) | (0.412) |
| $\Delta LLR_{i,j,t-4}$ | 0.623 | 0.569 | 0.558 | 0.616 |
| | (0.587) | (0.569) | (0.556) | (0.591) |
| $\Delta EQUITY_{i,j,t-4}$ | 1.218*** | 1.237*** | 1.197*** | 1.216*** |
| | (0.437) | (0.441) | (0.438) | (0.435) |
| $SIZE_{i,j,t-4}$ | -0.180 | -0.325 | 0.143 | -0.135 |
| | (1.681) | (1.663) | (1.747) | (1.691) |
| $DOMESTIC\_CREDIT_{j,t-4}$ | 0.0751* | 0.0704* | 0.0638* | 0.0748* |
| | (0.0387) | (0.0374) | (0.0373) | (0.0388) |
| $\Delta GDP_{j,t-4}$ | 0.125 | 0.134 | 0.138 | 0.128 |
| | (0.213) | (0.213) | (0.209) | (0.214) |
| *q2* | 0.00249 | -0.0641 | 0.0152 | 0.00241 |
| | (1.012) | (1.011) | (1.024) | (1.008) |
| *q3* | -0.278 | -0.354 | -0.303 | -0.296 |
| | (1.107) | (1.100) | (1.113) | (1.096) |
| *q4* | 2.018* | 1.901* | 1.947* | 2.015* |
| | (1.087) | (1.093) | (1.085) | (1.081) |
| Bank and quarter-fixed effects | Yes | Yes | Yes | Yes |
| Observations | 985 | 985 | 985 | 985 |
| $R^2$ | 0.100 | 0.103 | 0.105 | 0.100 |
| Adjusted $R^2$ | 0.0698 | 0.0723 | 0.0740 | 0.0690 |

This table reports regression results of the panel analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD_{i,j,t}$ is calculated as the quarterly change in bank i's risk-weighted assets to total assets in percent. $LAX\_REGULATION_{j,t}$ ($STRICT\_SUPERVISION_{j,t}$) is an indicator variables equal to 1 if country j is classified as country with less strict regulation (strict supervision) and 0 otherwise. $CDS\_SOVEREIGN_{j,t}$ is defined as the natural logarithm of country j's sovereign credit-default swap spreads. $IRB_{i,j,t}$ is an indicator variable equal to 1 if bank i uses the internal ratings-based approach in a quarter and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.8 in the Internet Appendix.

Table A.30: Robustness test panel: time period 2013 Q1 until 2019 Q4.

| | *Dependent variable:* $\Delta RWAD_{i,j,t}$ | | | |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| $LAX\_REGULATION_{j,t-1} \times IRB_{i,j,t-1}$ | | 3.578** | | |
| | | (1.709) | | |
| $STRICT\_SUPERVISION_{j,t-1} \times IRB_{i,j,t-1}$ | | | 3.578** | |
| | | | (1.709) | |
| $CDS\_SOVEREIGN_{j,t-1} \times IRB_{i,j,t-1}$ | | | | 4.094*** |
| | | | | (1.438) |
| $LAX\_REGULATION_{j,t-1}$ | -0.311 | -3.883** | -0.305 | -0.311 |
| | (0.314) | (1.790) | (0.313) | (0.311) |
| $STRICT\_SUPERVISION_{j,t-1}$ | 0.945** | 0.943** | -2.635 | 0.926** |
| | (0.364) | (0.363) | (1.732) | (0.362) |
| $CDS\_SOVEREIGN_{j,t-1}$ | 0.330 | 0.338 | 0.338 | -3.648** |
| | (0.738) | (0.738) | (0.738) | (1.596) |
| $IRB_{i,j,t-1}$ | 1.311 | 0.766* | 0.766* | -10.46** |
| | (0.800) | (0.454) | (0.454) | (4.138) |
| $\Delta LOANS_{i,j,t-4}$ | -0.0278 | -0.0277 | -0.0277 | -0.0269 |
| | (0.0313) | (0.0313) | (0.0313) | (0.0312) |
| $\Delta RETURN\_ON\_RWA_{i,j,t-4}$ | 0.525 | 0.494 | 0.494 | 0.531 |
| | (0.459) | (0.473) | (0.473) | (0.454) |
| $\Delta LLR_{i,j,t-4}$ | -0.500 | -0.520 | -0.520 | -0.483 |
| | (0.597) | (0.596) | (0.596) | (0.617) |
| $\Delta EQUITY_{i,j,t-4}$ | 1.496* | 1.518* | 1.518* | 1.511* |
| | (0.801) | (0.806) | (0.806) | (0.801) |
| $SIZE_{i,j,t-4}$ | 2.519** | 2.492** | 2.492** | 2.425** |
| | (0.963) | (0.969) | (0.969) | (0.948) |
| $DOMESTIC\_CREDIT_{j,t-4}$ | 0.00651 | 0.00683 | 0.00683 | 0.00463 |
| | (0.0105) | (0.0105) | (0.0105) | (0.0105) |
| $\Delta GDP_{j,t-4}$ | 0.0912 | 0.0890 | 0.0890 | 0.0908 |
| | (0.0643) | (0.0641) | (0.0641) | (0.0636) |
| *q2* | 0.913 | 0.915 | 0.915 | 0.928 |
| | (0.746) | (0.746) | (0.746) | (0.745) |
| *q3* | 0.716 | 0.709 | 0.709 | 0.752 |
| | (0.663) | (0.665) | (0.665) | (0.659) |
| *q4* | 1.285 | 1.278 | 1.278 | 1.321 |
| | (1.331) | (1.331) | (1.331) | (1.330) |
| Bank and quarter-fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1,246 | 1,246 | 1,246 | 1,246 |
| $R^2$ | 0.136 | 0.137 | 0.137 | 0.139 |
| Adjusted $R^2$ | 0.109 | 0.109 | 0.109 | 0.111 |

This table reports regression results of the panel analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD_{i,j,t}$ is calculated as the quarterly change in bank i's risk-weighted assets to total assets in percent. $LAX\_REGULATION_{j,t}$ ($STRICT\_SUPERVISION_{j,t}$) is an indicator variables equal to 1 if country j is classified as country with less strict regulation (strict supervision) and 0 otherwise. $CDS\_SOVEREIGN_{j,t}$ is defined as the natural logarithm of country j's sovereign credit-default swap spreads. $IRB_{i,j,t}$ is an indicator variable equal to 1 if bank i uses the internal ratings-based approach in a quarter and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.8 in the Internet Appendix.

Table A.31: Robustness test panel: banks' credit-default swap spreads to measure risk.

| | *Dependent variable:* $\Delta RWAD_{i,j,t}$ | | | |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| $LAX\_REGULATION_{j,t-1} \times IRB_{i,j,t-1}$ | | 1.620 | | |
| | | (1.771) | | |
| $STRICT\_SUPERVISION_{j,t-1} \times IRB_{i,j,t-1}$ | | | 4.410*** | |
| | | | (1.572) | |
| $CDS\_BANK_{j,t-1} \times IRB_{i,j,t-1}$ | | | | -0.455 |
| | | | | (0.878) |
| $LAX\_REGULATION_{j,t-1}$ | -0.660* | -2.246 | -0.546 | -0.676* |
| | (0.361) | (1.751) | (0.339) | (0.367) |
| $STRICT\_SUPERVISION_{j,t-1}$ | 0.0261 | -0.00308 | -4.041** | 0.0440 |
| | (0.286) | (0.305) | (1.570) | (0.294) |
| $CDS\_BANK_{j,t-1}$ | -0.712** | -0.789*** | -0.878*** | -0.308 |
| | (0.265) | (0.242) | (0.264) | (0.792) |
| $IRB_{i,j,t-1}$ | 1.484 | 0.634 | -0.123 | 3.573 |
| | (0.908) | (1.174) | (0.724) | (4.478) |
| $G\_SIB_{i,j,t}$ | -0.0692 | 0.0838 | -0.155 | -0.0572 |
| | (0.438) | (0.482) | (0.390) | (0.430) |
| $\Delta LOANS_{i,j,t-4}$ | -0.0174 | -0.0156 | -0.0143 | -0.0176 |
| | (0.0261) | (0.0267) | (0.0262) | (0.0260) |
| $\Delta RETURN\_ON\_RWA_{i,j,t-4}$ | 0.561* | 0.560* | 0.583* | 0.561* |
| | (0.329) | (0.330) | (0.328) | (0.329) |
| $\Delta LLR_{i,j,t-4}$ | -0.658 | -0.672 | -0.669 | -0.646 |
| | (0.464) | (0.461) | (0.444) | (0.466) |
| $\Delta EQUITY_{i,j,t-4}$ | 1.364** | 1.390** | 1.362** | 1.365** |
| | (0.562) | (0.566) | (0.556) | (0.563) |
| $SIZE_{i,j,t-4}$ | 0.538 | 0.585 | 0.672 | 0.526 |
| | (0.704) | (0.717) | (0.703) | (0.703) |
| $DOMESTIC\_CREDIT_{j,t-4}$ | 0.0137** | 0.0143** | 0.0151** | 0.0137** |
| | (0.00659) | (0.00648) | (0.00631) | (0.00670) |
| $\Delta GDP_{j,t-4}$ | 0.145** | 0.142** | 0.148*** | 0.144** |
| | (0.0543) | (0.0550) | (0.0518) | (0.0545) |
| *q2* | 1.433 | 1.424 | 1.408 | 1.419 |
| | (1.009) | (1.005) | (1.005) | (1.011) |
| *q3* | 0.359 | 0.320 | 0.296 | 0.332 |
| | (0.953) | (0.942) | (0.943) | (0.956) |
| *q4* | 3.145* | 3.111* | 3.088* | 3.117* |
| | (1.639) | (1.628) | (1.629) | (1.651) |
| Bank and quarter-fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1,364 | 1,364 | 1,364 | 1,364 |
| $R^2$ | 0.200 | 0.201 | 0.207 | 0.201 |
| Adjusted $R^2$ | 0.164 | 0.164 | 0.170 | 0.163 |

This table reports regression results of the panel analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD_{i,j,t}$ is calculated as the quarterly change in bank i's risk-weighted assets to total assets in percent. $LAX\_REGULATION_{j,t}$ ($STRICT\_SUPERVISION_{j,t}$) is an indicator variables equal to 1 if country j is classified as country with less strict regulation (strict supervision) and 0 otherwise. $CDS\_BANK_{j,t}$ is defined as the natural logarithm of bank i's credit-default swap spreads. $IRB_{i,j,t}$ is an indicator variable equal to 1 if bank i uses the internal ratings-based approach in a quarter and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.8 in the Internet Appendix.

Table A.32: Robustness test panel: IRB approach coverage.

| | *Dependent variable:* $\Delta RWAD_{i,j,t}$ | | | |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| $LAX\_REGULATION_{j,t-1} \times IRB\_COVERAGE_{i,j,t-1}$ | | 1.693* | | |
| | | (0.851) | | |
| $STRICT\_SUPERVISION_{j,t-1} \times IRB\_COVERAGE_{i,j,t-1}$ | | | 2.929*** | |
| | | | (1.094) | |
| $CDS\_SOVEREIGN_{j,t-1} \times IRB\_COVERAGE_{i,j,t-1}$ | | | | 0.680*** |
| | | | | (0.186) |
| $LAX\_REGULATION_{j,t-1}$ | -0.751** | -2.360** | -0.634* | -0.757** |
| | (0.333) | (0.907) | (0.322) | (0.333) |
| $STRICT\_SUPERVISION_{j,t-1}$ | 0.0863 | 0.110 | -2.559** | 0.125 |
| | (0.226) | (0.232) | (1.035) | (0.229) |
| $CDS\_SOVEREIGN_{j,t-1} \times$ | -0.682** | -0.789*** | -0.777*** | -1.442*** |
| | (0.287) | (0.285) | (0.284) | (0.352) |
| $IRB\_COVERAGE_{i,j,t-1}$ | -0.244 | -0.775 | -0.907 | -2.447** |
| | (0.757) | (0.778) | (0.756) | (0.929) |
| $G\_SIB_{i,j,t}$ | 0.302 | 0.422 | 0.178 | 0.201 |
| | (0.365) | (0.369) | (0.355) | (0.376) |
| $\Delta LOANS_{i,j,t-4}$ | -0.0310 | -0.0297 | -0.0293 | -0.0311 |
| | (0.0264) | (0.0266) | (0.0268) | (0.0264) |
| $\Delta RETURN\_ON\_RWA_{i,j,t-4}$ | 0.501 | 0.487 | 0.498 | 0.488 |
| | (0.319) | (0.321) | (0.321) | (0.316) |
| $\Delta LLR_{i,j,t-4}$ | -0.309 | -0.313 | -0.298 | -0.331 |
| | (0.482) | (0.478) | (0.483) | (0.470) |
| $\Delta EQUITY_{i,j,t-4}$ | 1.434*** | 1.457*** | 1.445*** | 1.441*** |
| | (0.529) | (0.533) | (0.531) | (0.531) |
| $SIZE_{i,j,t-4}$ | 0.514 | 0.529 | 0.682 | 0.527 |
| | (0.534) | (0.534) | (0.529) | (0.539) |
| $DOMESTIC\_CREDIT_{j,t-4}$ | 0.00908 | 0.00876 | 0.0102 | 0.0103 |
| | (0.00640) | (0.00619) | (0.00626) | (0.00651) |
| $\Delta GDP_{j,t-4}$ | 0.126* | 0.123* | 0.129** | 0.128** |
| | (0.0634) | (0.0626) | (0.0612) | (0.0634) |
| *q2* | 0.741 | 0.734 | 0.735 | 0.738 |
| | (0.750) | (0.751) | (0.752) | (0.752) |
| *q3* | 0.254 | 0.217 | 0.228 | 0.255 |
| | (0.647) | (0.649) | (0.653) | (0.652) |
| *q4* | 1.034 | 0.999 | 1.010 | 1.021 |
| | (1.402) | (1.403) | (1.403) | (1.404) |
| Bank and quarter-fixed effects | Yes | Yes | Yes | Yes |
| Observations | 2,119 | 2,119 | 2,119 | 2,119 |
| $R^2$ | 0.119 | 0.121 | 0.123 | 0.123 |
| Adjusted $R^2$ | 0.0931 | 0.0946 | 0.0975 | 0.0966 |

This table reports regression results of the panel analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD_{i,j,t}$ is calculated as the quarterly change in bank i's risk-weighted assets to total assets in percent. $LAX\_REGULATION_{j,t}$ ($STRICT\_SUPERVISION_{j,t}$) is an indicator variables equal to 1 if country j is classified as country with less strict regulation (strict supervision) and 0 otherwise. $CDS\_SOVEREIGN_{j,t}$ is defined as the natural logarithm of country j's sovereign credit-default swap spreads. $IRB\_COVERAGE_{i,j,t}$ is the share of bank i's risk-weighted assets that are calculated using the internal ratings-based approach. Comprehensive variable descriptions of all other variables are provided in Table A.8 in the Internet Appendix.

Table A.33: Robustness test panel: Corporate loan share.

| | *Dependent variable:* $\Delta RWAD_{i,j,t}$ | | | |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| $LAX\_REGULATION_{j,t-1} \times IRB_{i,j,t-1}$ | | 1.117 | | |
| | | (1.625) | | |
| $STRICT\_SUPERVISION_{j,t-1} \times IRB_{i,j,t-1}$ | | | 4.922* | |
| | | | (2.441) | |
| $CDS\_SOVEREIGN_{j,t-1} \times IRB_{i,j,t-1}$ | | | | -0.552 |
| | | | | (0.868) |
| $LAX\_REGULATION_{j,t-1}$ | -0.444 | -1.521 | -0.220 | -0.432 |
| | (0.468) | (1.640) | (0.460) | (0.466) |
| $STRICT\_SUPERVISION_{j,t-1}$ | 0.630* | 0.610* | -4.048 | 0.676* |
| | (0.346) | (0.352) | (2.420) | (0.357) |
| $CDS\_SOVEREIGN_{j,t-1}$ | -1.392*** | -1.385*** | -1.422*** | -0.871 |
| | (0.493) | (0.498) | (0.512) | (0.950) |
| $IRB_{i,j,t-1}$ | 1.434* | 0.759 | 0.0646 | 3.347 |
| | (0.816) | (0.855) | (0.481) | (3.392) |
| $G\_SIB_{i,j,t}$ | 0.488 | 0.571 | 0.394 | 0.458 |
| | (0.749) | (0.720) | (0.711) | (0.750) |
| $\Delta CORPORATE\_LOANS_{i,j,t-4}$ | -0.00112 | -0.00105 | -0.00157 | -0.00134 |
| | (0.00267) | (0.00271) | (0.00257) | (0.00276) |
| $\Delta RETURN\_ON\_RWA_{i,j,t-4}$ | 0.239 | 0.223 | 0.164 | 0.231 |
| | (0.396) | (0.402) | (0.407) | (0.398) |
| $\Delta LLR_{i,j,t-4}$ | -0.115 | -0.122 | -0.123 | -0.115 |
| | (0.325) | (0.322) | (0.319) | (0.324) |
| $\Delta EQUITY_{i,j,t-4}$ | 1.406* | 1.417* | 1.446* | 1.413* |
| | (0.754) | (0.751) | (0.746) | (0.755) |
| $SIZE_{i,j,t-4}$ | 1.789*** | 1.808*** | 1.675*** | 1.699*** |
| | (0.517) | (0.509) | (0.598) | (0.480) |
| $DOMESTIC\_CREDIT_{j,t-4}$ | 0.00455 | 0.00361 | 0.00318 | 0.00509 |
| | (0.00939) | (0.00954) | (0.0101) | (0.00954) |
| $\Delta GDP_{j,t-4}$ | 0.0582 | 0.0565 | 0.0611 | 0.0545 |
| | (0.0688) | (0.0693) | (0.0673) | (0.0689) |
| *q2* | 1.404* | 1.404* | 1.397* | 1.402* |
| | (0.719) | (0.719) | (0.719) | (0.719) |
| *q3* | 0.0383 | 0.0348 | 0.0131 | 0.0265 |
| | (0.501) | (0.502) | (0.506) | (0.502) |
| *q4* | 1.282 | 1.278 | 1.255 | 1.271 |
| | (1.415) | (1.415) | (1.413) | (1.414) |
| Bank and quarter-fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1,330 | 1,330 | 1,330 | 1,330 |
| $R^2$ | 0.127 | 0.127 | 0.135 | 0.127 |
| Adjusted $R^2$ | 0.0854 | 0.0852 | 0.0938 | 0.0852 |

This table reports regression results of the panel analysis with robust standard errors in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Key variables: $\Delta RWAD_{i,j,t}$ is calculated as the quarterly change in bank i's risk-weighted assets to total assets in percent. $LAX\_REGULATION_{j,t}$ ($STRICT\_SUPERVISION_{j,t}$) is an indicator variables equal to 1 if country j is classified as country with less strict regulation (strict supervision) and 0 otherwise. $CDS\_SOVEREIGN_{j,t}$ is defined as the natural logarithm of country j's sovereign credit-default swap spreads. $IRB_{i,j,t}$ is an indicator variable equal to 1 if bank i uses the internal ratings-based approach in a quarter and 0 otherwise. Comprehensive variable descriptions of all other variables are provided in Table A.8 in the Internet Appendix.