

# Survival of the Biggest: Large Banks and Financial Crises<sup>\*</sup>

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## Abstract

This paper studies a newly compiled data set of annual balance sheets of more than 11,000 commercial banks across 17 advanced economies since 1870. The new data allow us to investigate banking industry structure and bank-level dynamics before, during, and after banking crises. We show that a country's largest banks (i.e., the top-5 by assets) typically gain market share in crises, as small banks fail more often or are absorbed, making the largest banks even more dominant after crises. This is despite the fact that the largest banks tend to take more risk before crises, suffer greater equity losses in crises, and contract their lending more. Instead, the survival and expansion of the largest banks appear linked both to substantially higher rates of government rescues and to the fact that their deposit flows are more insensitive to bank losses, compared to smaller banks. We find no evidence that large-bank-dominated systems have lower crisis frequency; in fact, conditional on crises, large-bank-dominated systems see more severe economic outcomes.

*Keywords: banking crises, large banks, banking sector organization, banking interventions*  
*JEL classification codes:*

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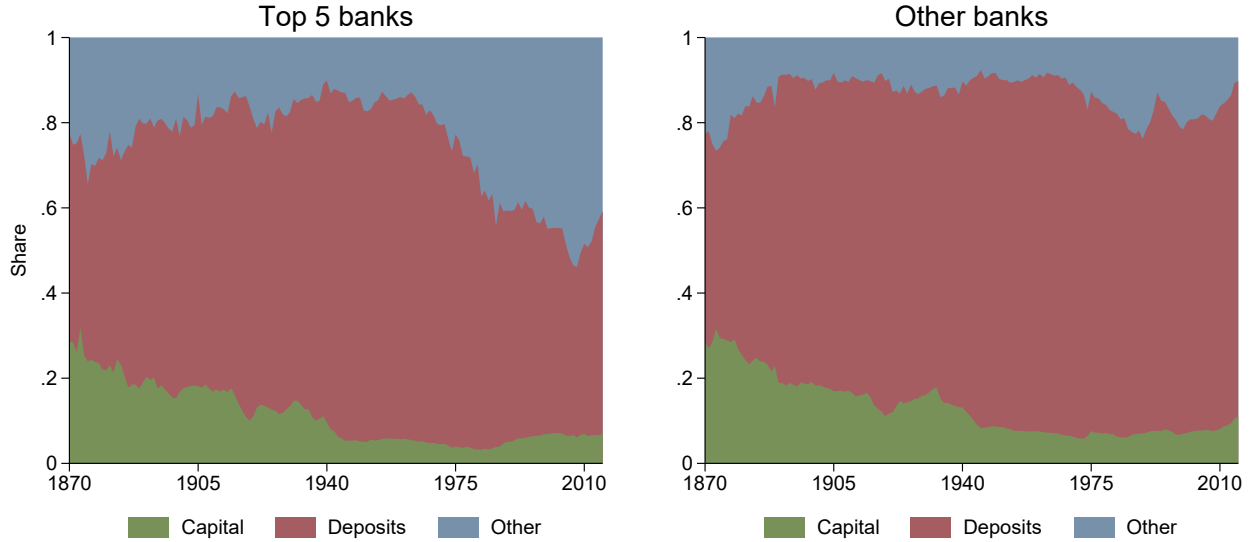




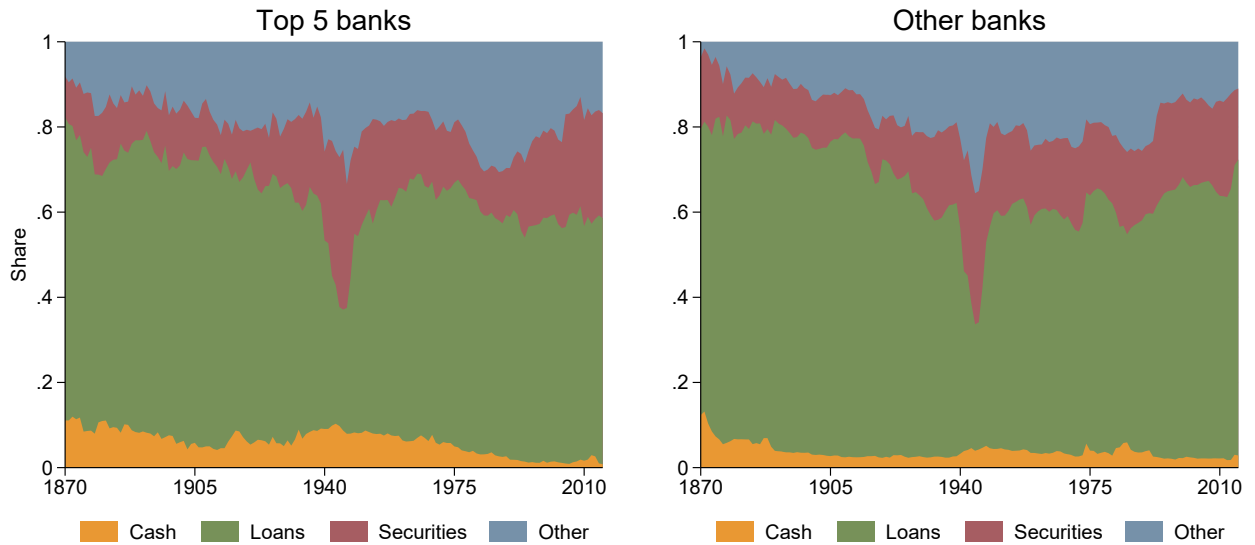
**Figure A.5:** Balance sheet composition of large and small banks

The top panel shows the liability composition of top-5 banks and all other banks. The bottom panel shows the asset composition of top-5 banks and all other banks. Median across banks in the two groups.

Panel A: Liabilities of the median top-5 and other banks



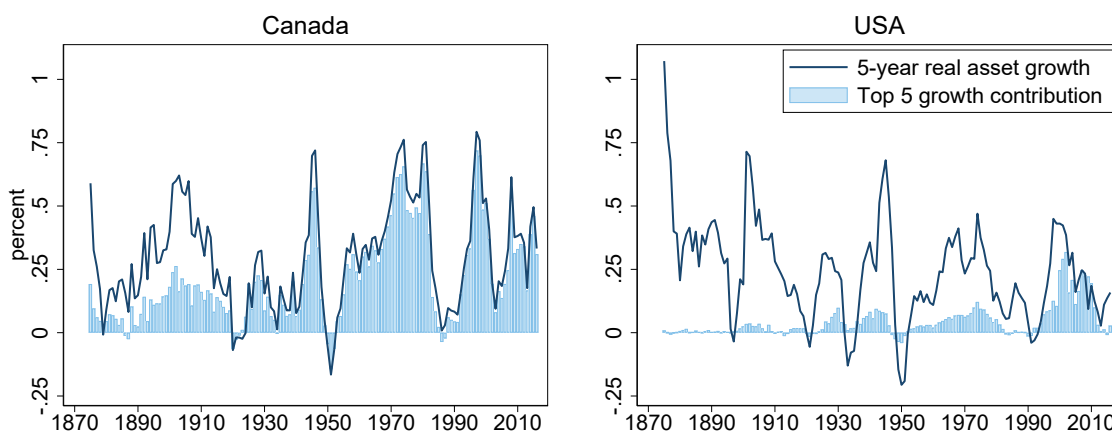
Panel B: Assets of the median top-5 and other banks



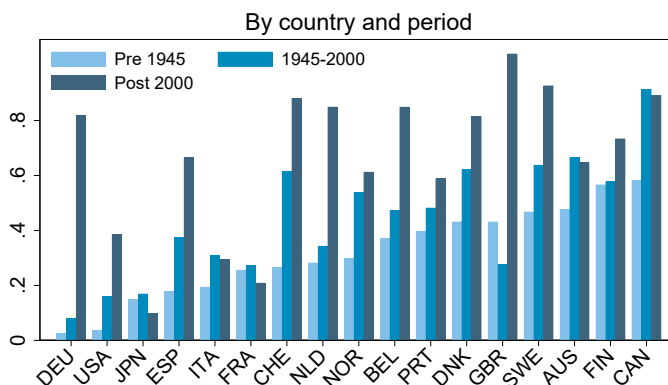
**Figure A.6:** Top-5 banks' contribution to the credit cycle

Panel A illustrates how the growth contribution of the top-5 banks is calculated for two countries. Panel B shows how the growth contribution of the top-5 banks changes over time (left plot) and across countries (right plot), as measured by the asset share of the top-5 banks. The Top 5 growth contribution is calculated as the M&A adjusted weighted growth rate of the top 5 banks times their lagged market share. Panel A is based on 5-year growth rates for illustrative purposes and the right hand panel of panel B is calculated using centered  $\pm 10$ -year rolling window regressions of the top-5 growth contribution on the aggregate growth rate.

Panel A: Growth contribution example for the United States and Canada



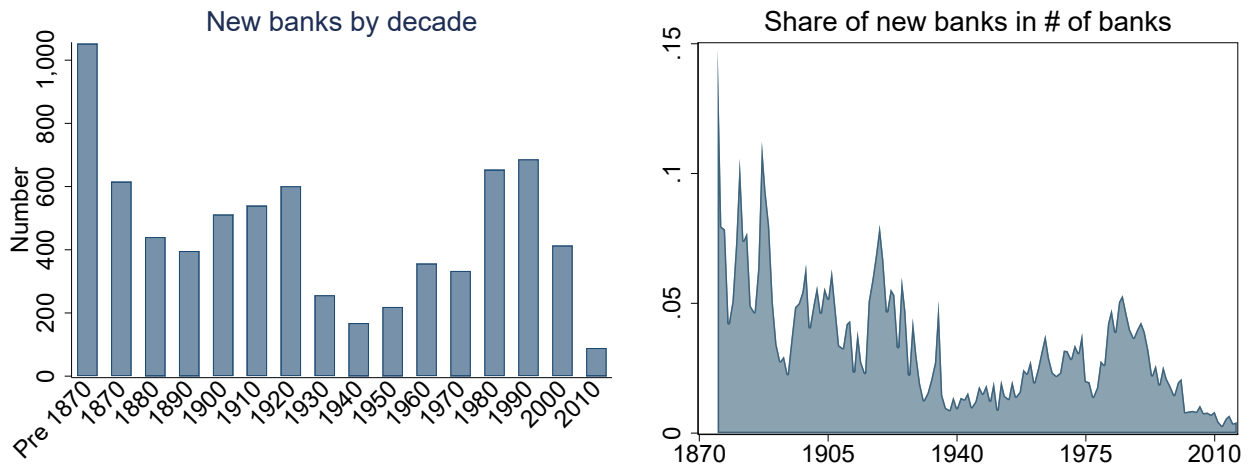
Panel B: Growth contribution by country and period



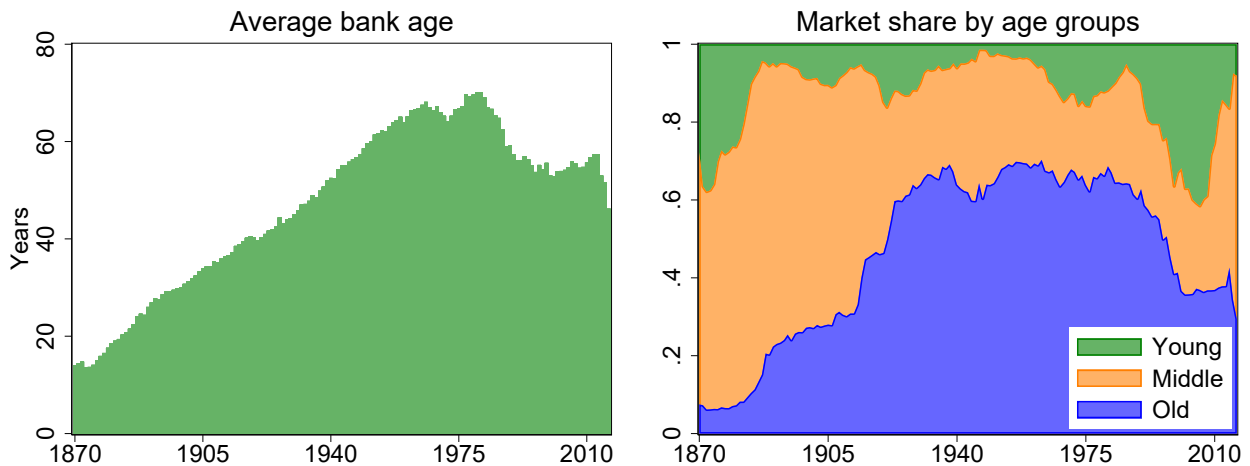
**Figure A.7: Bank entry**

Panel A plots the number of new banks by decade (left) and the fraction of new banks to total banks (right) across all the countries. Panel B plots the average bank age over time (left) and the distribution of banking sector assets by bank age groups over time (right), where “young” is defined as banks established within the last 10 years, “middle” is defined as banks 10 to 50 years old, and “old” is defined as banks older than 50 years. Figure only includes banks with non-missing establishment years.

Panel A: Bank entry over time



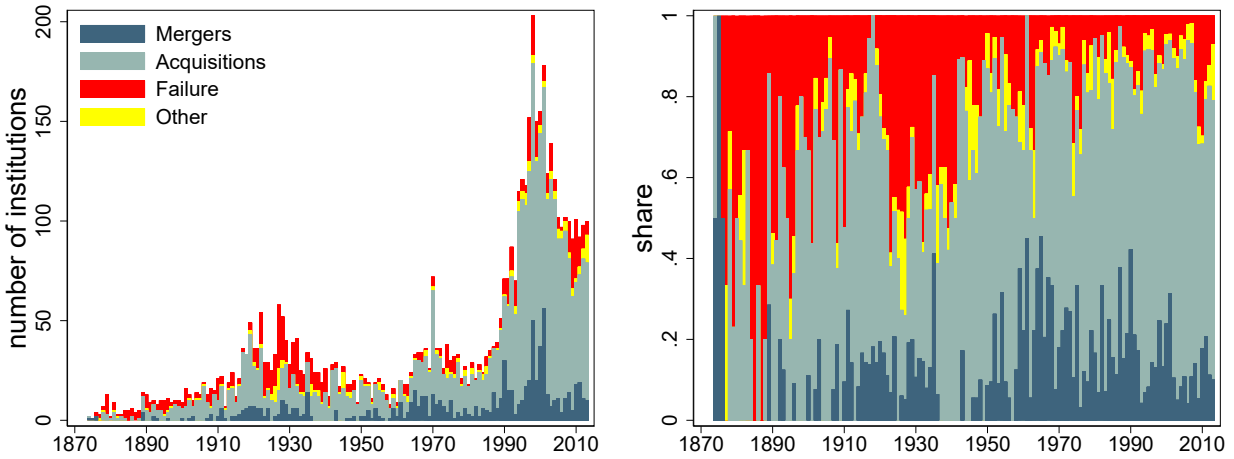
Panel B: Age structure of the banking system



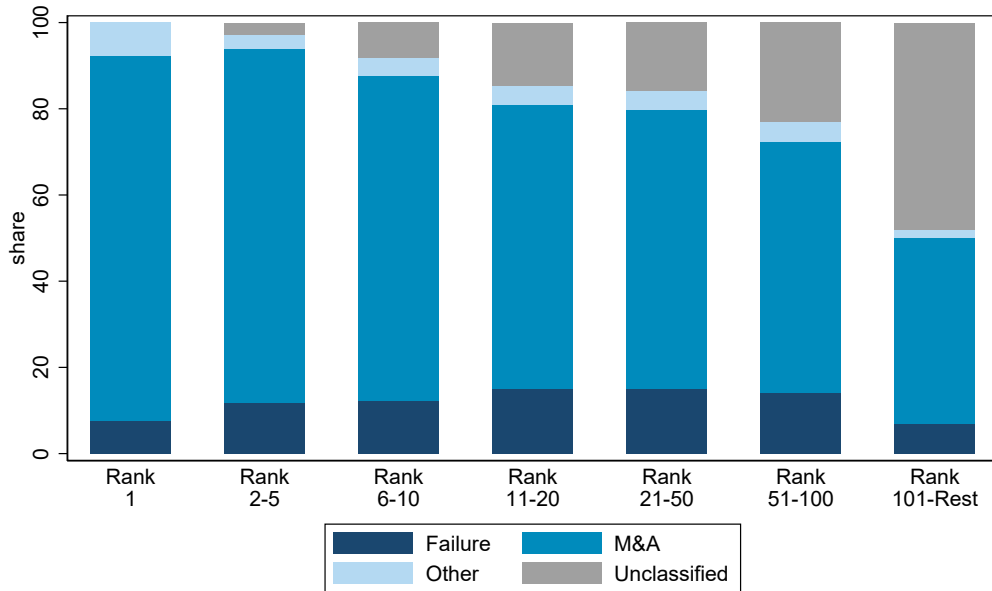
**Figure A.8:** Bank exit

Panel A shows the absolute (left) and relative (right) frequency of types of bank exits over time. Panel B shows the relative frequency of types of bank exits by bank size. Panel A only includes banks with known exit reason, while panel B also shows unclassified bank exits (grey bars).

Panel A: Number and type of bank exits over time

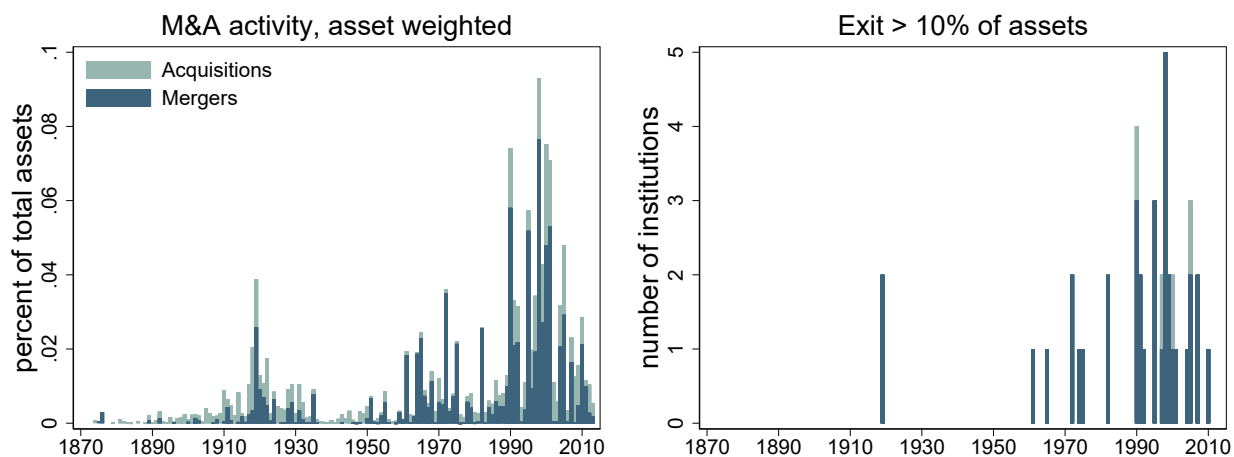


Panel B: Type of exit by bank size groups



**Figure A.9:** M&A trends

The figure shows trends in M&A activity in our database. The left-hand plot shows the share of banking sector assets acquired or involved in a merger in a given year averaged across the 17 countries in our sample. The right-hand plot shows the number of individual Mergers and Acquisitions with target assets exceeding 10% of banking sector assets.

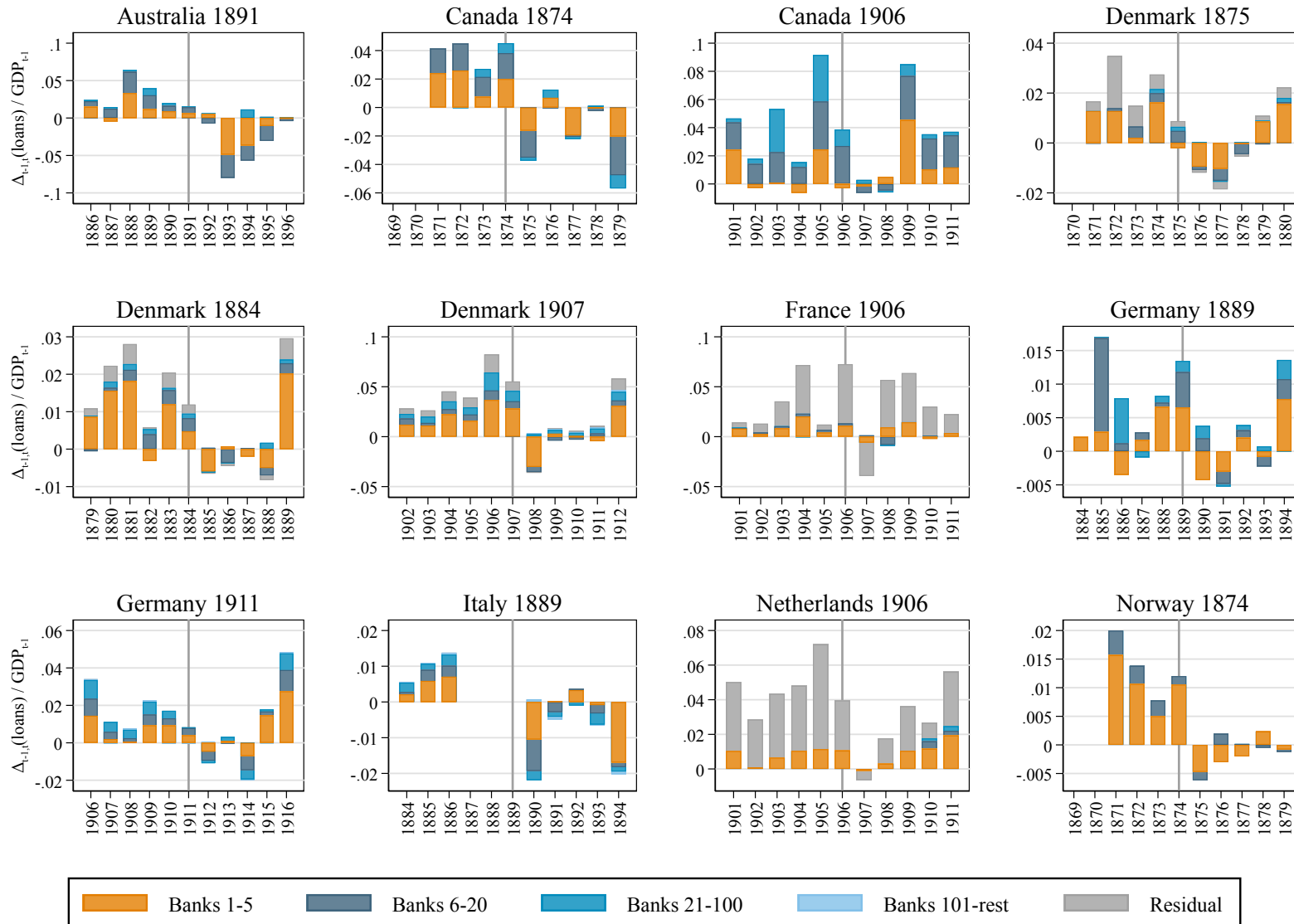


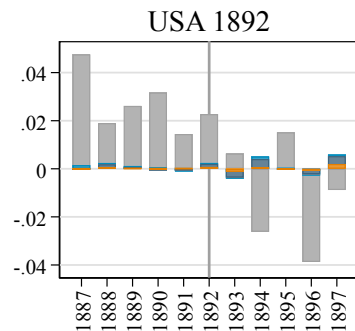
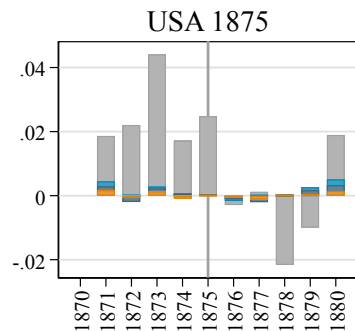
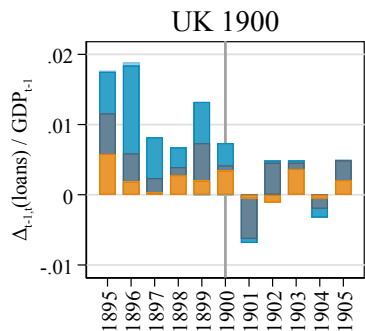
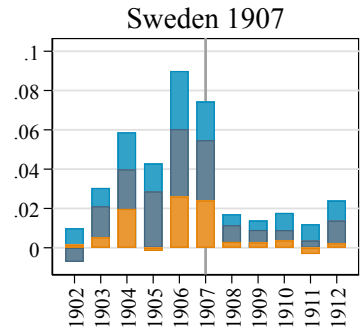
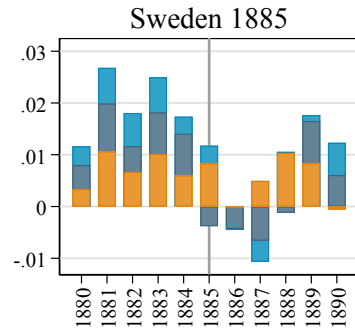
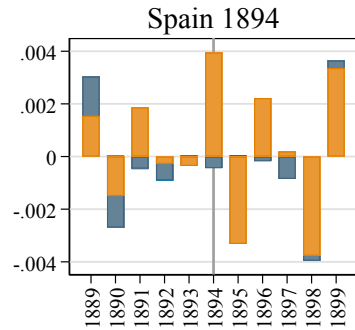
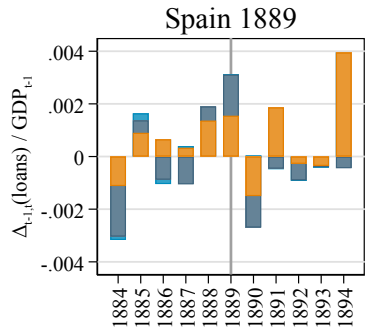
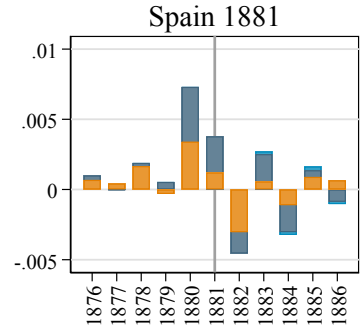
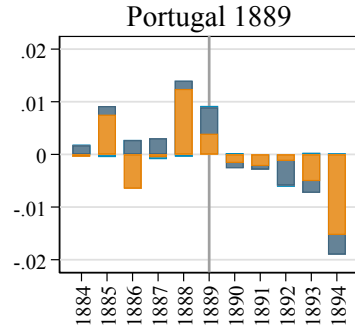
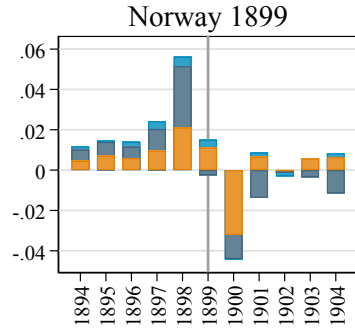
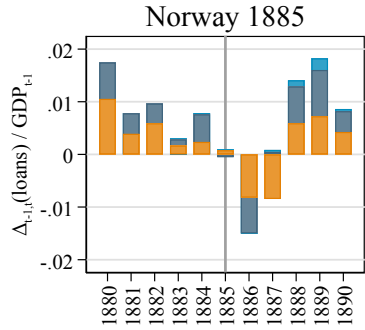


**Figure A.10:** Credit growth around individual banking crises

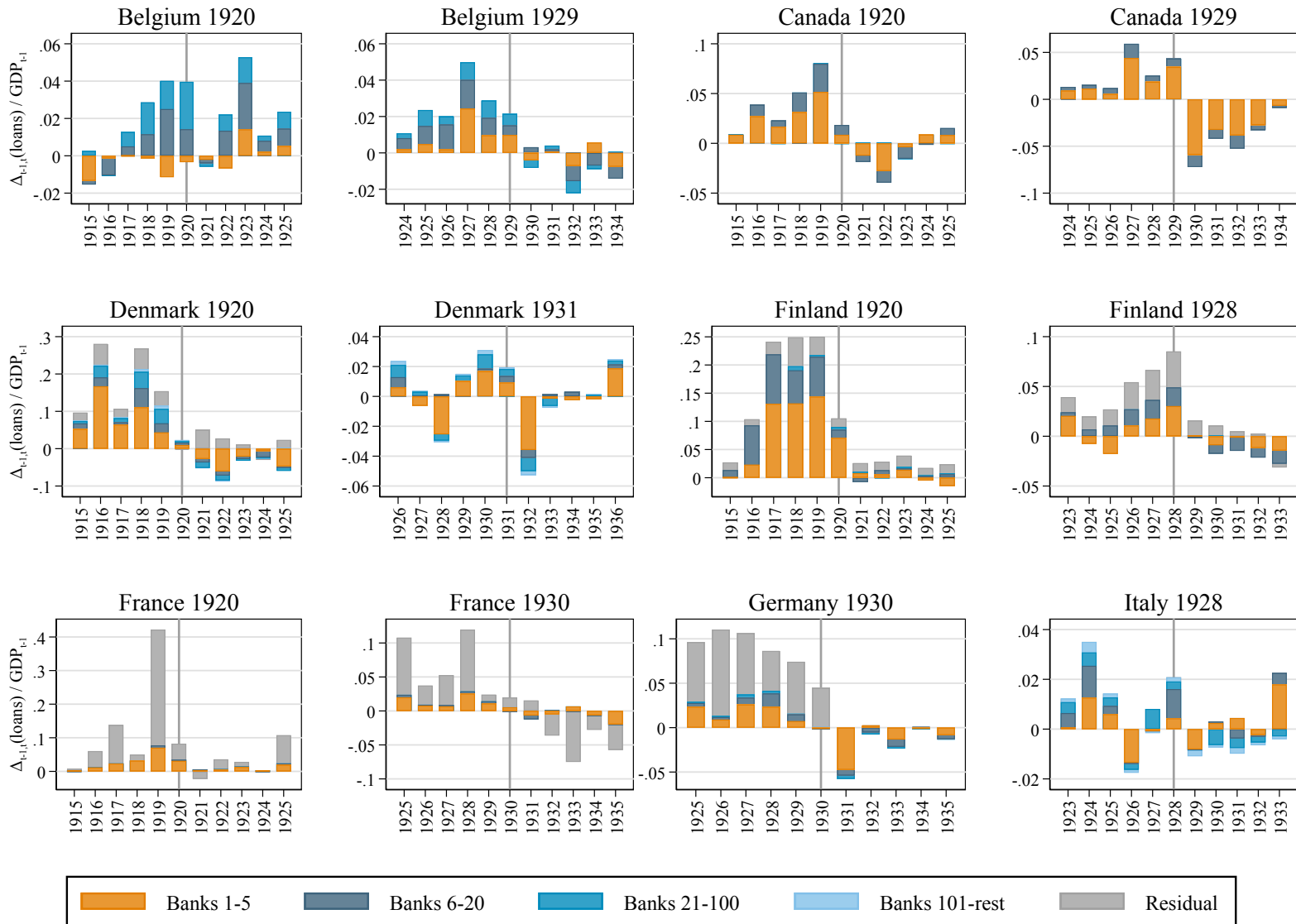
These plots are similar to Figure 5 but for each individual episode on the BSZ list.

Panel A: 1870-1914 banking crises

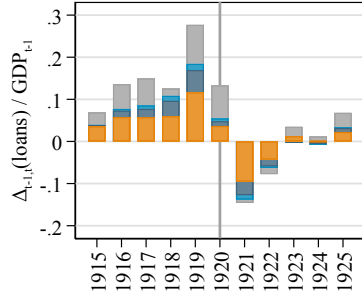




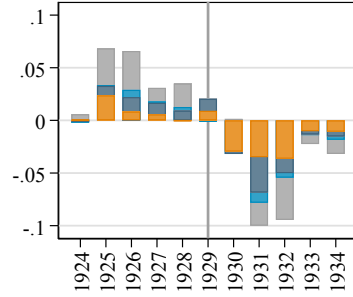
Panel B: 1915-1945 banking crises



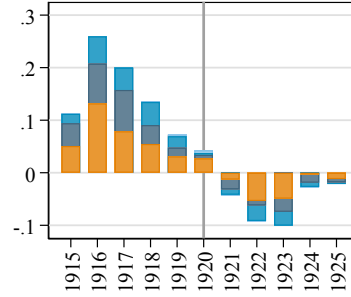
Netherlands 1920



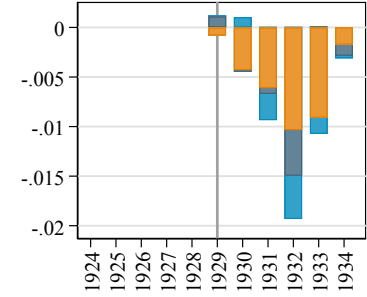
Netherlands 1929



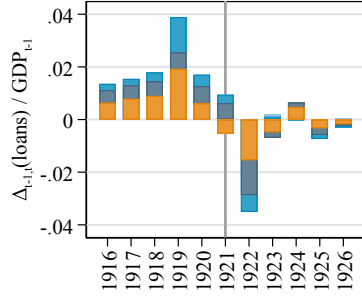
Norway 1920



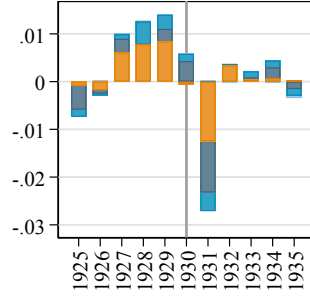
Norway 1929



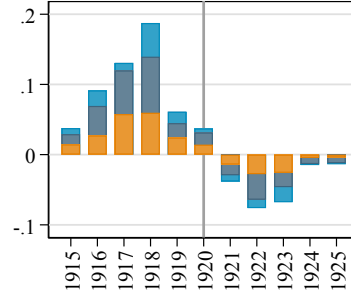
Spain 1921



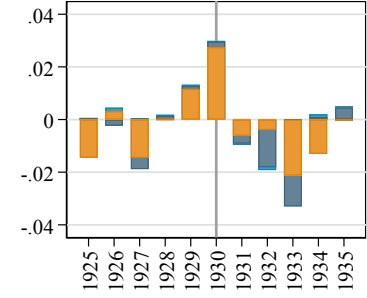
Spain 1930



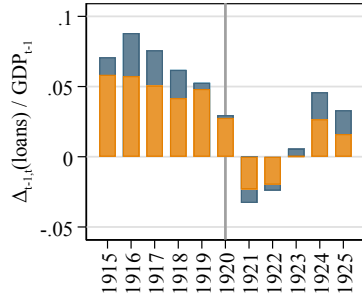
Sweden 1920



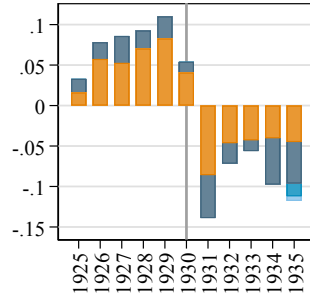
Sweden 1930



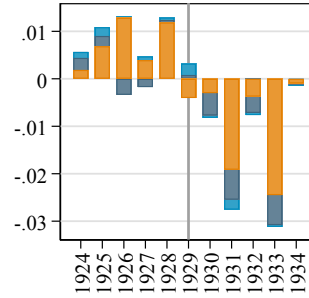
Switzerland 1920



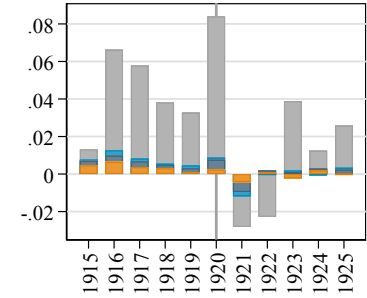
Switzerland 1930

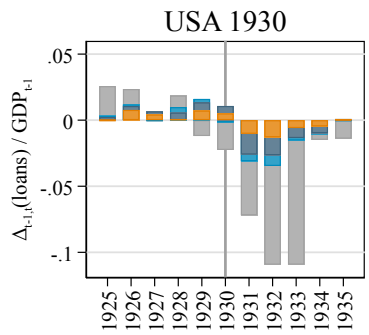


UK 1929

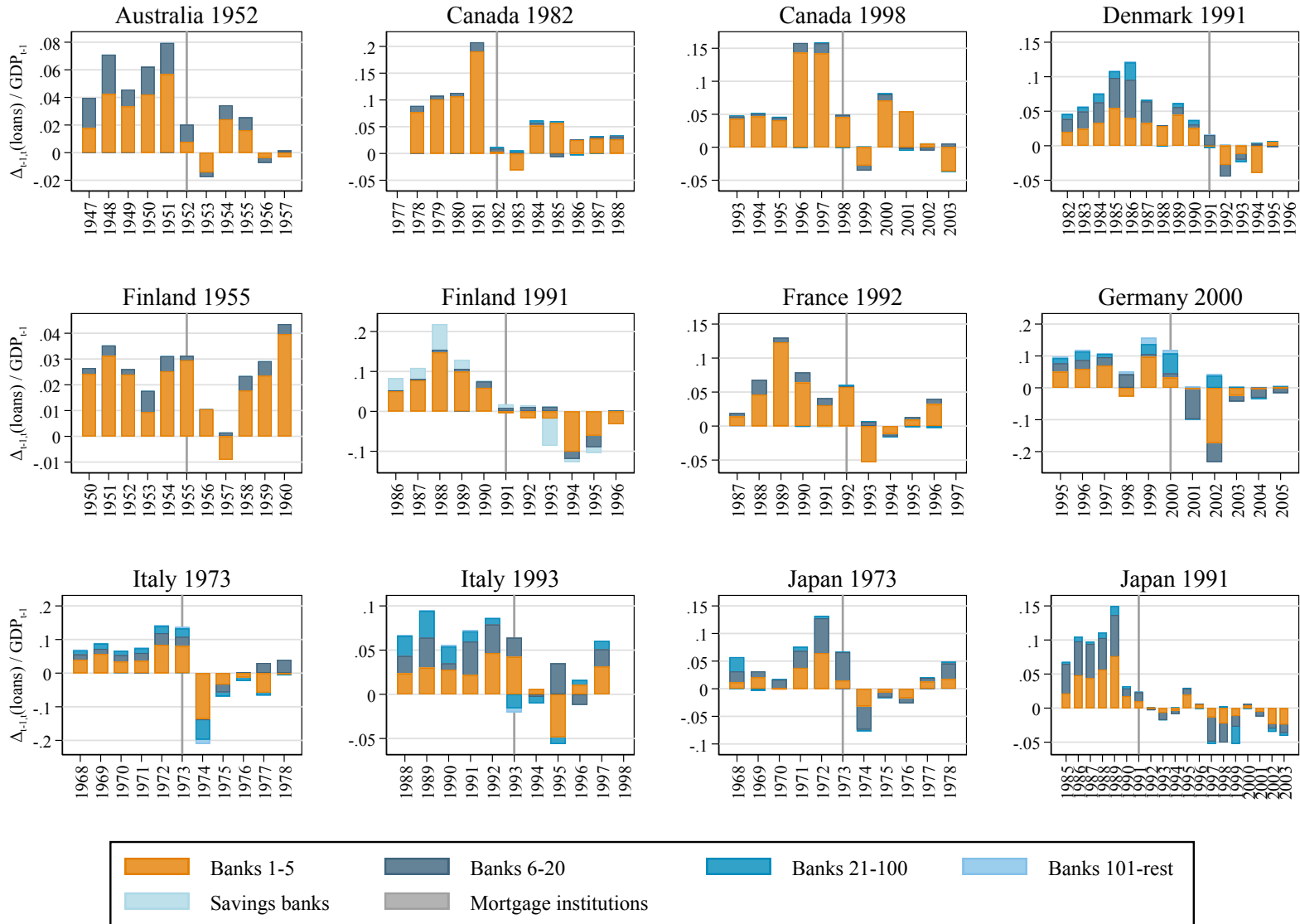


USA 1920

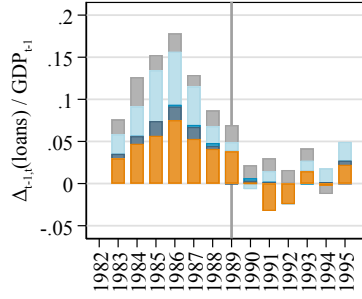




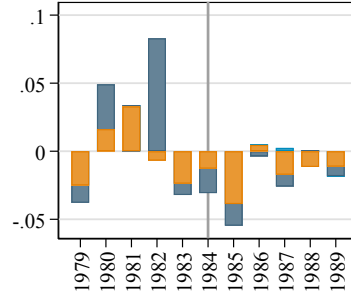
Panel C: 1946-2006 banking crises



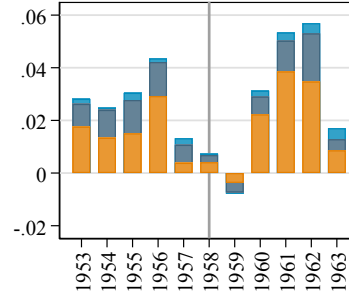
Norway 1989



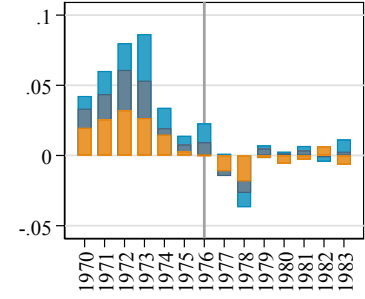
Portugal 1984



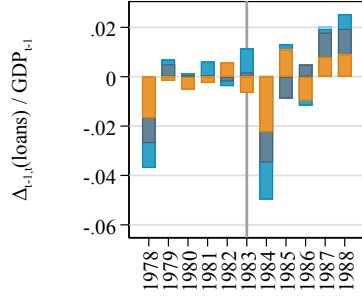
Spain 1958



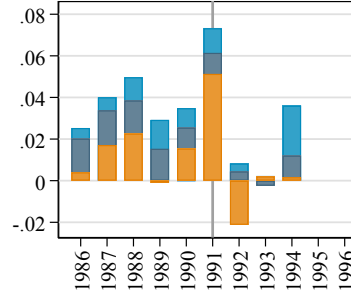
Spain 1976



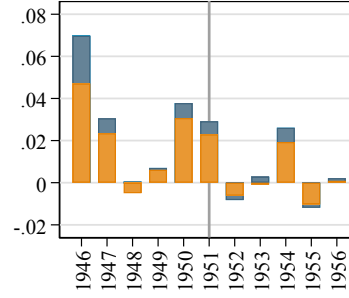
Spain 1983



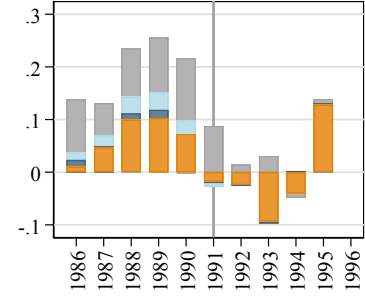
Spain 1991



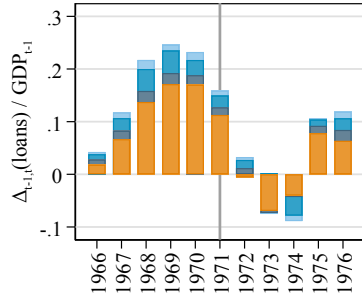
Sweden 1951



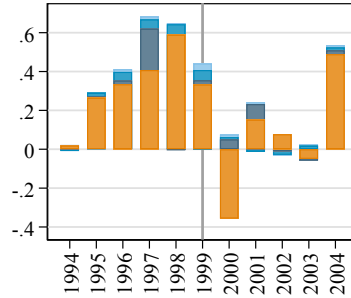
Sweden 1991



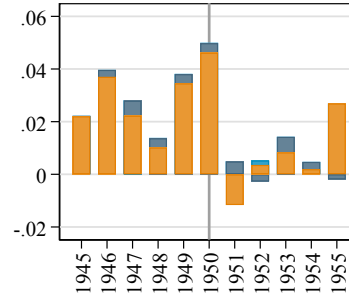
Switzerland 1971



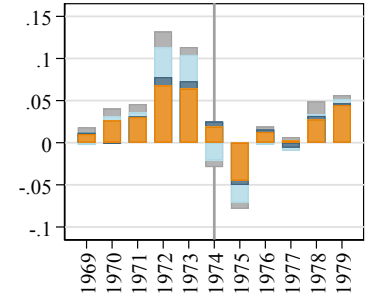
Switzerland 1999



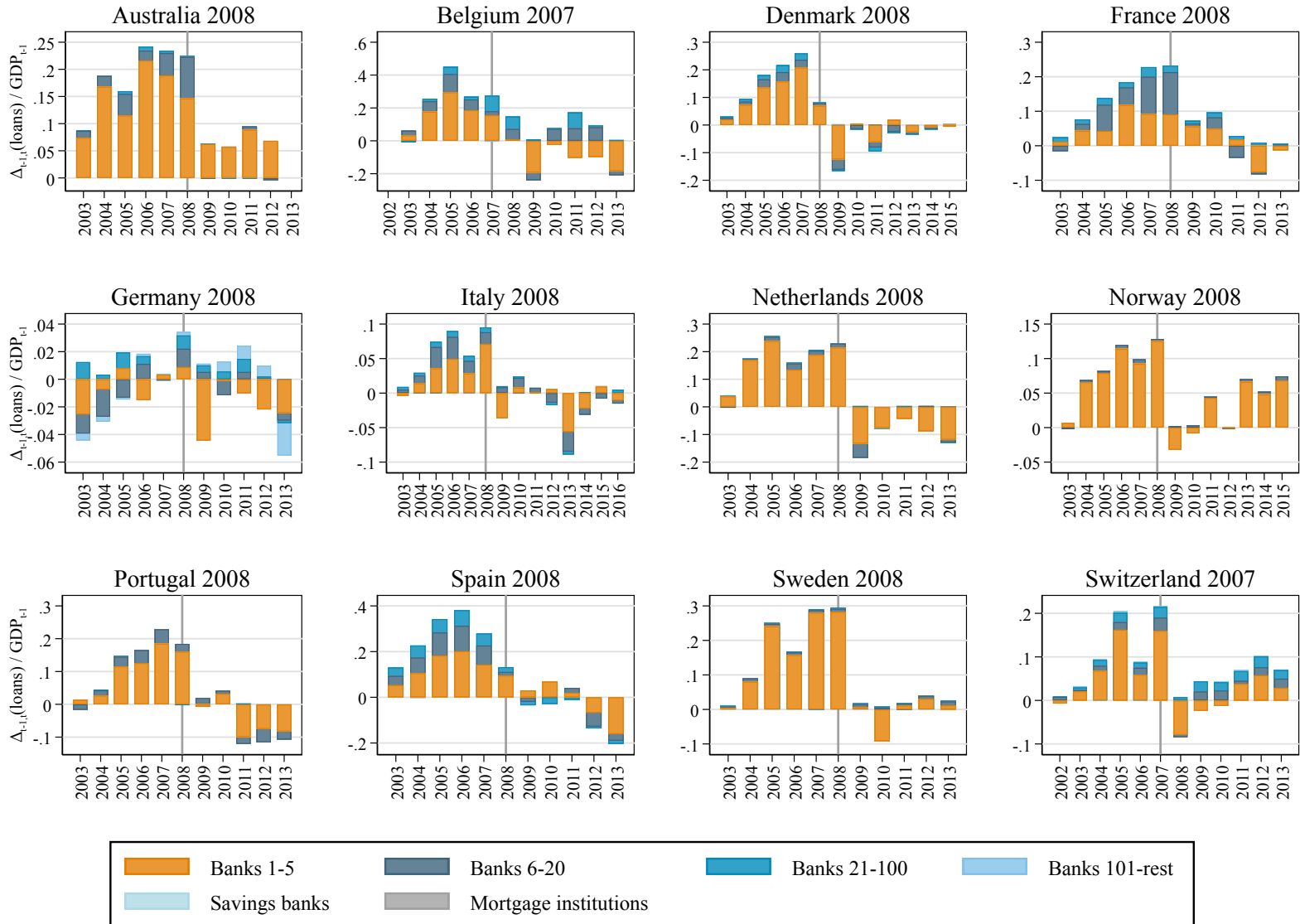
UK 1950



UK 1974



Panel D: 2007-2020 banking crises

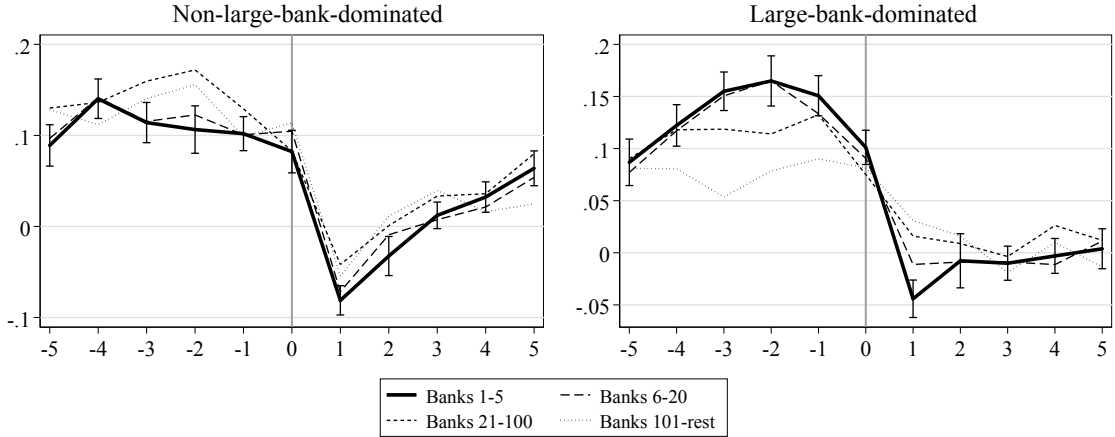




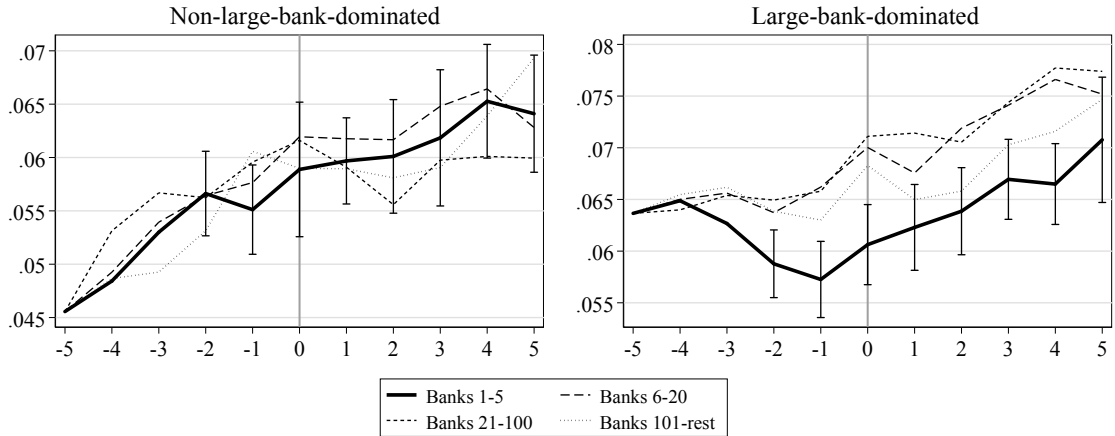
**Figure A.11:** Organic credit growth, capital ratios, noncore liability ratios, and safe asset ratios around banking crises

Panel A plots the organic growth rate of bank credit, by banks of different sizes, around banking crises. Panel B similarly plots the ratio of equity to assets, Panel C the ratio of noncore liabilities to assets, and Panel D the ratio of safe assets to total assets. Each event study is created by averaging across banking crises over the period 1870-2016. The left side of each panel averages across banking crises in “non-large-bank dominated” banking systems, and the right side average across banking crises in “large-bank dominated” banking systems, where “large-bank dominated” is defined as episodes when the combined asset share of top-5 banks at  $t-5$  is  $\geq 50\%$ . Size groups are determined by ranking banks by assets (within country) at  $t-5$  before each banking crisis. Average ratios in Panels B-D are computed by first aggregating numerators (e.g., noncore liabilities) and denominators (total assets) across all banks in each size group and within each banking crisis episode; then, the aggregate ratio for each size group is computed for each banking crisis; then, the ratio is averaged for each size group across all banking crises. Finally, the ratio levels in Panels B-D are then aligned at  $t = -5$  (i.e. the non-top-5 categories are shifted by an additive factor so that they start at the same level as top-5 banks at  $t-5$ ), in order to compare how the ratios change over time relative to the top-5 size group. 90% confidence bands are computed using a simple standard error of the mean across episodes of the difference between the Top 5 versus all other size groups.

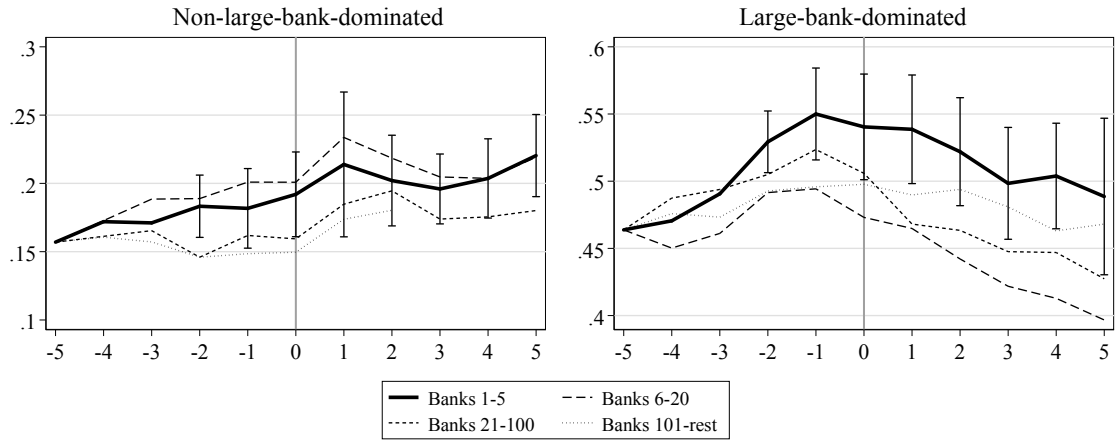
Panel A: Organic credit growth



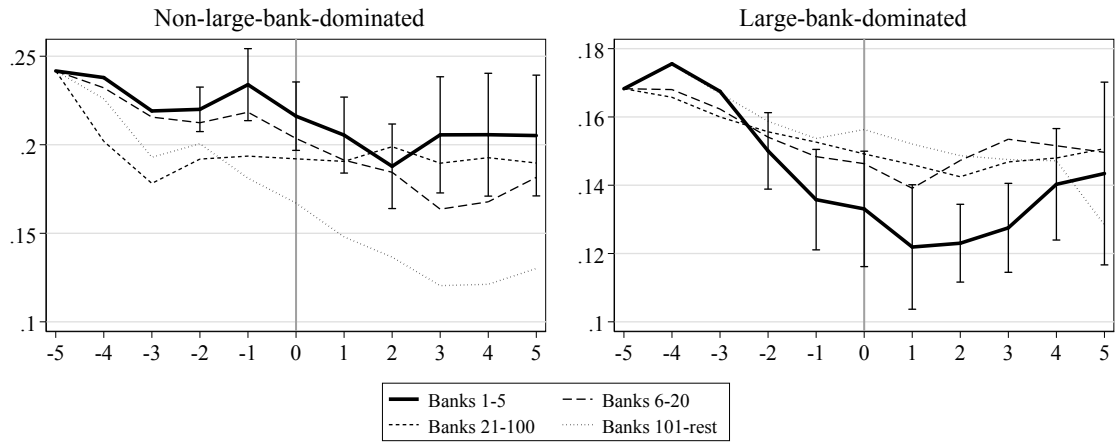
Panel B: Equity-to-assets (aligned at  $t = -5$ )



Panel C: Noncore liabilities-to-assets (aligned at  $t = -5$ )

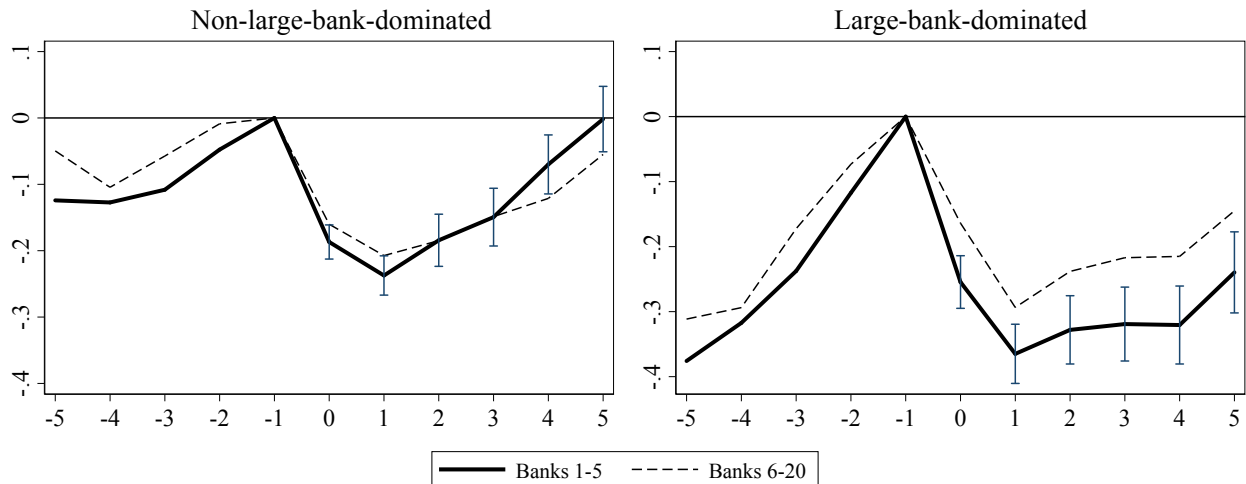


Panel D: Safe assets-to-assets (aligned at  $t = -5$ )



**Figure A.13:** Stock returns of top-5 and non-top-5 banks around banking crises

This figure plots event studies of average real total returns of bank stocks around banking crises, comparing top-5 banks (solid line) versus banks ranked 6-20 (dashed line). The left plot averages across “low” banking sector concentration episodes, and the right plot average across “high” banking sector concentration episodes, where “low” is defined as episodes where the top-5 asset share at  $t-5$  is  $< 50\%$  and “high” as  $\geq 50\%$ ). To generate the event studies, banks are first ranked by assets (within country) at  $t-5$  before each banking crisis. An equal-weighted average of cumulative real total returns (normalized relative to  $t-1$ ) for all banks that are publicly traded is first taken within each episode for size groups 1-5 and 6-20, respectively; then, a simple average is taken across episodes. 90% confidence bands are computed using a simple standard error of the mean across episodes of the difference between the two size groups.



**Table A.1:** Banking crises defined based on aggregate credit crunches

This table lists the set of banking crises studied in this paper, as defined in Section 2.4. “Banking crises” are defined here as country-year observations that are the first years of aggregate credit crunches, based on aggregate JST data—specifically when the past three-year change in the ratio of bank credit-to-GDP is less than -1 s.d. relative to that country’s history. Column 1 indicates the year of the peak level of bank credit-to-GDP, which is used to align event studies in Section 5. Column 2 indicates banking crises that are omitted from our analysis due to lack of or limited balance sheet data on individual banks. Column 3 indicates whether the event is a JST or BVX banking crisis also. Column 4 indicates the year of the initial bank stock decline after the peak level of aggregate bank stock prices (or lack of or limited bank stock data, in which case such an episode is omitted from our bank stock analysis).

Country	Year of credit boom peak before credit crunch	Individual bank balance sheet data available?	JST or BVX banking crisis also?	Year of initial bank stock decline (if bank stock data available)
	(1)	(2)	(3)	(4)
Australia	1891		1	1891
Australia	1952		0	1951
Australia	2008		0	2008
Belgium	1886	No data	1	1883
Belgium	1920		1	1922
Belgium	1929		1	1929
Belgium	2007		1	2008
Canada	1874		1	1875
Canada	1906		1	1907
Canada	1920		1	1920
Canada	1929		0	1929
Canada	1982		1	1981
Canada	1998		0	1998
Denmark	1875		1	1875
Denmark	1884		1	1885
Denmark	1907		1	1907
Denmark	1920		1	1919
Denmark	1931		0	1931
Denmark	1991		1	1990
Denmark	2008		1	2007
Finland	1920		1	1920
Finland	1928		1	1928
Finland	1955		0	1956
Finland	1991		1	1989
France	1907		0	1907
France	1920		0	1921
France	1930		1	1930
France	1992		1	1994
France	2008		1	2007
Germany	1872	Limited data	1	1873
Germany	1889		1	1890
Germany	1911		0	1910
Germany	1930		1	1929
Germany	2000		0	2001
Germany	2008		1	2008
Italy	1889		1	1888
Italy	1928		1	1929
Italy	1973		0	1974
Italy	1993		1	1990
Italy	2008		1	2007
Japan	1882	Limited data	1	No data
Japan	1889	Limited data	1	No data
Japan	1900	Limited data	1	No data
Japan	1906	Limited data	1	Limited data
Japan	1926	Limited data	1	Limited data
Japan	1973		0	1973
Japan	1991		1	1990
Netherlands	1906		1	1907
Netherlands	1920		1	1920
Netherlands	1929		1	1930
Netherlands	2008		1	2008
Norway	1874		0	No data
Norway	1885		0	No data
Norway	1899		1	1902
Norway	1920		1	1919
Norway	1929		1	No data
Norway	1989		1	1987
Norway	2008		1	2008
Portugal	1889		1	Limited data
Portugal	1984		0	1983
Portugal	2008		1	2008

Country	Year of credit boom peak before credit crunch	Individual bank balance sheet data available?	JST or BVX banking crisis also?	Year of initial bank stock decline (if bank stock data available)
	(1)	(2)	(3)	(4)
Spain	1881		1	Limited data
Spain	1889		1	Limited data
Spain	1894		0	Limited data
Spain	1921		1	Limited data
Spain	1930		1	Limited data
Spain	1958		0	1958
Spain	1976		1	1975
Spain	1983		0	1982
Spain	1991		0	1989
Spain	2008		1	2008
Sweden	1885		0	1885
Sweden	1907		1	1907
Sweden	1920		1	1918
Sweden	1930		1	1931
Sweden	1951		0	1952
Sweden	1991		1	1989
Sweden	2008		1	2007
Switzerland	1882	No data	0	No data
Switzerland	1920		1	1919
Switzerland	1930		1	1931
Switzerland	1971		0	1969
Switzerland	1999		0	1998
Switzerland	2007		1	2007
U.K.	1900		0	1901
U.K.	1929		0	1929
U.K.	1950		0	1951
U.K.	1974		1	1973
U.K.	1991		1	1990
U.K.	2008		1	2007
U.S.	1875		1	Limited data
U.S.	1892		1	Limited data
U.S.	1920		0	1920
U.S.	1930		1	1930
U.S.	1989		1	1990
U.S.	2007		1	2007

**Table A.2:** Top-5 banks and nonfinancials in 1880, 1910, 1970 and 2020 by country

This table reports the top-5 banks (Panel A) and top-5 nonfinancial firms (Panel B) by assets in 1880, 1910, 1970 and 2020. Company names are constant in the database and might therefore deviate from banks' actual historical names in each year.

Panel A: Largest banks

Country	Year	Top 1	Top 2	Top 3	Top 4	Top 5
Australia	1880	Bank of New South Wales	Union Bank of Australia	Bank of Australasia	Commercial Banking Co. of Sydney	National Bank of Australasia
Australia	1910	Bank of New South Wales	Union Bank of Australia	Bank of Australasia	Commercial Banking Co. of Sydney	State Savings Bank of Victoria
Australia	1970	Australia and New Zealand Bank	Bank of New South Wales	Commonwealth Bank of Australia	National Bank of Australasia	The State Savings Bank of Victoria
Australia	2020	Commonwealth Bank of Australia	Australia and New Zealand Bank	Westpac	National Australia Bank	Macquarie Group
Belgium	1880	–	–	–	–	–
Belgium	1910	Societe Generale de Belgique	Caisse Generale Reports et Depots	Soc. Franc. de Banque et de Depots	Caisse Hypothecaire Anversoise	Caisse des Proprietaires
Belgium	1970	Societe Generale de Belgique	Banque de Bruxelles	Kredietbank	Krediet aan de Nijverheid	Banque H. Lambert
Belgium	2020	Fortis Bank (Paribas)	KBC Bank	Dexia Bank Belgium	Bank Brussel Lambert	Sumitomo Mitsui Banking Corp.
Canada	1880	Bank of Montreal	Canadian Bank of Commerce	Merchants Bank	Bank of British North America	Ontario Bank
Canada	1910	Bank of Montreal	Canadian Bank of Commerce	Royal Bank of Canada	Merchants Bank	Imperial Bank of Canada
Canada	1970	Royal Bank of Canada	Canadian Imperial Bank of Comm.	Bank of Montreal	Bank of Nova Scotia	Toronto-Dominion Bank
Canada	2020	Royal Bank of Canada	Toronto-Dominion Bank	Bank of Nova Scotia	Bank of Montreal	Canadian Imperial Bank of Comm.
Denmark	1880	Den Danske Bank	Privatbanken	Kjøbenhavns Handelsbank	Fyens Disconto Kasse Bank	Kjøbenhavns Private Laanebank
Denmark	1910	Den Danske Bank	Kjøbenhavns Handelsbank	Privatbanken	Københ. Laane- Og Diskontobank	Aarhus Privatbank
Denmark	1970	Kjøbenhavns Handelsbank	Den Danske Bank	Privatbanken	Den Danske Provinsbank	Andelsbanken
Denmark	2020	Den Danske Bank	Nordea Bank Danmark	Jyske Bank	Nykredit Bank	Sydbank
Finland	1880	Yhdyspankki Suomessa	Pohjoismaiden Osake Pankki	Suomen Hypoteekkiyhdistys	Waasan Osake Pankki	Kansallis Osake Pankki
Finland	1910	Yhdyspankki Suomessa	Kansallis Osake Pankki	Pohjoismaiden Osake Pankki	Suomen Hypoteekkiyhdistys	Osaakehtiö Suom. Kaup. Hypo.
Finland	1970	Kansallis Osake Pankki	Pohjoismaiden Yhdyspankki	Postisäästöpankki	Okko Bank plc	Säästöpankkien Keskus O.-P.
Finland	2020	Nordea Bank Finland	OP-Pohjola Group	Danske Bank Finland	Aktia Bank	Ålands Aktiebank
France	1880	Credit Lyonnais	Société Générale	Comptoir d'Éscompte de Paris	Paribas	Crédit Industriel et Commercial
France	1910	Crédit Lyonnais	Société Générale	Comptoir National d'Éscompte	Paribas	Crédit Industriel et Commercial
France	1970	BNP	Société Générale	Société Générale	Crédit Foncier de France	Compagnie Bancaire
France	2020	BNP Paribas	Crédit Agricole Group	Société Générale	BPCE Group	Crédit Mutuel-CIC
Germany	1880	Berliner Disconto-Gesellschaft	Deutsche Bank	Norddeutsche Bank, Hamburg	Commerzbank	Dresdner Bank
Germany	1910	Deutsche Bank	Dresdner Bank	Berliner Disconto-Gesellschaft	Darmstädter Bank	A Schaaffhausen'scher Bankverein
Germany	1970	Deutsche Bank	Dresdner Bank	Commerzbank	Bayer. Hypot.- und Wechselbank	Frankfurter Hypothekenbank
Germany	2020	Deutsche Bank	Kreditanstalt für Wiederaufbau	Commerzbank	DZ Bank	UniCredit (Hypo Vereinsbank)
Italy	1880	Credito Mobiliare Italiano	Monte dei Paschi di Siena	Cassa di Sconto in Genova	Banco di Sconto e di Sete in Torino	Banca di Torino
Italy	1910	Cassa di Risparm. Prov. Lombarde	Banca Commerciale Italiana	Credito Italiano	Banco di Roma	Societa Bancaria Italiana in Milano
Italy	1970	Consorz. di Cred. Opere Pubbliche	Banca Nazionale del Lavoro	Banca Commerciale Italiana	Credito Italiano	Istituto Mobiliare Italiano
Italy	2020	Unicredito Italiano	Gruppo Bancario Intesa Sanpaolo	Gruppo Cassa Depositi e Prestiti	Banco Popolare	Monte dei Paschi di Siena
Japan	1880	–	–	–	–	–
Japan	1910	Yokohama Specie Bank	Mitsui Bank	Nippon Kangyo Bank	Industrial Bank of Japan	Sumitomo Bank
Japan	1970	Sumitomo Bank	Sanwa Bank	Dai-ichi Bank	Tokai Bank	Mitsui Bank
Japan	2020	Mitsubishi UFJ Financial Group	Japan Post Bank	Mizuho Financial Group	Sumitomo Mitsui Financial Group	Norinchukin Bank
Netherlands	1880	–	–	–	–	–
Netherlands	1910	Nederl. Handel Maatschappij	Twentsche Bank	Amsterdamsche Bank	Rotterdamsche Bank	Incasso-Bank
Netherlands	1970	Algemene Bank Nederland (ABN)	Amsterdam-Rotterdam Bank	Nederlandsche Middenstandsbank	Bank Mees & Hope	Nederlandse Credietbank
Netherlands	2020	ING Bank	Rabobank Bank	ABN AMRO Bank	Bank voor Nederl. Gemeenten	Nederlandse Waterschapsbank
Norway	1880	Den Norske Creditbank	Bergens Privatbank	Christiania Bank og Kreditkasse	Bergens Kreditbank	Den Nordenfjeldske Kreditbank
Norway	1910	Centralbanken for Norge	Den Norske Creditbank	Bergens Privatbank	Christiania Bank og Kreditkasse	Bergens Kreditbank
Norway	1970	Den Norske Creditbank	Christiania Bank og Kreditkasse	Bergens Privatbank	Andresens Bank	Fellesbanken
Norway	2020	DNBank	Santander Consumer Bank	Skandiabanken	Bank Norwegian	Gjensidige Bank
Portugal	1880	Banco Lusitano	Banco Aliança	Banco Nacional Ultramarino	Banco Uniao	Banco Comercial de Lisboa
Portugal	1910	Banco Nacional Ultramarino	Banco Lisboa & Açores	Banco Aliança	Banco Commercial do Porto	Banco do Minho
Portugal	1970	Caixa Geral de Depositos	Banco Pinto & Sotto Mayor	Banco Totta & Acores	Banco Português do Atlântico	Banco Borges & Irmao
Portugal	2020	Caixa Geral de Depositos	Banco Commercial Portugues	Banco Espirito Santo	Banco BPI	Santander Totta
Spain	1880	Crédito Mobiliario Español	Banco Castilla	Hipotecario de Espana	Banco de Barcelona	Sociedad de Credito Mercantil
Spain	1910	Hipotecario de Espana	Banco Hispano Americano	Banco de Bilbao	Banco Espanol de Credito	Crédito de la Unión Minera
Spain	1970	Banco Espanol de Credito	Banco Hispano Americano	Banco Central	Banco de Bilbao	Banco de Vizcaya
Spain	2020	Banco de Santander	BBVA	Caixabank	Bankia	Banco de Sabadell

Country	Year	Top 1	Top 2	Top 3	Top 4	Top 5
Sweden	1880	Skanes Enskilda Bank	Skandinaviska Kreditaktiebolaget	Stockholms Enskilda Bank	Inteckningsbanken	Mälareprovinsernas Bank
Sweden	1910	Skandinaviska Kreditaktiebolaget	Inteckningsbanken	Svenska Handelsbank	Stockholms Enskilda Bank	Göteborgs Bank
Sweden	1970	Svenska Handelsbank	Skandinaviska Kreditaktiebolaget	Sveriges Kreditbank	Göteborgs Bank	Stockholms Enskilda Bank
Sweden	2020	Nordea Bank	Skandinaviska Enskilda Banken	Svenska Handelsbank	Swedbank	SBAB Bank
Switzerland	1880	Züricher Kantonalbank	Credit Suisse	Eidgenössische Bank	Leu & Co.	Bank in Winterthur
Switzerland	1910	Swiss Bank Corporation	Credit Suisse	Züricher Kantonalbank	Schweizerische Volksbank	Leu & Co.
Switzerland	1970	UBS	Swiss Bank Corporation	Credit Suisse	Züricher Kantonalbank	Schweizerische Volksbank
Switzerland	2020	UBS	Credit Suisse	Schweizer Verband Raiffeisen	Züricher Kantonalbank	Bank J. Safra Sarasin
UK	1880	National Provincial Bank	London & County Banking Co.	Westminster Bank	Union Bank of London	London Joint Stock Bank
UK	1910	Lloyds Bank	Westminster Bank	Midland Bank	National Provincial Bank	Barclays Bank
UK	1970	Barclays Bank	National Westminster Bank	Midland Bank	Lloyds Bank	Halifax Building Society
UK	2020	Barclays Bank	Royal Bank of Scotland	Lloyds Bank	HSBC Bank	Standard Chartered
USA	1880	Importers & Traders' Nat. Bank	Fourth National Bank, New York	Nat. Bank of Commerce, New York	National Park Bank, New York	American Exchange National Bank
USA	1910	National City Bank, New York	Nat. Bank of Commerce, New York	Continental and Comm. Nat. Bank	First National Bank, New York	First National Bank, Chicago
USA	1970	Bank of America	Citicorp	Chase Manhattan	Manufacturers Hanover	J. P. Morgan & Co.
USA	2020	JPMorgan Chase	Bank of America	Citigroup	Wells Fargo	U.S. Bancorp

### Panel B: Largest nonfinancial firms

Country	Year	Top 1	Top 2	Top 3	Top 4	Top 5
Australia	1910	–	–	–	–	–
Australia	1970	BHP	Colonial Sugar	Australian Paper Manufacturers	Comalco	Australian Consolidated Industries
Australia	2020	BHP	Rio Tinto	MMG	Telstra	Woodside Petroleum
Belgium	1910	ACEC	Carrières de Porphyre de Quenast	Société des Glaces Nat. Belges	Liniere La Lys	Fabrique Nationale
Belgium	1970	Petrofina	Solvay	Cockerill	Sidmar	Aga Gevaert
Belgium	2020	Anheuser-Busch InBev	Solvay	UCB	Proximus Group	Umicore
Canada	1910	Lake Superior Corporation	Granby Mining, Smelting, Power	Canadian Car and Foundry	Dominion Textile Company	Spanish River Pulp & Paper Mills
Canada	1970	BCE	Canadian Pacific Railway	Imperial Oil Ltd	STELCO	Falconbridge
Canada	2020	Enbridge	TC Energy	Suncor Energy	Canadian Natural Resources	Nutrien
Denmark	1910	Store Nordiske Telegrafskab	Danske Sukkerfabrikker	Forenede Dampskibsselskab	Københavns Telefonselskab	Forenede Bryggerier
Denmark	1970	FL Smidth	Forenede Bryggerier	Superfos	Skandinavisk Tobakskompagni	Danfoss
Denmark	2020	Maersk Group	Ørsted	Carlsberg Group	Novo Nordisk	Vestas Wind Systems
Finland	1910	Finlayson & Co.	Finska Ångfartygs	Kymin	Ph. U Strengberg & Co.	W. Gutzeit
Finland	1970	Enso-Gutzeit	Wartsila	Rauma-Repola	Valmet	Kymin
Finland	2020	Nokia	Stora Enso	UPM-Kymmene	Neste	Kone
France	1910	Messageries Maritimes	Cie. Générale Transatlantique	Mines de Lens	Thomson-Houston	Saint-Gobain
France	1970	Usinor	Wendel-Sidelor (Sacilor)	Total	Rhone Poulenc	Pechiney
France	2020	Total	Renault	Sanofi	Orange	Christian Dior LVMH
Germany	1910	Krupp	Allgem. Elektr.-Gesells. (AEG)	Gelsenkirchener Bergwerks	Hamburg-Amerik. Packetfahrt	Siemens-Schuckertwerke
Germany	1970	Hoechst	Bayer	Siemens	Veba	BASF
Germany	2020	Volkswagen	Daimler	BMW	Deutsche Telekom	Siemens
Italy	1910	ILVA	Navigazione Generale Italiana	Ansaldo	Acciaierie di Terni	S. Ligure-Lomb. Raff. Zuccheri
Italy	1970	Montedison	SIP	Fiat	Eni / ANIC	SNIA Viscosa
Italy	2020	Eni	Fiat-Chrysler	Atlantia	Telecom Italia	Leonardo
Japan	1910	Kawasaki Shipyards	Kuhara Mining	Mitsubishi Shipyards	Kanegafuchi Spinning	Toyo Spinning
Japan	1970	Nippon Steel Corp	Mitsubishi Heavy Industries	Nippon Kokan (Japan Steel)	Hitachi	Nissan Motors
Japan	2020	Toyota Motors	SoftBank Group	Nippon Telegraph and Telephone	Sony	Honda
Netherlands	1910	–	–	–	–	–
Netherlands	1970	Royal Dutch-Shell	Philips'	Unilever	Hoogovens	Akzo
Netherlands	2020	Royal Dutch Shell	Airbus	Unilever	Altice	Heineken
Norway	1910	Norsk Hydro-elektrisk	De norske Salpeterverker	Rjukanfos	Sydvaranger	Union Co.
Norway	1970	Norske Hydro	Akergruppen	Elkem Spigerverket	Borregaard	Kvaerner Industrier
Norway	2020	Equinor	Telenor Group	Norsk Hydro	Yara International	Aker
Portugal	1910	–	–	–	–	–
Portugal	1970	–	–	–	–	–
Portugal	2020	Galp Energia	Jeronimo Martins	Sonae	Mota-Engil	NOS

Country	Year	Top 1	Top 2	Top 3	Top 4	Top 5
Spain	1910	Río Tinto	General Azucarera de España	Duro-Felguera	Comp. Arrendataria de Tabacos	Altos Hornos de Vizcaya
Spain	1970	SEAT	Comp. Esp. Petroleos	Altos Hornos de Vizcaya	Refineria de Petrol. Escombreras	Astilleros Espanoles (AESAs)
Spain	2020	Telefónica	Repsol	Abertis Infraestructura	ACS Group	Inditex
Sweden	1910	Svenska Sockererfabriks	LKAB	Stora Kopparbergs Bergslag	AB Separator	Stockholms Allmänna Telefon
Sweden	1970	Ericsson	Volvo	SKF	ASEA	SAAB-Scania
Sweden	2020	LKAB	Volvo	Ericsson	Telia Company	Stora Enso
Switzerland	1910	Nestle	Brown, Boveri	“Motor”	Industrie-Gesellschaft für Schappe	Maggi's Nahrungsmitteln
Switzerland	1970	Nestle	Ciba	Sandoz	Geigy	Alusuisse
Switzerland	2020	Nestle	Novartis	Roche	Glencore	HOLCIM
UK	1910	Stewarts & Lloyds	Metropolitan Carriage Wagon	Imperial Tobacco Company	J. & P. Coats	British American Tobacco
UK	1970	Royal Dutch-Shell	BP	Imperial Chemical	British-American Tobacco	Rio Tinto-Zinc UK
UK	2020	Royal Dutch-Shell	BP	British-American Tobacco	Vodafone	GlaxoSmithKline
US	1910	United States Steel	American Smelting & Refining	US Rubber	Swift	Armour
US	1970	Exxon Mobil	General Motors	Texaco	Ford Motor	Gulf Oil
US	2020	AT&T	ExxonMobil	Apple	Verizon Communications	Microsoft



**Table A.3:** Persistence of banks and nonfinancials

Top-5 firms from the year:	Status in 2020:	Banks %	Nonfinancials %
1880	Top 5	37.1	(no data)
	Top 6-20	1.4	
	Rank 21+	0.0	
	Acquired	54.3	
	Bankrupt	7.1	
		<i>(N=70)</i>	
1910	Top 5	49.4	11.4
	Top 6-20	3.5	10.0
	Rank 21+	0.0	15.7
	Acquired	40.0	57.1
	Bankrupt	7.1	5.7
		<i>(N=85)</i>	<i>(N=70)</i>
1970	Top 5	57.7	28.8
	Top 6-20	2.4	26.3
	Rank 21+	0.0	8.8
	Acquired	38.8	33.8
	Bankrupt	1.2	2.5
		<i>(N=85)</i>	<i>(N=80)</i>

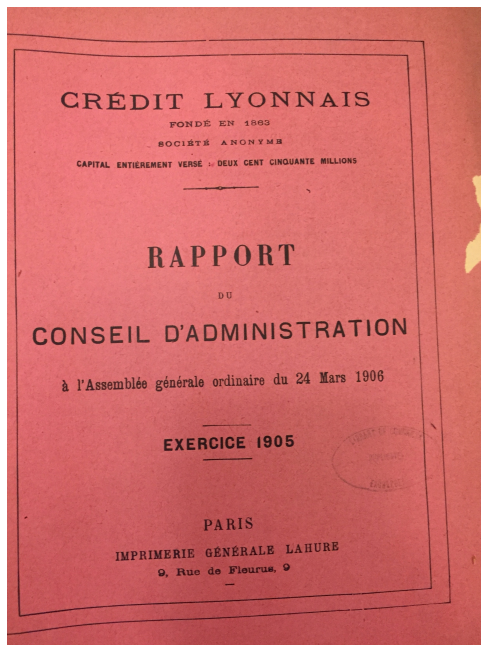
# DATA APPENDIX

Figure B.1: Historical balance sheet examples

Panel A: Canadian banks in 1900 (cropped from larger table)

NAME OF BANK NOM DE LA BANQUE.		Capital Authorized.	CAPITAL STOCK.		Amount of Ret or Reserve Fund.	Rate per cent of last Dividend Declared.	Notes in Circulation.	Balance due Dominion Government, after deducting advances for Credits, Pay-Lists, &c.	
		Capital autorisé.	Capital Subscribed.	Capital Paid Up.	Montant du fonds de réserve.	Taux pour cent du dernier dividende déclaré.	Billets en circulation.	Balance due au gouvernement (fédéral), déduction faite des avances sur crédits ouverts, bordereaux de paie, etc.	
		\$	\$	\$	\$	\$	1	2	
<b>ONTARIO.</b>									
1	Bank of Toronto	Toronto.	2,000,000	2,000,000	2,000,000	1,900,000	10	1,795,862	25,296
2	Canadian Bank of Commerce	do	6,000,000	6,000,000	6,000,000	1,250,000	7	5,605,194	397,922
3	Dominion Bank	do	3,000,000	2,831,700	2,233,574	2,233,574	10	1,864,166	24,794
4	Ontario Bank	do	1,500,000	1,385,500	1,360,338	200,000	5	1,389,679	13,673
5	Standard Bank of Canada	do	2,000,000	1,900,000	1,900,000	700,000	10	374,475	20,485
6	Imperial Bank of Canada	do	2,500,000	2,500,000	2,401,701	1,721,503	9	2,079,088	67,365
7	Traders do	do	1,500,000	1,250,000	1,251,510	150,000	6	1,149,230	—
8	Bank of Hamilton	Hamilton.	2,000,000	1,981,000	1,932,222	1,372,740	8	1,843,215	10,573
9	Bank of Ottawa	Ottawa.	2,000,000	1,994,000	1,994,180	1,606,635	9	1,524,270	21,267
10	Western Bank of Canada	Oshawa.	1,000,000	500,000	400,729	128,000	7	374,614	—
Total, Ontario.			23,500,000	21,109,000	20,634,852	11,366,438		18,724,798	880,275
<b>QUEBEC.</b>									
11	Bank of Montreal	Montreal.	12,000,000	12,000,000	12,000,000	7,000,000	10	6,257,298	2,024,955
12	Bank of British North America	do	4,500,000	4,500,000	4,500,000	1,581,000	6	2,397,855	14,052
13	Provincial Bank of Canada	do	1,000,000	873,377	743,535	Nil.	Nil.	621,624	22,510
14	Banque d'Hochelega	do	2,000,000	1,500,000	1,500,000	586,000	6	1,385,263	23,340
15	Molson's Bank	do	2,500,000	2,500,000	2,500,000	2,050,000	8	2,319,482	31,894
16	Merchants' Bank of Canada	do	6,000,000	6,000,000	6,000,000	2,000,000	7	4,114,779	246,327
17	Banque Nationale	Quebec.	1,200,000	1,200,000	1,200,000	200,000	6	1,145,314	12,622
18	Quebec Bank	do	3,000,000	2,500,000	2,500,000	700,000	6	1,931,459	21,110
19	Union Bank of Canada	do	2,000,000	2,000,000	2,000,000	500,000	6	1,669,068	5,030
20	Banque de St. Jean	St. John's.	1,000,000	500,000	262,154	10,000	6	451,416	—
21	Banque de St. Hyacinthe	St. Hyacinthe.	1,000,000	504,000	283,390	75,000	6	209,385	—
22	Eastern Townships Bank	Sherbrooke.	2,000,000	1,533,000	1,540,250	990,000	7	1,336,555	4,950
Total, Quebec.			38,656,666	30,276,753	35,544,048	16,296,000		24,285,275	2,410,566
Total, Ontario.			23,500,000	21,109,000	20,634,852	11,366,438		18,724,798	880,275
Total, Ontario and Quebec			62,656,666	57,379,753	56,179,900	27,632,488		43,008,773	3,290,831
<b>NOVA SCOTIA.</b>									
23	Bank of Nova Scotia	Halifax.	2,000,000	1,800,000	1,800,000	2,418,000	9	1,776,934	56,815
24	Royal Bank of Canada	do	3,000,000	2,000,000	2,000,000	1,700,000	7	1,833,313	317,626

Panel B: Credit Lyonnais, France, in 1905



RÉSUMÉ DU BILAN GÉNÉRAL	
ACTIF	
Espèces en Caisse et dans les Banques.	Fr. 150.000.708 98
Portefeuille	1.094.906.407 70
Avances sur garanties et Reports.	297.155.030 58
Comptes courants	568.448.807 00
Portefeuille-titres (Actions, Bons, Obligations et Rentes)	8.280.206 97
Comptes d'ordre et divers	1.342.578 84
Immeubles	35.000.000 »
TOTAL	Fr. 2.150.254.580 97
Résumé de	
Solde créancier	Fr. 34.110.630 05

**Figure B.2:** Schematic illustration of bank evolution

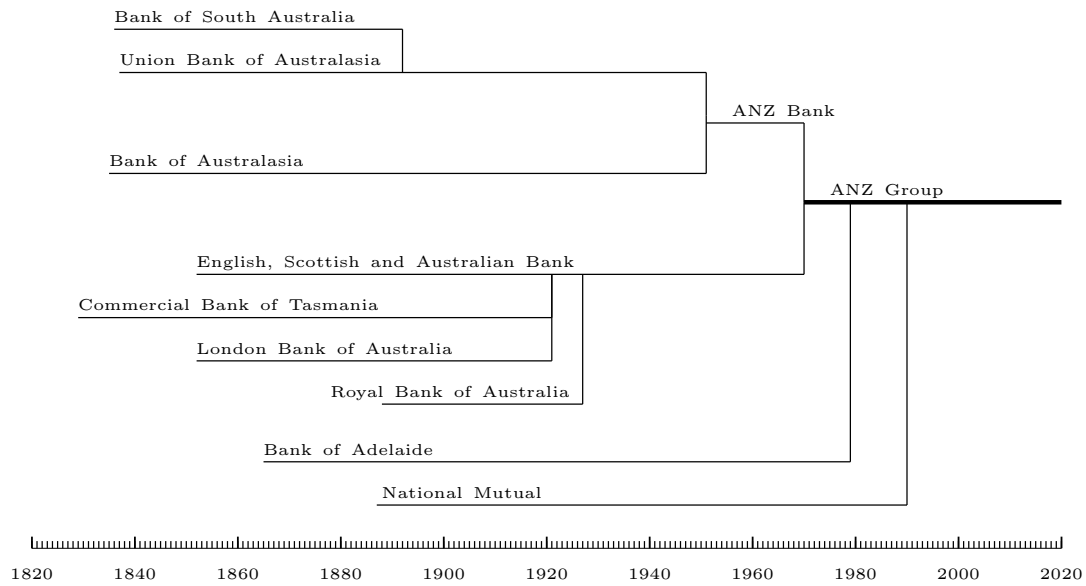
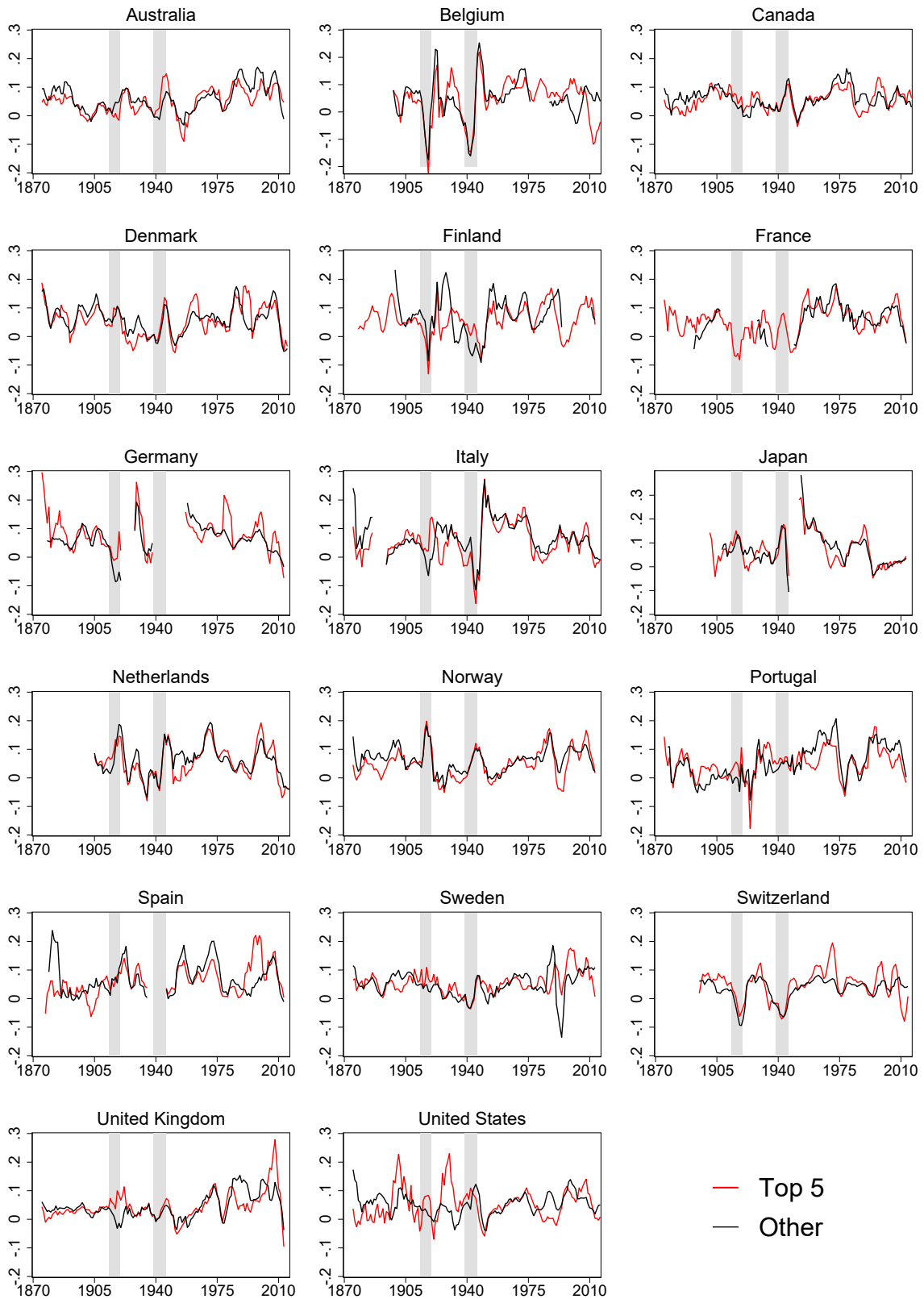


Figure B.3: Credit growth by bank size



**Figure B.4:** Ratio of total assets relative to JRST (2021)

