JST Financial Crisis Chronology

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1 Introduction

The Jordà-Schularick-Taylor Macrohistory Database is the result of an extensive data collection effort over several years. It brings together macroeconomic data that had previously been dispersed across a variety of sources. The database forms the basis of some pioneering publications of recent years, e.g., Schularick & Taylor (2013), Jordà et al. (2015), Jordà et al. (2019). An important component of the database is a banking crisis chronology for the 18 countries included in the 5th release of the database. The banking crisis variable (crisisJST) takes unity in the first year a country is experiencing a systemic banking crisis, and zero else.[*] An episode of banking distress is coded as a systemic banking crisis if it is characterized by major bank failures, banking panics, substantial losses in the banking sector, significant recapitalization, and/or significant government intervention. Importantly, this definition excludes the failures or losses of individual/small banks without systemic implications from being coded as a crisis episodes.

The following document presents short narratives and descriptions for each episode coded as a crisis in the Jordà-Schularick-Taylor Macrohistory Database. The narratives give a quick overview on the developments in the banking sector during the respective crisis year. Furthermore, each description contains extensive bibliographical information on additional sources that describe the respective events in more detail.

Section 3 shows the change to the previous version of the Macrohistory Database, i.e., how the bank crisis coding has changed. Section 4 contains a comparison of all banking crises in the Jordà-Schularick-Taylor Macrohistory Database with other databases. The fifth section discusses deviations from the coding in Baron et al. (2021) and Laeven & Valencia (2018) in greater detail.

2 Narrative Chronology

2.1 Australia

AUS-1893 The financial crisis of 1893 was preceded by years of strong credit growth and a significant increase in housing prices. From about 1880 to 1891, the ratio of bank loans to nominal gross domestic product rose from about 35 percent to over 70 percent and then plunged to about 40 percent until the year 1900 (Fisher & Kent, 1999, p. 7). Aliber & Kindleberger (2015, p. 196) emphasize that the Baring Crisis of 1890 also contributed to the aggravation. The credit expansion of the 1880s was financed with large capital inflows, especially from the UK. When the Barings Bank faced liquidity problems related to investments in Argentina, the default on these loans brought attention to all overseas securities. The following sudden stop of capital inflows to Australia resulted in financial distress (Fisher

[*] The most recent update of JST Macrohistory entailed a revision of the crisis chronology. The previous version of the chrisis chronology is also included in dataset under the label *crisisJST_old*. For details on the changes enacted in the newest release, see Section 3 of this document.

& Kent, 1999). In the first five months of 1893, 13 trading banks were forced to close their doors and had to write-off 40 percent of their initial capital in the same year.

AUS-1989 Starting in the late 1970s, the Australian government reformed the banking system and liberalized credit markets. Competition in the banking system increased and, among other things, banks were allowed to invest funds in higher risk assets. Throughout the 1980s, banks rapidly increased their exposures, and rising asset prices followed. However, when the economy slowed down in 1989, the banking system was confronted with an increasing number of non-performing loans. Two large banks had to be rescued by the government (Caprio & Klingebiel, 2003, p. 15). The ratio of current losses to the average value of banks' lending increased from nearly zero percent to about three percent during the course of 1989 (Rodgers, 2015, p. 10). Between 1990 and 1993, on average, about 12 percent of all business loans within the Australian banking system were non-performing (Rodgers, 2015, p. 13).

2.2 Belgium

BEL-1870 Buyst & Maes (2007) describe this event as a banking panic: "Frightened by the threat of war between France and Prussia the Belgian Finance Minister and the governor of the NBB[National Bank of Belgium] lost their nerves. They ordered to evacuate immediately the metal reserves out of the capital. The removal happened with so much commotion that it sparked panic among the population. People besieged the NBB's head office to demand the conversion of notes in coins. To the population's outrage, the NBB simply decided to close its counters, except for one. At the same time, the volume of discount transactions was reduced drastically." (Buyst & Maes, 2007, pp. 131-132).

BEL-1876 The collapse of a major railway corporation created distrust in the financial system, and according to Buyst & Maes (2007, pp. 135-136), this developed into a financial crisis in which several banks went bankrupt. Grossman (2010, p. 299) summarises the crisis as follows: "A substantial boom in the early 1870s, fuelled partially by the Franco-Prussian War, led to the establishment of a number of new banks. Several of these failed when the international crisis hit the Brussels Stock Exchange. A few smaller banks went into receivership, and three larger banks, Banque de Belgique, Banque de Bruxelles, and Banque Centrale Anversoise had to be reorganized."

BEL-1885 In the late 1870s, many Belgian banks started to introduce interest-bearing short-term current accounts to generate incentives for market participants to use the payment system, and as a side effect, increased the danger of illiquidity due to cash withdrawals (Buyst & Maes, 2009, p. 99). Buyst & Maes (2007, pp. 136-139) argue that this danger manifested during 1885, with many banks becoming illiquid. The Belgian central bank refused to react as a Lender of Last Resort. Financially weak banks, including Banque de Belgique, and other institutions, like Banque des Travaux Publics, failed. According to estimates, more than 20 percent of total paid-up capital in the Belgian banking sector had to be written-off.

BEL-1925 In 1925, fears of a currency devaluation led to panic deposit withdrawals and worsened the financing condition of firms and banks. The continuing devaluation of the Belgian franc during 1926 forced the Belgian government to borrow in USD in order to cover the Belgian notes and banks. Throughout 1926, the Belgian banking system became more consolidated as several banks merged.

BEL-1931 Buyst & Maes (2009, pp. 100-102) describe the crisis as follows: As a small open economy, Belgium was particularly affected by the worldwide decline in foreign demand. Belgian banks were exposed to shocks in the export industry, both as creditors and as major shareholders of export-oriented firms. The defaults and bankruptcies of a significant number of export-oriented firms forced several medium-sized banks banks to suspend payments. In addition, rumors about the failure of Banque de Bruxelles, one of the country's largest banks, led to further declines in confidence and induced withdrawals from all banks (Bernanke & James, 1991, p. 91).

BEL-1934 In March 1934, the large Belgian bank Banque Belge du Travail went bankrupt leading to a loss of confidence among the public and a first wave of deposit withdrawals. The government responded with structural reforms for the financial system, requiring universal banks to split into two entities: deposit-taking institutions and holding companies (Buyst & Maes, 2009, pp. 102-103). Despite this intervention, the deteriorating situation of Algemeene Bankvereeniging threatened to bring down Middenkredietkas, the bank of Belgium's Catholic Farmers league, which would have wiped out the savings of thousands of Belgian peasants (Mommen, 1994, pp. 23). At the end of 1934, rumors of an impending bankruptcy of Algemeene Bankvereeniging and Middenkredietkas led to further mass deposit withdrawals and as a result of a general crisis of confidence large-scale capital flight ensued (Buyst & Maes, 2009, pp. 103). A government of national unity, formed in 1935 by the vice-governor of the NBB Paul van Zeeland on request of King Leopold III, devalued the Belgian franc and established a banking supervision authority (Giddey, 2014).

BEL-1939 Reinhart & Rogoff (2009, p. 325) state, that "[t]he economy was slowly recovering until the prospects of war hampered investment decisions. As a result, foreign exchange and gold reserves diminished dramatically." Baron et al. (2019) identify a decline of bank equity prices of around 50 percent in the Belgian stock market. Two large banks, the Crédit Anversois and Caisse Générale Reports et Dépôts failed in 1939 and 1940 respectively, the latter being dragged down in part by the bankcruptcy of the Dutch banking house Mendelssohn & Cie (Giddey, 2017). Figures from the *Commission Bancaire*, Belgium's banking supervision authority, reported in Giddey (2017, p. 9) show a marked reduction between 1939 and 1940 in the total number of banks operating in Belgium.

BEL-2008 The crisis in Belgium was part of the international financial crisis that started in the United States. Two of Belgium's largest banks, Fortis and Dexia, were confronted with declining capital and increasing write-offs. Dexia and Fortis lost access to the overnight interbank market and had to turn to the Marginal Lending Facility of the Eurosystem Basel

Committee on Banking Supervision (2010). In late 2008, the Belgian operations of Fortis were nationalized with a capital injection of €4.7 billion by the Belgium government (Wiggins et al., 2014a). Dexia was supported with a capital injection of €6.4 billion and €150 billion in public guarantees under an agreement between Belgium, France, and Luxembourg (Wiggins et al., 2014b). Belgium's measures and commitment to support financial institutions amounted to 47 percent of GDP by 2010 (Stolz & Wedow, 2010, pp. 19-21).

2.3 Canada

CAN-1907 The financial panic of 1907 in Canada may have been part of the international financial panic started in the United States (Rich (1989) gives a broad discussion). Increasing volatility in the demand for money increased money market rates and made bank financing more difficult. Loss of confidence aggravated this situation. In the years 1907 and 1908, three Canadian banks failed. When the Sovereign Bank of Canada failed in 1908, the Bank of Montreal stepped in to coordinate a response by other banks (Calomiris & Haber, 2014, pp. 305-307).

2.4 Switzerland

CHE-1870 "Switzerland was highly dependent upon the French monetary and financial systems. The outbreak of the Franco-Prussian War and France's unilateral extension of maturity on commercial bills cut off Switzerland from its main sources of coins and credit" (Grossman, 2010, p. 310).

CHE-1910 Vogler (2001) writes: "[...] there was a wave of major bank collapses, particularly from 1910 to 1913 and, again, during the course of the First World War. Between 1910 and 1913, 45 local and regional banks collectively incurred losses of CHf. 112m., equivalent to the size of the Confederation's budget in 1912. Furthermore, 28 banks merged with either a cantonal or a major bank, whereas during just a decade from 1906, 85." The contemporary observer and economist Ernst Wetter analyzed the bank collapses of the period in detail. He specifically differentiates between "personal" reasons for bank collapses, e.g., failure of executives, and "factual" reasons, such as inadequate regulatory oversight and bad business policies of the affected banks. Banks had engaged in very speculative lending and financial planning in addition to having an already extremely inadequate liquidity situation. Wetter (1918) also identifies other causes in insufficient risk distribution within the banking system, which made individual banks very vulnerable to local risk, and a lack of transparency in the publication of banking business data.

CHE-1931 Zurlinden (2003) describes Switzerland as a victim of the international monetary system of the time, namely the gold standard. The economic collapse in the United States, Germany, France, and the United Kingdom decreased the external demand for Swiss industrial goods and as a result exports fell by more than 50% between 1929 and 1932. When the United Kingdom, Germany, and other countries devalued their currencies starting in 1931, the Swiss economy was confronted with a deterioration of its competitiveness. During 1931 and the following years, the number of bank bankruptcies and the losses of the whole banking system increased; stock prices of banks declined by 50 percent in 1931 alone. The Swiss "Big Banks" were especially affected: the Swiss Bank and the Banque d'Escompte Suisse were forced to turn to the government for assistance (Zurlinden, 2003, pp. 109-112). In July 1931, the Union Financière de Genève went into financial distress and was rescued by a takeover from the Comptoir d'Escompte de Geneve (Bernanke & James, 1991, p. 92).

CHE-1991 Over the course of the 1980s, real estate prices doubled in Switzerland. However, in 1991, real estate prices started to fall rapidly, resulting in estimated losses of about CHF 42 billion (roughly 8.5 percent of the total loan volume or more than 10 percent of Swiss GDP). The big banks alone wrote off CHF 30 billion or nearly 13 percent of their loan volume. Banks were confronted with problems on both sides of the balance sheet, i.e., problems to refinance existing loans and huge write-offs. The result was the disappearance of about half of the 200 regional banks. Almost all troubled banks ended up merging with stronger banks, only a single bank had to be liquidated. **Sources:** Ziegler (2004)

CHE-2008 Switzerland was affected by the international financial crisis via two channels: high exposures of the largest Swiss banks vis-a-vis the US real estate market and the worldwide economic downturn, which reduced foreign demand and therefore exports. The global banks UBS and Credit Suisse were majorly affected. Both banks had to publicly announce their losses and write-offs. The Swiss government, the Swiss National Bank, and the Swiss Federal Banking Commission announced a package of measures to stabilize the Swiss financial system, including the possibility for UBS to transfer a portfolio of illiquid assets to a fund entity managed by the SNB and a CHF 6 billion recapitalisation of UBS directed by the government (Swiss National Bank, 2009, pp. 21-22).

2.5 Germany

GER-1873 The year of the so-called "Gründerkrach". Technological progress towards the end of the 1860s led to an economic boom in Prussia, an increase in construction activity, and the establishment of numerous companies. With the founding of the "Kaiserreich" and victory over France, reparation payments could be used to increase money supply and reduce government debt, leading to a decline in outstanding government bonds. Stronger economic integration with the founding of the empire and the liberalization of stock corporation law reinforced the expansion and increasingly directed private capital into shares, which ultimately led to the stock market crash and banking crisis of 1873 (Brunnermeier & Schnabel, 2016, pp. 42-45). Many banks engaged in the financing process of the newly founded companies were affected and had to close their doors (Plumpe, 2012, pp. 62-67).

GER-1891 The crisis was a consequence of the Baring Crisis of 1890. The increasing role of the international gold standard led to strong capital outflows from European countries, including Germany, into the rest of the world. When the Baring Bank went into financial distress because of defaults in Argentina, many German banks were affected (Grossman, 2010, p. 307). Financial turmoil led to the bankruptcy of the bank Hirschfeld & Wolff and also revealed fraudulent behaviour and exposure to risky stocks. The fact that a well-respected bank went bankrupt as a result of fraud caused a bank run and led to the downfall of other major banks associated with questionable stock market deals (Tilly, 2013).

GER-1901 From 1894 onward, Germany experienced an economic expansion. In the late 1890s, many German banks started investing in Russian companies and strong capital inflows led to increasing prices in Russia. When prices finally fell, many Russian companies incurred heavy losses which in turn affected invested banks in Germany and Belgium (Conant, 1915, pp. 704-707). Furthermore, the bankruptcy of Leipziger Bank laid bare large-scale fraudulent behavior at a bank that had once been considered rock-solid. Managers had hidden the bank's exposure to "Trebergesellschaft", a large joint-stock company that had reported fake profits for several years (Burhop, 2008, pp. 21-27). During the following turmoil another large bank, the Dresdner Creditanstalt, went bankrupt as well. The crisis marked the end of the post-1894 economic expansion.

GER-1931 Schnabel (2004) describes the crisis as follows: Since 1925 huge capital inflows from foreign countries were used by German banks to finance a significant credit expansion. This increased the vulnerability of the German banking system because the banks used short-term debt by foreign investors to finance risky projects. When interest rates in the United States increased, foreign capital was withdrawn from Germany, increasing financial tensions in the private banking sector. When in May 1931 the recession, political uncertainty over the reparation payments and financial distress led to the bankruptcy of "Österreichische Creditanstalt", this triggered a banking panic in Germany. From June 1930 to July 1931, withdrawals led to a decline of 20 percent of domestic deposits in the most relevant German banks, while the average amount of foreign deposits declined by 30 percent in the same time (Schnabel, 2004, p. 856). Until 1932, the government assisted private banks with 910.3 Mio. Reichsmark and public banks with 62.5 Mio. Reichsmark. During this crisis, one of the big banks, 54 provincial banks, and about 400 private banks failed. Despite government assistance, bank capital declined by over 32 percent (Fischer, 2013, p. 262).

GER-2008 The banking crisis in Germany in 2008 was part of the international financial crisis which erupted in the United States after a sharp fall in real estate prices. Shin (2012) argues that German banks were strongly affected as they had a pivotal role in the intermediation process within the United States. By providing credit to the US shadow banking system, German banks bought private-label mortgage-backed securities and other structured products. The active participation in securitization led to a substantial increase of toxic assets within German bank balance sheets. Important participants of this process were mainly the "öffentlich-rechtlichen Landesbanken" (public banks), and primarily these were affected by the crisis, which made a broader government bail-out necessary. One of Germany's largest private banks, Commerzbank, needed recapitalization provided by the government. At its peak, 3.7 percent of all loans in the German banking system were non-performing. Germany's measures and commitment to support financial institutions amounted to 25 percent of GDP (based on 2008). **Sources:** Stolz & Wedow (2010), Shin (2012), Rudolph (2013), Hellwig (2017), Laeven & Valencia (2018)

2.6 Denmark

DEN-1877 This crisis is part of the broader financial turmoil of the 1870s starting with the German "Gründerkrach". Several savings banks and a few commercial banks experienced a crisis during the recession. The Danish Nationalbank had to provide extraordinary loans to banks. **Sources:** Grossman (2010, p. 301), Abildgren et al. (2011)

DEN-1885 During a wave of bankruptcies, the liquidity of the Danish banking system came under pressure. The National Bank of Denmark intervened as Lender of Last Resort (Abildgren et al., 2011, p. 6).

DEN-1908 The crisis was part of the international financial panic that started in the United States and spread to several European countries. In the years 1901 to 1906, Denmark had an economic boom in which its banks built up portfolios that were affected negatively by the panic (Hansen, 1991, p. 39). The result was the suspension of the Freeholders' Bank (Grundejerbank), followed by a run on several institutions and a serious decline in the value of bank shares. The Retailers' Bank (Detailhandlerbank) in particular suffered a drop of twenty points in its shares (Conant, 1915, pp. 300-301). "The government, Danmarks Nationalbank and a number of large private banks established a Banking Committee with a view to providing guarantees for depositors and other creditors in crisis-stricken banks. Denmark's largest savings bank is reconstructed with government help" (Abildgren et al., 2011, p. 6).

DEN-1921 During the First World War, interventions by the government increased available liquidity used by the banks to extend their investments in stocks. Despite low economic growth rates during the war, stock market prices accelerated and tripled until 1918 (Hansen, 2012, pp. 678-679). When the international deflationary crisis hit the Danish economy at the beginning of the 1920s, share prices declined significantly. A systemic banking crisis followed in which a total of 23 Danish banks had to be liquidated, restructured with government assistance, or acquired by larger banks. The largest bank of Denmark, Landmandsbank, recorded heavy losses and was recapitalized by the government (Hansen, 2012, p. 679), (Abildgren et al., 2011, p. 6).

DEN-1987 During the end of the 1970s and the beginning of the 1980s, the banking system was deregulated. In the early 1980s, higher growth rates and capital inflows into Denmark went hand in hand with rising asset prices. However, in 1987, Denmark experienced financial instability in which “a number of banks encountered difficulties, including Denmark’s ninth largest bank, Varde Bank. The government and Danmarks Nationalbank were involved in finding solutions for five distressed banks.” (Abildgren et al., 2011, (2011), p. 6) **Sources:** Vastrup (2009), Abildgren et al. (2011)

DEN-2008 The financial crisis in Denmark was part of the international financial crisis of 2008/2009. Nonetheless, the causes of the financial crisis and their depth lies both abroad and in the adverse development of the Danish economic and financial system during the years prior. The Committee of the Causes of the Financial Crisis (2013) concludes that rising real estate prices and the increased risk-taking of Danish banks in domestic markets were important reasons. Participation in securitization which led to a substantial increase of toxic assets within the Danish banking system was also a contributing factor. Denmark was confronted with a banking panic in which many banks had to be shut down, restructured, or acquired, including four of the 15 largest banks. At the peak of the crisis, 9.4 percent of all loans were non-performing (Laeven & Valencia, 2018). The government and the Danish central bank intervened heavily to stabilize the financial system (Abildgren et al., 2011, p. 6). Denmark’s measures and commitment to support financial institutions amounted to 23 percent of GDP (based on 2008). **Sources:** Stolz & Wedow (2010, p. 20), Abildgren et al. (2011), Committee of the Causes of the Financial Crisis (2013), Laeven & Valencia (2018)

2.7 Spain

ESP-1883 The crisis at the beginning of the 1880s is associated with the gold fever that led to a strong equity price boom and higher capital inflows. Economic turmoil in Spain and the economic crisis in France after the stock market crash of 1882 led to a sudden reversal of capital flows, and the reserve losses experienced by the Spanish central bank motivated its decision to abandon the gold standard temporarily (Martín-Aceña & Pons, 2010, p. 13), (Betrán & Pons, 2013, pp. 18-19). Between 1882 and 1884, twenty banks disappeared, most of which were from Barcelona. Martín-Aceña & Pons (2010) argue that this collapse of many systemic banks in the big cities of Spain triggered a decline of loan supply and was a leading factor of the stagnation in the following years.

ESP-1890 The crisis was a consequence of the Baring Crisis of 1890. The increasing role of the international gold standard led to strong capital outflows from European countries into the rest of the world. When Baring Bank went into financial distress because of defaults in Argentina, it created a financial crisis in which many Spanish securities on domestic and foreign security markets were affected (Betrán & Pons, 2013, pp. 19-20). Martín-Aceña & Pons (2010) describe the sharp decline of stock prices as the trigger of rising liquidity and cash ratios and declining loan supply and investments by banks. The consequence was a liquidation of two banks and damage to the financial structure that continued to burden banks many years after the event.

ESP-1913 This crisis is characterized by financial distress of the Banco Hispano Americano, a large institution, which had direct consequences for other banks and put a halt to the involvement of this bank in Latin America. It was the first time that the Bank of Spain intervened as a Lender of Last Resort to prevent the situation from worsening. Betrán et al. (2012, p. 422) identified a decline of real bank stock prices by 44 percent between 1910 and 1916. **Sources:** Betrán et al. (2012), Betrán et al. (2014, pp. 42-44)

ESP-1920 During the First World War, the Spanish banking system had expanded its links with many industries. The use of resources during wartime had led banks to extend credit for capital-intensive investments and increasingly take property as collateral. The end of the war changed the economic needs of society, and many production capacities remained idle, which had negative consequences on financial intermediaries who granted the loans. Ultimately, in 1920, turmoil began in the Spanish financial system when Bank of Barcelona failed. A banking panic followed, necessitating cautious intervention by the Bank of Spain to assist the banking system by providing liquidity (Martín-Aceña & Pons, 2010, pp. 21-22). Stock returns from 1919 to 1920 amounted to -13 percent (Betrán et al., 2012, p. 422).

ESP-1924 Since the crisis of 1920, the banking system had not been able to recover and still contained many bad loans and devalued stocks. Policymakers were unable to reform the existing institutional framework. When a recession hit the Spanish economy in 1924, a bank run started and destabilized the banking system even further. Martín-Aceña & Pons (2010) demonstrate the impact on the ratio of bank deposits to currency which began to decline in 1924. The Banco de la Union Mineira and the Banco Vasca, together with eight other banks, went bankrupt (Betrán et al., 2012, p. 423).

ESP-1931 On the one hand, the crisis followed strong domestic political upheavals and, on the other hand, the crisis was the consequence of the global economic crisis that started in the United States. Rising political uncertainty, economic crises in the neighboring countries, and financial distress started a banking panic in Spain. Contrary to many other nations, Spain was able to contain the damage through cooperation between the Spanish central bank, which worked as a Lender of Last Resort, and the Spanish government. During this panic, three banks failed and stock prices declined significantly. Four affected Spanish banks failed throughout the following years (Betrán et al., 2012, p. 423). **Sources:** Martín-Aceña & Pons (2010, pp. 25-26), Betrán et al. (2012)

ESP-1977 Martín-Aceña & Pons (2010) describe the causes of the crisis as a combination of several exogenous and endogenous shocks, like the oil price shocks of the 1970s, deterioration of the competitiveness of the Spanish industrial sector and high risk-taking by banks after credit market liberalizations during the 1960s. About 52 banks, representing 20 percent of the volume of deposits, struggled with solvency problems and had to be saved through interventions of the government and the central bank. Many banks were restructured and sold to other banks, or they were merged to prevent massive losses in the banking system. At its peak, 5.8 percent of all loans were non-performing (Laeven & Valencia, 2018). An intense period of financial restructuring followed the resolution of the banking crisis. **Sources:** Martín-Aceña & Pons (2010, pp. 37-41), Laeven & Valencia (2018)

ESP-2008 The Spanish financial crisis happened parallel to the financial crisis in the United States. The introduction of the Euro as a common European currency led to a convergence of interest rates. The following years were characterized by higher economic growth rates, increasing real estate prices and large current account deficits vis-à-vis other Eurozone countries. When the real estate prices started to decline, the Spanish banking system was confronted with high write-offs. Betrán et al. (2012) identify a banking crisis and emphasize that the number of savings banks dropped from 45 to 2 banks. At its peak, 5.8 percent of all loans were non-performing (Laeven & Valencia, 2018). The government intervened with a vast bank recapitalization program and the European Central Bank acted as Lender of Last Resort. Spain's measures and commitment to support financial institutions amounted to 23 percent of GDP (based on 2008). **Sources:** Stolz & Wedow (2010, p. 20), Betrán et al. (2012), Martín-Aceña (2014), Aliber & Kindleberger (2015), Laeven & Valencia (2018)

2.8 Finland

FIN-1877 The end of the Franco-Prussian War was followed by an increase in European demand for Finnish forest products. The resulting rise in asset prices increased the exposure of Finnish banks and took on increasingly speculative traits. As a result, the fall in prices for forest products led to high write-offs at the concerned banks. The bankruptcy of a Russian subsidiary of the largest Finnish bank, Pohjoismaiden Osakepankki, was ultimately the catalyst for a decline in profits and spread to the banking system. Bank profitability in proportion to total assets was -1.1 percent in 1877. **Sources:** Herrala (1999)

FIN-1900 Herrala (1999) describes the crisis as follows: The Finnish Agriculture and Industry Bank, founded in 1897, had continuously based its operation on a very risk-based strategy, namely speculative investment, aggressive interest rate competition, active marketing for deposits, and even fraudulent practices. The bank was also dependent on central bank financing. When a recession started at the turn of the century, the bank got into financial distress which ultimately led to its failure and caused losses to its depositors. Financial contagion was contained through public intervention. Bank profitability in proportion to total assets was -0.4 percent in 1900.

FIN-1921 The years between 1914 and 1917 were characterized by strong inflation in Finland. As a consequence, there was a sharp decline of real economic activity. Nonetheless, during this period share prices increased and many new, small and specialized banks were established on the credit markets. At the beginning of the new decade, a sharp depreciation of the Markka hit many of those newly founded banks with high exposures and started a banking crisis. It also ended the economic recovery in progress since the end of the civil war. Bank mergers were employed to stabilize the banking system, but still, high losses in the financial system and write-offs for creditors and depositors occurred. Bank profitability in proportion to total assets was -0.2 percent in 1921. **Sources:** Herrala (1999)

FIN-1931 Between 1925 and 1928, economic recovery was accompanied by an increase in speculative activity of financial institutions. A poor harvest in 1928 marked the end of the economic expansion and started a recession. However, the real problems in the financial system became apparent at the beginning of the world economic crisis of 1930, which had a sharp adverse effect on Finnish exports and deepened the ongoing recession. Herrala (1999) describes the events of 1931 as a capital market failure after the domestic and foreign shocks, which led to a decline in asset prices and affected several banks. The consequence was a significant decline in bank branches in Finland. Bank profitability in proportion to total assets was -0.5 percent in 1931. **Sources:** Herrala (1999)

FIN-1991 Financial liberalization and a fixed exchange rate at the beginning of the 1980s were catalysts of strong international capital flows into Finland. Jonung et al. (2009a) emphasize that the credit dynamics in Finland changed significantly with private households taking high amounts of debt to finance a sharp increase in consumption and investments. Between 1989 and 1991, the Finnish financial system and economy witnessed rising interest rates and the collapse of the Soviet Union as one of the leading trading partners. In the following years, Finland experienced significant write-offs within its financial system and an increase of non-performing loans up to 13 percent of all loans. Three banks were taken over by the state Skopbank, the Savings Bank of Finland and the STS-bank and the remainder of the banking system had become dependent on government support (Englund & Vihriälä, 2009, pp. 91-93). Recapitalization costs of the government amounted to 8.63 percent of GDP.

2.9 France

FRA-1882 During the 1870s, private investors and banks increased their exposures to the Paris Bourse and their willingness to take risks. Investors used loans to finance their share purchases with the expectation to benefit from rising stock prices. When interest rates in Europe started to increase, stock prices began to fall rapidly, leading to high write-offs, especially on the forward markets. This stock price deterioration primarily hit the Union Générale which experienced intense financial distress. Furthermore, the resulting losses created a banking panic that had to be contained through loan support by the Bank of France and several private banks. Seven stockbrokers at the Paris Bourse and nine stockbrokers at the Lyon Bourse, together with the entire Lyon Bourse, failed. Furthermore, runs and subsequent failures of the Banque de Lyon and Union Générale burdened the financial system. **Sources:** White (2007), Brunnermeier & Schnabel (2016)

FRA-1889 Hautcoeur et al. (2014) describe the crisis as follows: At the center of development was the copper industrialist Secrètan, with the aim of building a global copper monopoly. Secrètan's company, the Société Industrielle et Commerciale des Métaux (SdM), began acquiring a large number of copper mine shares. Through future contracts, SdM was able to increase the copper price, thereby increasing its value significantly. This strategy was made possible by the extensive provision of loans from commercial and investment banks and even more extensive by the provision of (off-balance sheet) guarantees for the risks. However, after copper prices plummeted dramatically, massive losses of participating banks resulted. The Comptoir d'Escompte (CdE), which was classified by observers as systemically relevant, was on the verge of insolvency. The Bank of France reacted with the creation of a "lifeboat" to support the CdE and provided a loan of 100 million francs to prevent a potential banking panic.

FRA-1930 This crisis of France is part of the world economic crisis started in the United States in 1929. From 1930 till 1936 France experienced stagnating industrial production, falling prices, rising unemployment and deteriorating competitiveness of their firms due to the withdrawal of many countries from the international gold standard while France remained within the gold standard till 1936 (Sauvy, 1969). Grossman (2010, p. 314) summarizes, "[f]ailure of local banks, such as Banque Adam, Oustric Group, Banque Renauld, Charpenay, Veuve Guérin; a regional bank, Banque d'Alsace-Lorraine; and the national Banque Nationale de Crédit (1930-1931). A major investment bank, Banque de l'Union Parisinee (1932), was rescued by the Bank of France working with Paris banks". In the following years, further bank failures, bank runs and increased losses within the banking system occurred (Bernanke & James, 1991, pp. 51-53).

FRA-2008 The financial crisis in France was part of the international financial crisis that started in the United States. French banks were exposed to the US real estate market (Shin, 2012). When real estate prices in the United States and Europe started to decline, the consequences were write-offs and losses. The BNP Paribas stood in the focus of public attention after the announcements of its losses. France introduced guarantees of about € 360 billion for French credit institutions and provided a € 55 billion guarantee for Dexia as part of an agreement with Belgium and Luxembourg. At its peak, 4.5 percent of all loans in the French banking system were non-performing. These measures and commitment to support financial institutions amounted to 18 percent of GDP (based on 2008). **Sources:** Stolz & Wedow (2010, pp. 19-20), Shin (2012), Cecchetti & Schoenholtz (2017), Laeven & Valencia (2018)

2.10 United Kingdom

GBR-1890 The event of 1890 is known as the Baring Crisis. During the 1880s, huge capital flows from many European countries, especially Britain, flowed into Argentina. Although the funds were used to modernize the Argentinian economy and infrastructure, the investment took on increasingly speculative traits. The British bank Baring Brothers and Co., which underwrote most of Argentina's debt issues, was at the center of these developments. In

1890, Argentina was confronted with high public debt and economic and banking problems which reduced foreign trust in Argentinian securities and ultimately led to the default of those loans. The default created a global financial panic, with many banks trying to sell off distressed securities. However, fire sales of those assets led to further destabilization of affected banks. The Baring Bank had to accept high losses, leading to the threat of collapse of the British financial system. To prevent contagion effects, the Bank of England, the Bank of France, and the Bank of Russia, together with several British private investors, created a rescue fund to save the institution. Further effects on the British economy were manageable. **Sources:** Paolera & Taylor (2001), Mitchener & Weidenmier (2008)

GBR-1974 This event is referred to as the "Secondary Banking Crisis". During the 1960s many new financial intermediaries arose. Contrary to the "primary" banks, many new secondary banks worked as intermediaries on the wholesale funding market and also tried, among other things, to increase market shares in property and consumer loans. In 1970, the government implemented a growth strategy that consisted of moderate deregulation of banks and an increase in competition between financial intermediaries. Furthermore, it focused on expansive monetary policy. This strategy was accompanied by a credit boom and a boom in several property markets with rising share prices. The secondary banks especially tended to finance long-term loans with very short-term liquidity. When inflation started to increase in 1973, asset prices began to fall, and the secondary banks faced problems in refinancing their existing loans. The Bank of England and the government intervened vastly to protect the primary banks from financial contagion and huge write-offs of the secondary banks. A "lifeboat" with a volume of 1,2 billion pounds was created that provided emergency loans to 24 distressed secondary banks. Of a further 26 distressed secondary banks that did not receive support, eight collapsed, and most of the others were merged. **Sources:** Reid (1982)

GBR-1991 During the 1980s, the British government pushed for liberalization of the British banking system and capital markets. Balluck et al. (2016) emphasize the sharp increase of mortgage lending and private household debt that went along with lower lending standards. In addition to these developments, the United Kingdom joined the European Currency System in 1990, which obliged a fixed exchange rate to the Deutschmark. When the German reunification caused an increase in interest rates, the UK was challenged with speculative attacks on the exchange rate and losses within the banking system due to defaulting loans. Many banks had funding problems, and the danger of financial contagion led to an intervention by the Bank of England. The crisis led to the failure of 25 small banks and write-offs of about 2 percent of total loans.

GBR-2007 The financial crisis in Great Britain was not only part of the international economic crisis but also had similarities with the developments in the United States. Banks in the United Kingdom had essential parts of their business model concentrated on real estate markets. Comparable to the United States, banks in the United Kingdom used securitization, and rising dependency on short-term wholesale funding markets became normality. From 1997 to 2007, the UK real estate prices increased significantly and started declining in the middle of 2007, thereby inducing losses in the banking system. Consequences included financial contagion effects and a run on Northern Rock. The government and the Bank of England reacted with sizeable intervention: Nationalization of Northern Rock and guarantees on short- to medium-term bank debt. The UK's measures and commitment to support financial institutions amounted to 25 percent of GDP (based on 2008). **Sources:** Barrell & Davis (2008), Shin (2009), Stolz & Wedow (2010)

2.11 Ireland

IRE-2008 The Irish financial crisis of 2008 was preceded by a massive credit expansion with non-financial lending more than tripling from its level in 1997 (Kelly, 2009). Banks were financing a property bubble that came to a halt in 2007 when financial sector stocks began to trend downwards (Centonze, 2014). In 2008, Irish banks which had borrow heavily on international markets, took a hit from short-term interest rates on international interbank markets (Honohan, 2019, p. 106). This liquidity squeeze aggravating problems on the asset side of bank balance sheets led to a steep fall in the stock prices for Ireland's three largest banks (Anglo Irish, Bank of Ireland, AIB). By March 2009, the stock price of Allied Irish Bank, the biggest among the three, had dropped down to €0.28 from its peak €23.95 in February 2007 (Centonze, 2014). The Irish government nationalized Anglo Irish Bank in January 2009, and injected equity capital into AIB and Bank of Ireland, in addition to loans from the ECB that amounted to €17 Billion and 34 € Billion respectively by August 2009 (Kelly, 2009).

2.12 Italy

ITA-1873 In the late 1860s, an increase of liquidity in the economy expanded the possibilities of Italian banks to grant loans. The banks participated in the financing of railroads and other businesses. However, the "Gründerkrach" in Germany and the end of the US railroad boom spread to different European countries and affected Italian banks. While Bartoletto et al. (2018, pp. 13-14) argue that the issuing banks were especially hit, Gigliobianco & Giordano (2010, p. 13) emphasize that private bankers and saving and cooperative banks took losses. **Sources:** Grossman (2010, p. 307), Gigliobianco & Giordano (2010), Bartoletto et al. (2018)

ITA-1887 In an environment of a regulatory "vacuum" and an expansionary monetary stance, Italian banks started to grant real estate credit. Exposures and real estate prices increased. However, in 1887 real estate prices started to decline and involved banks incurred losses. The situation exacerbated through a trade war with France. "By the late 1880s capital inflow had dried up and then reversed. Banks continued to suffer from a sharp decline in real estate prices and the increase in nonperforming loans." (Bartoletto et al., 2018, p. 8) The Banca Tiberiana and the Banco di Sconto e Sete failed. Based on estimations, nonperforming loans increased from 1 to 8 percent for commercial banks till 1891 (Fratianni &

Spinelli, 1997, p. 88).

ITA-1893 "In the 1880s, increasing demand for industrial and residential real estate financing gained momentum. The former stemmed from the country's industrial strategy. [...], a period of wild speculation in land development and construction, which relied for the most part on short-term bank credit, quickly generated an excess supply, with a subsequent drop in prices and an increase in failures of real estate companies and banks." (Fratianni & Spinelli, 1997, p. 87) The result was a banking crisis in which the authorities pressured the banks - despite their own losses - to support failing commercial banks. Problems in solving the crisis of 1887 sustainably ultimately led to the failure of Banca Romana, Credito Mobiliare, and Banca Generale. As a result of this financial crisis, the banking system was reorganized and four troubled banks were merged to create the Bank of Italy (Toniolo, 1995, p. 297). **Sources:** Toniolo (1995), Fratianni & Spinelli (1997), Grossman (2010)

ITA-1907 By the end of 1906, rising interest rates had already slowed down dynamics in Italian stock markets. In 1907, mis-speculation of several relevant US financiers led to a financial panic, affecting several European countries as well. As a reaction, Italian banks reduced their exposure to the stock market leading to a decline in equity prices. Despite interventions of the Bank of Italy, declines in equity prices generated the fear of a possible credit crunch, and rising deposit withdrawals weakened the liquidity position of the banking system. One of the main universal banks, the Società Bancaria Italiana, was on the verge of bankruptcy. The crisis was contained through the first huge-scale intervention by the Bank of Italy. **Sources:** Gigliobianco et al. (2009), Bartoletto et al. (2018, pp. 16-17)

ITA-1921 At the center of this crisis was the Banca Italiana di Sconto, which granted a substantial part of its loans to the war-related industry. Private or public support came too late, making liquidation inevitable. At the same time, the Banco di Roma suffered enormous losses of deposits and posed a risk to the economy as a whole. However, the bank was rescued with public funds. From 1919 till 1922, the ratio of bank assets to GDP declined from 0.307 to 0.273 and the ratio of bank assets to total assets fell from 0.624 to 0.467.

ITA-1930 Italy was affected by the international financial crisis in 1930, which started in the United States at the end of 1929. Italy's membership in the international gold standard is described as one of the main reasons for the substantial capital outflows and the starting deflation. In December 1930, a deposit withdrawal hit the three largest Italian banks of the time. In 1931, the government started a vast and secret intervention to stabilize the most important Italian banks. Toniolo (1995, pp. 307-308) emphasizes that the broad intervention was carried out with discretion such that the Italian public did not realize the deepness of this crisis. **Sources:** Bernanke & James (1991), Toniolo (1995), Gigliobianco & Giordano (2010)

ITA-1935 Following a brief period of recovery in credit aggregates after the crisis of 1930/1931, there was a sharp contraction in loans in 1935. Major bankruptcies of Italian banks were prevented by interventions of the Bank of Italy and the Italian government. Bernanke & James (1991, p. 53) emphasize the sharp decline in deposits, and point to the invasion of Abyssinia as a reason for the problems. **Sources:** Bernanke & James (1991), Bartoletto et al. (2018, pp. 10-11)

ITA-1990 Bartoletto et al. (2018) argue that the Italian banking system had already several different structural problems when external shocks, like the crisis of the European Monetary System and political upheavals, further destabilized the Italian banking system. A substantial increase in interest rates due to German reunification provoked speculative attacks against the Italian currency that led to Italy's withdrawal from the European Monetary System. The ratio of non-performing loans to the aggregate loan volume rose to 5.7 percent in 1993 and 7.9 percent in 1995 in the center-north banking system and to 10.2 percent (1993) and 25.4 (1995) percent in the southern banking system. During the 1990-94 period, 58 banks (accounting for 11 percent of lending) were merged with other institutions (Caprio & Klingebiel, 2003, p. 15). **Sources:** Fratianni & Spinelli (1997), Caprio & Klingebiel (2003), Bartoletto et al. (2018, pp. 11-12)

ITA-2008 Italy was not directly affected by the international financial crisis due to the low exposures of its banks in complex financial products. Nonetheless, the banks were confronted with the falling level of international confidence and an abrupt stop of international capital flows. The Italian government put a recapitalization program in place to stabilize sound banks and this was used by Banco Popolare Società Cooperativa for an overall amount of 1.45 billion € (European Commission, 2009). In September 2008, about 18 percent of all loans in the Italian banking system were non-performing. **Sources:** European Commission (2009), Bank of Italy (2010, pp. 141-145), Laeven & Valencia (2018)

2.13 Japan

JPN-1871 In 1871, the government of Japan declared that it would adopt the gold standard and introduced the yen as the new unit of account. It issued gold coins for general use and silver coins for international trade. Grossman (2010, p. 308) argues that this reform led to the failure of nine out of ten exchange companies, precursors of banks that were established to provide banking services.

JPN-1890 During the mid-1880s the Tokyo Stock Exchange became an essential marketplace for share trading. Tamaki (1995, p. 66) highlights the fact, that many corporations - especially corporations listed on the stock exchange - had borrowed large amounts of capital from banks. When in autumn of 1889 a bad harvest brought large pecuniary demands, a banking panic occurred. The newly founded Bank of Japan had to intervene as a Lender of Last Resort.

JPN-1901 During the middle of the 1890s, many banks started to concentrate their business on financing the long-term industrial development of the country. The number of banks sharply increased from about 500 to about 2500. A significant change was the introduction of a legal framework for commercial banking in 1893. The crisis of 1901 is described by Okazaki & Yokoyama (2002, 3-4) as a financial (banking) panic and at the same time marks the peak of the boom of newly founded banks. The panic led many banks to fail and reversed the trend in the number of operating banks. **Sources:** Tamaki (1995), Okazaki & Yokoyama (2002)

JPN-1907 Payne & Rodgers (2014) identify the trigger as economic shocks to mining in Japan. The shocks were a riot of workers and an adverse demand shock from the United States reducing the demand for natural resources. The economic problems of the mines harmed the respective regions and led to bank runs. The first bank run started in February 1907 at the Nagoya Bank, which was supported with 2.5 million Yen from the government. During the following months, bank runs and suspensions hit several banks in Tokyo and other areas, including the One Hundred Thirty-Eight Bank. During the first half of 1908, 42 banks were affected by runs and 23 banks suspended. In response, the government sharply increased supporting loans to banks. **Sources:** Inoue & Yabushita (1993), Payne & Rodgers (2014)

JPN-1920 The prelude to this crisis was the recession that started in Japan in 1919 after the end of the First World War. The Japanese wartime boom ended with sharp declines in exports. The resulting current account deficits put pressure on the Bank of Japan to raise interest rates in late 1919. However, interest rate increases weighed on the banking system and led to the Japanese "Black Monday" when the markets for securities and commodities collapsed. The consequences were the loss of equity of large banks, financial contagion effects and bank runs. Between April and July 1920, 57 bank head offices and 102 branch offices were affected by runs and 21 banks were forced to close temporarily. The Bank of Japan supplied emergency loans to those banks which required reserves to sustain deposit withdrawals amounting to ¥85.33 million (Tamaki, 1995, p. 141). Tamaki (1995, p. 141) reports that the Bank of Japan in particular blamed risky lending practices and the issuance of non-transparent securities.

JPN-1927 In September 1923, large parts of Japan were hit by the Great Kanto Earthquake which hurt the Japanese financial system and damaged both their financial assets and real capital. The government was not able to solve these problems, which led to a significant increase in non-performing loans that were at the center of the 1927 crisis. Political debates in the Japanese Parliament and publications on the difficult financial situation of the Bank of Taiwan, Suzuki & Co, and Tokyo Watanabe Bank, caused a financial panic and sparked several bank runs. Tamaki (1995, pp. 151-152) lists four waves of bank bankruptcies: During the first wave, between the end of January and March, six banks including Imabari Shogyo and Fukaya Shogyo were engulfed. The second wave was triggered by the closure of Watanabe Bank and led to the failure of 11 banks, including Murai Bank and two Tokyo-based banks.

The third wave started at the beginning of April and saw the failure of four banks, with ¥8.5 million paid-in capital. The fourth wave followed directly and began with the closure of the Bank of Taiwan, the giant Fifteen Bank (so-called "Aristocratic Bank") and eleven further banks. The authorities increased loans to banks by ¥1450 million. **Sources:** Inoue & Yabushita (1993), Tamaki (1995)

JPN-1997 Sharp declines in real estate and stock prices had adverse effects on Japanese banks. In the following years, the amount of non-performing loans continuously increased. When in 1997 the economic development started to slow down, the bank Sanyo Securities failed and started a chain reaction in the financial system. Nelson & Tanaka (2014, p. 41) describe that the rising interbank market rates impeded the funding possibilities of banks and deteriorated their liquidity position. "Within the same month, Hokkaido Takushoku Bank, one of the eleven large city banks, Yamaichi Securities, the fourth largest securities firm, and Tokuyo City Bank, a regional bank, collapsed." (Nelson & Tanaka, 2014, p. 41) As a consequence of this crisis, the government undertook two rounds of capital injections: In the first round, 23 banks applied for the capital injection, including major banks, for an amount of ¥1.8 trillion (0.4% of GDP). In the second round, fifteen major banks received a capital injection of ¥7.5 trillion (1.5% of GDP) (Nelson & Tanaka, 2014, p. 42). **Sources:** Harada (2001), Nelson & Tanaka (2014)

2.14 Netherlands

NLD-1921 Grossman (2010, pp. 308-309) states that "[t]he war-related closure of money market led to rapid growth of the banking sector (1914-1920) and its increasingly close connection with industry. The downturn in 1921 led to bankruptcies of many small local banks and the intervention of the Netherlands Bank in favor of the mid-sized Bank-Associatie and Marx & Co. (1922), and the extremely large Rotterdamsche Bankvereeniging (1924)." The crisis hit no less than fifty-nine banks, and many of those affected banks failed. One conservative estimate puts the losses at 200 million florins in 1920-1922 alone (Jonker & van Zanden, 1995, p. 80).

NLD-2008 This crisis was part of the international financial crisis which started in the United States and also affected the Dutch banking system. While the European Central Bank intervened as a Lender of Last Resort, the government reacted with deposit guarantees for depositors and launched a guarantee scheme for medium-term debt of the banks to address their liquidity problems. Furthermore, the Dutch government also committed itself to provide capital support for banks, and this was utilized by ING Group, SNS Reaal and Aegon. Additionally, ABN AMRO and Fortis Netherlands were nationalized. These measures and the commitments to support financial institutions amounted to 52 percent of GDP (based on 2008). **Sources:** Kellermann (2009), Stolz & Wedow (2010, pp. 19-20)

2.15 Norway

NOR-1899 In 1895 economic activity in Norway started to increase, which can be traced back to the international economic upswing and political decision to resume the construction of railways from Oslo to other cities. These factors were the starting point of rising construction activity and speculation on land property. In the following years, real estate prices, the number of operating banks and the number of loans extended sharply increased. In 1899, the failure of Chr Christophersen, a large non-financial firm, precipitated a crash on the asset markets: Prices of dwellings fell 59 percent in Oslo 1899 - 1904 and 43 percent in Bergen 1898 - 1905. Two larger banks, Discontobanken and Industribanken, and a smaller bank, Den Nordiske Aktiebank, received considerable support from the Norges Bank, and Industribanken received support from the central government. The smaller banks Kristiania Delkrederebank, Norsk Vexel- og Landmandsbank, Christiania Privatbank, and Christiania Handelsbank were liquidated privately without intervention by either the Norges Bank or the government. **Sources:** Gerdrup (2003, pp. 8-14), Grytten & Hunnes (2010, pp. 16-17)

NOR-1922 The beginning of the First World War marked the end of the participation of Norway in the international gold standard and the end of the Scandinavian currency union. Monetary expansion by the Norwegian central bank and substantial increases in exports to the participants of the First World War resulted in rising credit and economic growth rates in Norway. Furthermore, share prices increased significantly, and many banks became more willing to finance risky stock market speculations. After the War, gold outflows and an economic downturn in Europe led to a deflationary spiral in Norway with stock market prices declining to their pre-War level and significant negative consequences for the Norwegian banking system. Over the crisis years, about 131 banks went bankrupt, were liquidated or merged, and losses reached new records. **Sources:** Gerdrup (2003, pp. 14-21), Grytten & Hunnes (2010, pp. 17-18)

NOR-1931 The crisis of Norway in 1931 was part of the world economic crisis started in 1929 in the United States. Since May 1928 Norway had re-entered the international gold standard and similar to many other European countries, this was the main reason for capital outflows which had destabilized the Norwegian banking system. However, the early exit of Norway from the gold standard community in September 1931 increased the flexibility of the Norges Bank to react. Two large commercial banks were forced to apply for protection in the form of a three-month moratorium in November-December 1931 and were granted assurance of access to unlimited liquidity provided by the Norges Bank. Several smaller banks were either liquidated or stabilized with central bank and government assistance. From 1930 to 1934, the number of operating joint-stock commercial banks declined from 151 to 120, and the number of operating Savings banks declined from 627 to 616. **Sources:** Bernanke & James (1991), Nordvik (1995), Grytten & Hunnes (2010, pp. 19-20)

NOR-1988 During the 1980s the Norwegian government followed the international trend to liberalize credit and capital markets and the whole banking system to increase competition between financial intermediaries. An increase in overall expenditure and an increase in loans went side-by-side with substantial increases in real estate prices and stock market prices from about 211 percent and 405 percent in 1980 and 1987 respectively. However, tight fiscal and monetary policy as a reaction to several foreign shocks led to falling asset prices. During the following years, several small and medium sized banks failed; furthermore, the three biggest Norwegian banks Kreditkassen, Fokus, and De Norske Bank lost large parts of their capital and were supported by the government. Losses of the commercial banks as a percentage of total assets increased from to 2 percent to over 7 percent at the beginning of the 1990s. The overall gross recapitalization costs of the government amounted 2.61 percent of GDP and the at its peak in 1991, and 16.4 percent of all loans were non-performing. **Sources:** Gerdrup (2003, pp. 21-27), Vale (2004), Grytten & Hunnes (2010, pp. 20-22), Laeven & Valencia (2018)

2.16 Portugal

PRT-1890 During the 1880s, the Portuguese government steadily increased its stock of public debt. When political problems in Brazil affected Portugal, increasing current account deficits reduced the credibility of Portugal on the international capital markets. When the “Baring Crisis” led to frozen international capital markets and reevaluation of existing assets by foreign investors, Portugal lost access to new sources of funding and its banks lost trust to the public. In 1890, Portugal’s largest bank, the Montepio Geral, witnessed the first problems and the whole banking system was affected until 1891. To counter the banking fragility, Portugal suspended the gold standard, and the Portuguese central bank intervened as a Lender of Last Resort. **Sources:** Branco et al. (2012)

PRT-1920 After the First World War, the Portuguese economy had similar problems as other European economies, namely the changes in the economic needs of its society and an accelerating inflation rate. J. Reis (1995, pp. 480-483) argues that the crisis of 1920 was a banking panic. The causes of which were shocks from the real economy and decline of trust in banks by the public.

PRT-1923 The Portuguese banking system struggled with the loss of trust from the public since the crisis of 1920. J. Reis (1995, pp. 480-482) argues that an adverse foreign demand shock combined with a tight monetary policy created a recession. During the recession, the already missing trust of the public manifested into a banking panic. While the number of operating banks increased since the crisis of 1920, the trend reversed in 1923, and the number of operating joint-stock commercial banks declined from 28 banks to 21 banks in 1925. **Sources:** J. Reis (1995)

PRT-1931 In 1930, Portugal was hit by the world economic crisis started in the United States. However, the crisis aggravated during the year 1931. The decline in international demand affected many Portuguese firms which transmitted the shock to the financial system.

Declining asset prices and write-offs caused the closure of five banks in 1932, and two of those banks - the Banco do Minho and the Banco Português e Brasileiro - were especially relevant. When the Banco Nacional Ultramarino, one of the most important Portuguese banks, was threatened by a possible failure, the Portuguese government intervened to stabilize the banking system. **Sources:** J. Reis (1995)

PRT-2008 Portugal's banks were already very large relative to the size of the Portuguese economy, and a significant part of their liabilities consisted of foreign debt. When the financial crisis started in the United States and Europe, Portugal experienced a "sudden stop" of foreign capital and losses within the important banks of the country. While the European Central Bank intervened with broad liquidity support, the Portuguese government increased the guarantees for deposits from €25,000 to €100,000 and implemented a €20 billion facility to guarantee for the liabilities of Portuguese banks. The Banco Português de Negócios was nationalized (Pereira & Wemans, 2015). Portugal's measures and commitment to support financial institutions amounted to 12 percent of GDP (based on 2008). **Sources:** Stolz & Wedow (2010, p. 20), Pereira & Wemans (2015), R. Reis (2013, pp. 172-179)

2.17 Sweden

SWE-1878 During the 1860s and 1870s, the financial and banking system of Sweden was liberalized to increase competitiveness, thus supporting the industrial development of the economy and raising the overall welfare of the Swedish population. During the economic boom of the 1870s, Swedish banks moved their focus to bonds and claims from railway companies as such assets had been categorized as safe. However, when the terms of trade deteriorated, those railway companies were confronted with losses and became unable to finance their debt service. Consequences comprised of bank runs and bank failures, including the bankruptcy of the Enskilda bank. The government intervened by creating the so-called Railroad Mortgage Fund, where banks were able to pledge their unmarketable railroad bonds. The value of the fund was SEK 23 million. This corresponded to 8-9 per cent of total public lending by commercial banks. However, affected banks only needed a third of the rescuing capital, where the main part was acquired by Stockholms Enskilda Bank. **Sources:** Knutsen & Sjögren (2009, pp. 16-20)

SWE-1907 The crisis in 1907 was part of the international financial panic started in the United States. In the years before 1907, Swedish banks borrowed funds from international capital markets to finance domestic credit. The worldwide financial panic denied the banks access to new funding which necessitated reaction by the Swedish central bank. A total of 16 banks went bankrupt or were reconstituted. The adverse effects of the crisis persisted till 1909 (Hagberg & Jonung, 2009, pp. 166-167).

SWE-1922 During the First World War, Sweden experienced an economic boom with rising stock and asset prices. High inflation rates accompanied this development. After the end of the World War, Swedish politics agreed to return to the gold standard at the pre-War parity which created a need for restrictive monetary policy. In combination with a fall in foreign demand, caused by downturns in many European countries after the war, monetary policy also initiated a sharp recession in Sweden and problems within their banking system. Many banks incurred heavy losses and 14 commercial banks were liquidated (Nordvik, 1995, pp. 453-455). The Swedish government established the Credit Bank of 1922 to support the banks. **Sources:** Nordvik (1995), Hagberg & Jonung (2009, pp. 168-169), Grossman (2010, p. 310)

SWE-1931 "The Great Depression hit the Swedish economy in late 1931. Falling exports reduced aggregate demand, employment, and industrial production. The international reserves of the Riksbank declined due to capital outflows. Sweden was forced to abandon the gold standard and allow the krona to float in September 1931, shortly after the pound left the gold standard. A policy of price stabilization was adopted. The depreciation that followed allowed Sweden to isolate itself from the international economic turmoil." (Hagberg & Jonung, 2009, p. 170). Nonetheless, serious problems within the banking system started in Sweden when the death of the important industrialist Ivan Kreuger set off a series of bankruptcies which affected banks with strong business ties, such that the government intervened to secure the banking stability. **Sources:** Hagberg & Jonung (2009, pp. 169-170)

SWE-1991 Financial liberalizations and a fixed exchange rate at the beginning of the 1980s were the starting points of strong credit growth and increasing asset prices in Sweden. Jonung et al. (2009a) emphasize that the credit dynamics in Sweden changed significantly with private households taking high amounts of loans to finance a sharp increase in consumption and investments, especially in real estate. When interest rates in Europe started to increase in 1990, asset prices dropped. Swedish bank credit losses accelerated during 1990 and 1991 to reach an annual rate of 3.5 percent of lending by the end of 1991, and 7.5 percent at the peak of the crisis in the final quarter of 1992. Over the period 1990 - 1993, accumulated losses came to a total of nearly 17 percent of lending. First signs of solvency problems caused by the loss came in 1991, at Första Sparbanken and Nordbanken. Despite a SEK 4.2 billion capital injection for Nordbanken and guarantees for Första Sparbanken in 1991, additional capital injection for Nordbanken became necessary by 1992. Gota, the largest Swedish bank, was also supported by public equity. The total payment of the government to support Swedish banks was SEK 66.4 billion (Englund & Vihriälä, 2009).

SWE-2008 The crisis in Sweden was part of the international financial crisis. Several banks in Sweden were affected by an increase in volatility in capital markets and the general loss of confidence on the inter bank markets. The Swedish central bank intervened directly to stabilize Swedish banks, by providing more liquidity in domestic and foreign currency and implementing facilities for banks to borrow Swedish Kronor at longer maturities than usual. The Swedish government increased the limit for insured deposits from SEK 250,000 to SEK 500,000 and set up guarantees for the medium-term debt of banks and mortgage institutions up to SEK 1.5 trillion. Two banks, the Kaupthing Bank Sverige and the Carnegie Investment Bank, were primarily affected and sold to private investors with government assistance (Molin, 2009, pp. 138-140). **Sources:** Molin (2009), Laeven & Valencia (2018)

2.18 United States of America

USA-1873 At the beginning of the 1870s, many investors in the United States and Europe invested heavily in US railroad bonds. One of the reasons for this investor behavior can be attributed to stable returns over many years. When stock market crashes in Europe occurred in 1873, many European investors started to sell US securities, especially the aforementioned US railroad bonds. This reaction led to a decline in bond prices and made the financing conditions of affected companies more expensive, ultimately leading to their failures. Since many US banks were the holders of securities emitted by affected firms, it initiated a banking panic. More than 40 brokerage houses (private banks) failed in September 1873 in New York, Philadelphia, and Washington D.C. One national bank and two trust companies failed in NYC. The loss of depositor confidence was confined to the savings banks all of which suffered runs. **Sources:** Tallman & Wicker (2009, pp. 12-15), Richardson & Sablik (2015), Aliber & Kindleberger (2015, pp. 195-196)

USA-1893 The crisis of 1893 is described as one of the severest financial crisis of the national banking era. The crisis was triggered by, namely the failure of many railway companies and the collapse of the price of silver which affected many mines. These shocks led to a stock market crash in NYC and created distrust against many banks. During the year 1893, vast amounts of deposits were withdrawn from many financial centers and banks in interior parts of the United States. Many banks were forced to sell assets, initiating fire sales and declines in asset prices. Once New York and other financial centers refused to allow depositors to make large withdrawals to stop further fire sales, it initiated a banking panic affecting many banks, especially those in interior parts of the country. Over 500 national banks failed. **Sources:** Carlson (2005), Tallman & Wicker (2009, pp. 15-17), Richardson & Sablik (2015)

USA-1907 Seasonal transportation of crops and international gold flows caused money market rates to rise in autumn 1907. Affected by the increasing costs of capital, the Knickerbocker Trust Company was confronted with a loss of confidence due to its risky investments. When the main banks denied Knickerbocker access for clearing, resulting in the company failing, the loss of confidence gained momentum and resulted in a banking panic against banks and other trust companies. This crisis eventually led to the establishment of the Federal Reserve. The Trust Companies operated outside of the effective regulation for clearing due to their low relevance for the payment system (Tallman & Wicker, 2009, p. 18). **Sources:** Tallman & Moen (1990), Tallman & Wicker (2009, pp. 17-20)

USA-1930 During the 1920s many banks engaged in speculation with several assets, especially stocks. From 1928 till 1929, the Federal Reserve was aiming to reduce rising asset prices driven by speculation through increases of the nominal interest rate. However, the tight monetary policy ultimately led to the stock market crash of October 1929, marking the start of the Great Depression. Friedman & Schwartz (1963) argues that over the following few years, systematic bank panics and bank runs impaired the stability of the banking system and led to a significant decline in the money supply. The first important bank run occurred in October 1930, when several banks in the South and Midwest failed, the second occurred in the spring of 1931, and the third occurred in September 1931. The instability of the financial system caused sharp declines in asset prices and reduced bank capital. During the Great Depression, over one-third of all banks failed. **Sources:** Friedman & Schwartz (1963), Eichengreen & Temin (2000), Bernanke (2000)

USA-1984 During the end of the 1970s and the beginning of the 1980s, the Federal Reserve increased the Federal Funds Rate sharply to stop the steady rise of the inflation rate. However, for many Savings & Loans Associations (S&Ls) this change in monetary policy was an adverse shock. Rising interest rates reduced the NPVs of their assets, and maturity mismatch between loans and deposits increased their costs. To support the S&Ls, the US government implemented a broad liberalization policy to improve their flexibility. Nonetheless, the increase in competitive pressure and higher risk-taking led to further declines in assets values, and many S&Ls became insolvent. The sharp fall in the oil prices in 1987 initiated declining real estate prices in several regions of the United States and aggravated the crisis to its peak (Grossman, 2010, pp. 270-271). "During 1980-94, the FSLIC and RTC managed the resolution of nearly 1300 S&Ls with over $620 billion in assets at a cost of more than $160 billion; during the same period, the FDIC managed the resolution of nearly 300 banks with assets of more than $900 billion at a cost of almost $200 billion" (Grossman, 2010, p. 272).

USA-2007 Since the beginning of the 2000s, real estate prices and rising credit growth gained momentum in the United States. Banks engaged in securitization with mortgage loans (for a detailed explanation, see Hellwig (2008)) and indirectly distributed growing risks within the whole financial system of the United States. Also noteworthy was the growing dependence on short-term wholesale market financing for many financial intermediaries. When real estate prices started to fall during the summer of 2007, many banks had to take high write-offs and a financial panic against many "shadow banks" erupted, i.e., against money market funds. The crisis reached its peak with the collapse of the investment bank Lehman Brother and the near-collapse of the American International Group (AIG). Substantial government bail-outs and liquidity assistance by the Federal Reserve were necessary to stabilize the banking system. United States measures and commitment to support financial institutions amounted to 26 percent of GDP (based on 2008). **Sources:** Hellwig (2008), Stolz & Wedow (2010), Mian & Sufi (2014), Federal Deposit Insurance Corporation (FDIC) (2017)

3 Changes to the Previous Version

The changes in the Jordà-Schularick-Taylor Macrohistory Database are limited to a recoding of specific individual years, which have attracted particular attention through the publication of Baron et al. (2021)). A total of seven years are recoded in five countries. New additions are **Belgium (1876)** and **Japan (1901)**. Excluded from the Macrohistory Database are **Germany (1907)**, **Denmark (1931)**, **Netherlands (1893)**, **Netherlands (1907)** and **Netherlands (1939)**.

3.1 Newly added crisis years

New JST Crisis	Reason
Belgium (1876)	A few smaller banks went into receivership, and the larger Banque de Belgique, Banque de Bruxelles, and Banque Centrale Anversoise had to be reorganized (Grossman, 2010, p. 299)
Japan (1901)	The crisis of 1901 is described as a banking panic that marks the climax of the banks' founding boom and led to the failure of many banks. This banking crisis encouraged Japanese policymakers to consolidate the Japanese banking system (Inoue & Yabushita (1993, pp. 391-393), Okazaki & Yokoyama (2002, pp. 3-4))

3.2 Removed crisis years

Removed JST Crisis	Reason
Germany (1907)	Borderline banking crisis
Denmark (1931)	Compared with other countries, commercial bank deposits fell only slightly during 1931; there was no general run on the banks and no suspension of payments by any commercial bank (Grossman, 2010, p. 315)
Netherlands (1893)	Borderline banking crisis
Netherlands (1907)	Borderline banking crisis
Netherlands (1939)	Due to the imminent war, some banks were affected by financial distress and the bank Mendelssohn & Co. Amsterdam collapsed. However, there is no narrative evidence that this initiated a systemic banking crisis.

4 Comparison with Different Databases

In the following section, we provide a comparison of the Jordà-Schularick-Taylor Macrohistory Database with four further international databases: the database of Bordo et al. (2001), the database of Reinhart & Rogoff (2009), the database of Laeven & Valencia (2018) and the database of Baron et al. (2021)). The table lists whether each database also identifies a banking crisis in the respective year in each country.

Reinhart & Rogoff (2009) cover the entire period between 1870 and 2010, and they distinguish between several forms of crisis. Bordo et al. (2001) cover the period between 1880 and 1997 and classify between banking crises and currency crises. Laeven & Valencia (2018) cover the period between 1970 and 2017 and set several conditions about the degree of financial distress within the banking system and the kind of public intervention. If a banking crisis fulfills half of these criteria, then its identified as "systemic" in the sense of Laeven & Valencia (2018). Baron et al. (2021) cover the whole relevant period and define "'banking distress' as bank equity declines of over 30% in a year and then separate these bank equity declines into 'panic' versus 'quiet' (non-panic) episodes based on a systematic reading of the narrative evidence for each of these episodes."(Baron et al., 2021).

Country	JST Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Baron et al. (2021)
Australia					
	1893	$\surd$	$\surd$	–	$\surd$
	1989	$\surd$	$\surd$	X	$\surd$
Belgium					
	1870	–	$\surd$	–	X
	1876	–	X	–	$\surd$
	1885	X	X	–	$\surd$ (1883)
	1925	$\surd$	$\surd$	–	X
	1931	$\surd$	$\surd$	–	$\surd$ (1929)
	1934	$\surd$	$\surd$	–	X

Notes: $\surd$ if (systemic) banking crisis identified; X if (systemic) banking crisis not identified; – if no data available; $\surd$ ("year") if banking crisis identified in "year".

Country	JST Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Baron et al. (2021)
Belgium					
	1939	$\surd$	$\surd$	–	*X*
	2008	–	$\surd$	$\surd$	$\surd$
Canada					
	1907	*X*	$\surd$ (1908)	–	$\surd$
Switzerland					
	1870	–	$\surd$	–	$\surd$
	1910	*X*	$\surd$	–	*X*
	1931	$\surd$	$\surd$	–	$\surd$
	1991	*X*	*X*	*X*	$\surd$ (1990)
	2008	–	$\surd$	$\surd$	$\surd$
Germany					
	1873	–	*X*	–	$\surd$ (1874)
	1891	*X*	*X*	–	$\surd$
	1901	$\surd$	*X*	–	$\surd$
	1931	$\surd$	$\surd$	–	$\surd$ (1930)
	2008	–	$\surd$	$\surd$	$\surd$
Denmark					
	1877	–	$\surd$	–	$\surd$
	1885	$\surd$	$\surd$	–	$\surd$
	1908	$\surd$ (1907)	$\surd$ (1907)	–	$\surd$ (1907)
	1921	$\surd$	$\surd$	–	$\surd$ (1919)

Notes: $\surd$ if (systemic) banking crisis identified; *X* if (systemic) banking crisis not identified; – if no data available; $\surd$ ("year") if banking crisis identified in "year".

Country	JST Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Baron et al. (2021)
Denmark					
	1987	$\surd$	$\surd$	X	X
	2008	–	$\surd$	$\surd$	$\surd$
Spain					
	1883	X	X	–	$\surd$ (1882)
	1890	X	X	–	$\surd$
	1913	X	X	–	X
	1920	$\surd$	$\surd$	–	$\surd$
	1924	$\surd$	$\surd$	–	$\surd$
	1931	$\surd$	$\surd$	–	$\surd$
	1977	$\surd$	$\surd$	$\surd$	$\surd$ (1975)
	2008	–	$\surd$	$\surd$	$\surd$
Finland					
	1877	–	X	–	$\surd$
	1900	$\surd$	X	–	$\surd$
	1921	$\surd$	$\surd$	–	$\surd$
	1931	$\surd$	$\surd$	–	$\surd$
	1991	$\surd$	$\surd$	$\surd$	$\surd$ (1990)
France					
	1882	$\surd$	$\surd$	–	$\surd$
	1889	$\surd$	$\surd$	–	$\surd$
	1930	$\surd$	$\surd$	–	$\surd$

Notes: $\surd$ if (systemic) banking crisis identified; X if (systemic) banking crisis not identified; – if no data available; $\surd$ ("year") if banking crisis identified in "year".

Country	JST Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Baron et al. (2021)
France					
	2008	–	$\surd$	$\surd$	$\surd$
United Kingdom					
	1890	$\surd$	$\surd$	–	$\surd$
	1974	$\surd$	$\surd$	X	$\surd$ (1973)
	1991	X	$\surd$	X	$\surd$
	2008	–	$\surd$	$\surd$	$\surd$ (2007)
Ireland					
	2008	–	–	$\surd$	$\surd$(2007)
Italy					
	1873	–	X	–	$\surd$
	1887	X	$\surd$	–	$\surd$ (1889)
	1893	$\surd$	$\surd$	–	$\surd$ (1891)
	1907	$\surd$	$\surd$	–	$\surd$
	1921	$\surd$	$\surd$	–	$\surd$
	1930	$\surd$	$\surd$	–	$\surd$
	1935	$\surd$	$\surd$	–	X
	1990	$\surd$	$\surd$	X	$\surd$ (1992)
	2008	–	X	$\surd$	$\surd$
Japan					
	1871	–	X	–	X

Notes: $\surd$ if (systemic) banking crisis identified; X if (systemic) banking crisis not identified; – if no data available; $\surd$ (“year”) if banking crisis identified in “year”.

Country	JST Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Baron et al. (2021)
Japan					
	1890	*X*	*X*	–	√
	1901	√	√	–	√
	1907	√	√	–	√
	1920	*X*	*X*	–	√
	1927	√	√	–	√
	1997	√	√	√	√
Netherlands					
	1921	√	√	–	√
	2008	–	√	√	√
Norway					
	1899	*X*	√	–	√ (1898)
	1922	√	√	–	√ (1919)
	1931	√	√	–	√
	1988	√	√	√(1991)	√ (1987)
Portugal					
	1890	*X*	√	–	√
	1920	√	√	–	√ (1921)
	1923	√	√	–	√
	1931	√	√	–	√
	2008	–	√	√	√

Notes: √ if (systemic) banking crisis identified; *X* if (systemic) banking crisis not identified; – if no data available; √ ("year") if banking crisis identified in "year".

Country	JST Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Baron et al. (2021)
Sweden					
	1878	–	$\surd$	–	$\surd$
	1907	$\surd$	$\surd$	–	$\surd$
	1922	*X*	$\surd$	–	$\surd$ (1919)
	1931	$\surd$	$\surd$	–	$\surd$ (1932)
	1991	$\surd$	$\surd$	$\surd$	$\surd$
	2008	–	*X*	$\surd$	$\surd$
USA					
	1873	–	$\surd$	–	$\surd$
	1893	$\surd$	$\surd$	–	$\surd$
	1907	$\surd$	$\surd$	–	$\surd$
	1930	$\surd$	$\surd$ (1929)	–	$\surd$
	1984	$\surd$	$\surd$	$\surd$ (1988)	$\surd$
	2007	–	$\surd$	$\surd$	$\surd$

Notes: $\surd$ if (systemic) banking crisis identified; *X* if (systemic) banking crisis not identified; – if no data available; $\surd$ ("year") if banking crisis identified in "year".

5 Deviations from other databases and reasoning

Below are tables of all banking crises that have not been coded by Baron et al. (2021) or Laeven & Valencia (2018). This section should explain the coding of these "controversial" banking crises by the Jordà-Schularick-Taylor database. Schularick & Taylor (2013, p. 1038) define a banking crisis as follows:

> In line with previous studies, we define financial crises as events during which a country's banking sector experiences bank runs, sharp increases in default rates accompanied by larges losses of capital that result in public intervention, bankruptcy, or forced merger of financial institutions

For each banking crisis, the return on bank capital for the respective crisis year is listed, together with the reasoning of why the Jordà-Schularick-Taylor database has coded the respective crisis.

5.1 Detailed comparison with Laeven & Valencia (2018)

Current JST Crisis	Reason
Australia (1989)	Ratio of current losses to the average value of banks' lending increased from nearly 0 percent to about 3 percent within 1989; non-performing business loans increased in 1989 and reached 12 percent; two large banks, the State Bank of South Australia (SBSA) and the State Bank of Victoria (STV) effectively failed and they had to rely on extraordinary government support.
Switzerland (1991)	Swiss banks incurred loan losses of about 8.5 percent of total loans or more than 10 percent of Swiss GDP; 200 banks did not survive the crisis and lost their independence; sharp increases of default rates accompanied by large losses of capital resulted in forced merger of financial institutions.
Denmark (1987)	142 banks were involved in 75 mergers and acquisitions; the Varde Bank encountered financial difficulties, and the Danish Government supported five banks; the cumulated losses over 1990-1992 were 9 percent of loans; larges losses of capital resulted in forced merger of financial institutions.
United Kingdom (1974)	Bank of England created a 1.2 billion pounds lifeboat with public and private funds; 24 secondary banks were supported, 8 secondary banks failed, and several had to merge. .
United Kingdom (1991)	The Bank of England worried about financial contagion effects and intervened by providing emergency loans to British banks; 25 banks failed until 1994 due to loan defaults and loss of capital.
Italy (1990)	58 banks, with 11 percent of lending, merged with other institutions; the ratio of non-performing loans in southern Italy increased from 10.2 to 25.4 percent from 1993 till 1996.

5.2 Crises in Laeven & Valencia (2018) but not in Macrohistory

There is no crisis in Laeven & Valencia (2018) that are not coded in Macrohistory database.

5.3 Crises in Macrohistory but not in Baron et al. (2021)

Current JST Crisis	Reason
Belgium (1870)	Sources indicate an extensive bank panic, which made it necessary to close the central bank and the bank counters (Buyst & Maes, 2007, pp. 131-132).
Belgium (1925)	Government borrowed in USD to guarantee the liabilities of the Belgian banks; merging activity between banks increased.
Belgium (1934)	The failure of the large Belgian bank, Banque du Travail provoked bank runs; government intervened actively to stabilize the banks.
Switzerland (1910)	45 local and regional banks collectively incurred losses of 112 million Swiss francs; 28 banks merged with either a cantonal or a major bank.
Denmark (1987)	We have coded the year 1987 because this date is considered the starting point of the Nordic Banking Crisis in Denmark (Abildgren et al., 2011, p. 6).
Spain (1913)	It was the first time that the Spanish central bank intervened as Lender of Last Resort, and during this period, Spanish real bank stock prices declined significantly.
Italy (1935)	The role of Government and the Bank of Italy was crucial to overcome the crisis and preventing major banks from failing.
Japan (1871)	Failure of nine out of ten exchange companies, which were precursors of banks.

5.4 Crises in Baron et al. (2021) but not in Macrohistory

Country	BVX Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Macrohistory Database
Belgium					
	1914	√	√	–	X
	Reason: Bank stock prices collapsed due to the beginning of the First World War.				
	2011	–	–	√(2008)	√(2008)
	Reason: Crisis is linked to the financial crisis of 2008.				
Canada					
	1873	–	√	–	X
	Reason: Despite a small reference in Conant (1915, p. 459), we will not code this year due to a lack of more detailed narrative evidence.				
	1920	√ (1923)	√ (1923)	–	X
	Reason: We did not find narrative evidence for banking problems during 1920 only for 1923. However, in 1923, the failure of the Home Bank, due to fraud, was notable but isolated. No panic and no public support (Grossman, 2010, p. 301).				
	1983	√	√	X	X
	Reason: No banking panic or systemic risks (Caprio & Klingebiel, 2003, p. 15).				
Switzerland					
	1919	X	√ (1921)	–	X
	Reason: We did not find any narrative evidence for a (systemic) banking crisis in Switzerland during 1919.				

Notes: √ if (systemic) banking crisis identified; *X* if (systemic) banking crisis not identified; – if no data available; √ ("year") if banking crisis identified in "year".

Country	BVX Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Macrohistory Database
Germany					
	1925	X	$\surd$	–	X
	Reason: We did not find any narrative evidence for a (systemic) banking crisis in Germany during 1925.				
Denmark					
	1992	$\surd$	$\surd$	X	X
	Reason: We have coded the year 1987 since this crisis stretched over several years (Abildgren et al., 2011, p. 6).				
	2011	–	–	X	X
	Reason: No banking panic or systemic risks.				
Spain					
	2010	–	$\surd$	$\surd$(2008)	$\surd$(2008)
	Reason: Crisis is linked to the financial crisis of 2008.				
France					
	1914	X	$\surd$	–	X
	Reason: Bank stock prices collapsed due to the beginning of the First World War.				
	1994	$\surd$	$\surd$	X	X
	Reason: Insolvency problems at Credit Lyonnais; no banking panic or systemic risks (Caprio & Klingebiel, 2003, p. 15).				
United Kingdom					
	1878	–	X	–	X
	Reason: No extensive bank failures in 1878. The business of individual banks suffered a major blow but the great majority survived the immediate pressure (Collins, 1989).				

Notes: $\surd$ if (systemic) banking crisis identified; X if (systemic) banking crisis not identified; – if no data available; $\surd$ ("year") if banking crisis identified in "year".

Country	BVX Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Macrohistory Database
United Kingdom					
	1914	X	$\surd$	–	X
	Reason: Bank stock prices collapsed due to the beginning of the First World War.				
Italy					
	1914	$\surd$	$\surd$	–	X
	Reason: Bank stock prices collapsed due to the beginning of the First World War.				
	2011	–	–	X	X
	Reason: Despite an increase in financial stress, there was no systemic crisis.				
Ireland					
	2007	–	–	$\surd$(2008)	$\surd$(2008)
	Reason: Stock prices for Irish banks started to decrease in 2007 due to increasing mortgage defaults. As part of the global liquidity crisis banks quickly collapsed in 2008.				
Japan					
	1882	X	X	–	X
	Reason: The Japanese economy was confronted with a sharp fall in the value of its paper currency and the fragmentation of its banking system. Tamaki (1995, pp. 57-63) identifies the currency system as one of the core problems.				
	1922	X	X	–	$\surd$ (1920)
	Reason: Since bank failures happened three years in a row, we define this as one systemic banking crisis.				

Notes: $\surd$ if (systemic) banking crisis identified; X if (systemic) banking crisis not identified; – if no data available; $\surd$ ("year") if banking crisis identified in "year".

Country	BVX Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Macrohistory Database
Japan					
	1923	X	√	–	X
	Reason: The Great Kanto earthquake increased the ratio of non-performing loans; however, government intervention postponed the resulting systemic crisis until 1927.				
	1990	X	X	X	X
	Reason: In 1990, bank share prices slumped sharply, but there was no systemic banking crisis or banking panic. Instead, losses accumulated slowly over the years up to 1997 (Nelson & Tanaka, 2014, pp. 37-41).				
	2001	–	√	√ (1997)	√ (1997)
	Reason: We consider this year as part of the systemic banking crisis that started already in 1997.				
Netherlands					
	1907	X	X	–	X
	Reason: Borderline banking crisis				
	1914	√	√	–	X
	Reason: Bank stock prices collapsed due to the beginning of the First World War.				
	1931	X	X	–	X
	Reason: Substantial write-downs of bank capital, but no major bank suspensions or bank holidays (Grossman, 2010, p. 316).				
Norway					
	1914	X	√	–	X
	Reason: Back stock prices collapsed due to the beginning of the First World War.				

Notes: √ if (systemic) banking crisis identified; X if (systemic) banking crisis not identified; – if no data available; √ ("year") if banking crisis identified in "year".

Country	BVX Crisis Year	Bordo et al. (2001)	Reinhart & Rogoff (2009)	Laeven & Valencia (2018)	Macrohistory Database
Portugal					
	2011	–	–	$\surd$(2008)	$\surd$(2008)
	Reason: Crisis is linked to the financial crisis of 2008.				
USA					
	1884	$\surd$	$\surd$	–	*X*
	Reason: No public support; crisis was quickly contained by private intervention.				
	1890	*X*	$\surd$	–	*X*
	Reason: Crisis was avoided by the intervention of several major private banks.				
	1990	$\surd$	$\surd$	*X*	*X*
	Reason: At the beginning of 1989 there were no more systemic dangers arising from the banking system (Laeven & Valencia, 2018).				

Notes: $\surd$ if (systemic) banking crisis identified; *X* if (systemic) banking crisis not identified; – if no data available; $\surd$ ("year") if banking crisis identified in "year".

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