

## ONLINE APPENDIX

### Banking Crises Without Panics

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#### I. Data

##### A. Narrative Crises

Table A1 reports the list of Narrative Crises, defined as the union of all banking crises from six prominent papers: Bordo et al. (2001), Caprio and Klingebiel (2003) Demirgüç-Kunt and Detragiache (2005), Laeven and Valencia (2013), Reinhart and Rogoff (2009, and online spreadsheets updated 2014)<sup>1</sup>, and Schularick and Taylor (2012, online update 2017). We use the most recent update of each paper. The years listed correspond to the starting year of the banking crisis, according to each paper. The starting year of the Narrative Crisis list (reported in column (8)) is the earliest year across all six papers. In the table, a “0” means that the source reports no banking crisis in a given year, while a blank cell means that the crisis is not covered in the sample period (i.e. no information provided either way as to whether a banking crisis occurred).

##### B. Master List of Episodes

Table A2 reports the master list of episodes, which is intended to be a very broad list of *potential* crises, many of which may not necessarily be “banking crises” according to any definition. The master list of episodes is the union of: i) the Narrative Crises list defined in Table A1, and ii) years in which the bank equity real total return index *cumulatively* declines by more than 30% relative to its previous peak.<sup>2</sup> The year of each episode, reported in column (2), is defined

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<sup>1</sup> Reinhart and Rogoff (2009) present three slightly different banking crisis lists: in their Appendix A3, Appendix A4, and online spreadsheets (we use the latest 2014 update). We generally take the union of these lists; however, when there is a small disagreement regarding the starting date of a banking crisis, we use the most recent online update.

<sup>2</sup> Note that 30% bank equity crashes in a single year (i.e. the episodes analyzed in Sections II and III of the main paper) are a subset of the 30% *cumulative* declines listed in Table A2. Thus, Table A2 is a broader list that encompasses all 30% bank equity crashes analyzed in Sections II and III.

as the first year in which the bank equity index cumulatively falls by more than 30% from its previous peak. In cases in which the bank equity index does not decline by 30% or more, the year in column (2) is the year from the Narrative Crises list. Column (3) indicates whether the episode is a Narrative Crisis. If the year from the Narrative Crisis list is different from the year defined by the bank equity decline (column (2)), that is also indicated in column (3).

Column (5) indicates the presence or absence of a banking “panic.” As stated in the main text, we define a “panic” as an episode containing any of the following criteria appearing in narrative accounts: i) severe and sudden depositor or creditor withdrawals at more than one of a country’s largest banks or more than ten smaller banks, that lead these banks to be on the verge of collapse; ii) severe and sudden strains in interbank lending markets; or iii) severe and sudden foreign-currency capital outflows from the banking sector. Column (6) records the starting month of the panic, according to narrative accounts. Column (7) records whether there is a 30% cumulative bank equity decline associated with a given episode. Column (8) indicates the presence or absence of narrative evidence of “widespread bank failures,” which is defined as the failure of a top five (by assets) bank or more than five total banks failures above the normal rate of bank failures. A “bank failure” is defined broadly to include liquidations, bankruptcies, forced mergers, substantial restructurings, nationalizations, suspensions of payment, etc. Detailed narrative evidence of panics (or their absence) and widespread bank failures (or their absence) for each episode, to support the classification in Table A2, is documented in the following link:

<https://blogs.cornell.edu/baron/documentation-bank-panics-and-failures/>

### C. A New Database of Banking Crisis Characteristics and Policy Responses

We construct a new historical database of banking crises. Our dataset is similar to that of Laeven and Valencia (2013), which covers the period 1970–2012, though we extend their database back to 1870. This database consists of all episodes on the master list (Table A2). We code the various characteristics of banking crises, including the extent of: deposit runs, bank failures, nonperforming loans, and various forms of government intervention into the banking sector like liquidity support and equity injections. Following Laeven and Valencia (2013), we define the following variables for each potential crisis in our sample:

- Decline in deposits (the peak-to-trough % decline in aggregate deposits of the banking sector, only calculated for pre-1945 banking crises, since postwar crises are generally not associated with a loss in aggregate deposits);
- Failed banks (% of total bank assets or deposits);
- Largest banks failing (1 if any of the failed banks are among the top-5 banks by assets in the country, 0 otherwise)
- NPL at peak (the peak level of non-performing loans of the banking sector or of the largest banks);
- Significant liability guarantees (1 if the central bank or government provides extraordinary guarantees of bank deposits and other short-term liabilities, 0 otherwise);
- Significant liquidity support (1 if the central bank or government provides extraordinary liquidity support to the banking sector, 0 otherwise);
- Banks nationalized (1 if the government nationalizes any major banks, 0 otherwise);
- Government equity injections (1 if the government purchases newly issued equity of major banks in an effort to recapitalize the banking sector, 0 otherwise).

The above variables are gathered for each of the crises on the master list, which involved a major data collection effort using an extensive number of primary and secondary sources. First, we started with the dataset of Laeven and Valencia (2013), which collected all the above variables for their set of crises over the period 1970-2012. To extend our dataset back further, we examined the descriptions of crises from 400+ primary and secondary sources and gathered information on the above variables, whenever it was present. We back up this new database of banking crises with extensive documentation derived from these primary and secondary sources. Some of the sources are relatively well-known, such as Reinhart and Rogoff (2009, Appendix A3), Bordo et al. (2001), Caprio and Klingebiel (2003), Kindleberger (1993), Mehrez and Kaufmann (2000), Rocha and Solomou (2015), Conant (1915), Sumner (1896), and Grossman (2010). One important primary source is the “League of Nations: Money and Banking Statistics”, volumes from 1925 to 1939, which contained data on bank failures and deposit declines in a wide range of countries during the interwar period. Many other sources are new archival primary sources that we uncovered (e.g., newspaper articles, contemporaneous accounts, bank financial reports, corporate manuals) covering individual countries and specific banking crisis episodes. We also have hundreds of secondary sources written by historians about specific crisis episodes. We plan to provide this new

database to other researchers studying historical banking crises, along with the extensive narrative documentation.

#### D. Documentation of Sources

Figure A1 provides examples of historical newspapers used to construct our bank equity return data. Table B1 provides an overview of the coverage and sources for the bank equity index total return variable. Cells with numbers indicate the number of underlying banks used to construct new bank equity return indexes. Shaded areas refer to premade bank equity indexes.

Table B2 lists in detail all the sources used to construct the *annual* equity variables: yearly bank stock prices, year bank stock dividends, yearly nonfinancial stock prices, and yearly nonfinancial stock dividends.

As noted in Table B2, some of the annual bank price return and dividend yield indexes are constructed from individual stock data that we gathered. The individual bank names, sample coverage, and the original data sources for the bank stocks used to construct these annual indexes are listed in the following document:

<https://blogs.cornell.edu/baron/individual-banks-used-for-yearly-price-and-dividend-indexes-1n23632/>

As one can see in the link above, we include banks based on which country they lend in, not the country in which their stocks trade. Thus, for an “overseas bank” like the Anglo-Argentine Bank, it is considered an Argentinian bank, not a U.K. bank.

Table B3 lists in detail all the sources used to construct the *monthly* equity and credit spread variables: monthly bank stock returns, monthly nonfinancial stock returns, monthly bank credit spreads, and monthly corporate credit spreads. As noted in Table B3, some of the monthly data is constructed from individual securities from banks or nonfinancial firms. The banks’ and nonfinancials’ company names, sample coverage, and the original data sources used to construct these indexes are listed in the following document:

<https://blogs.cornell.edu/baron/individual-stocks-and-bonds-for-monthly-data-1phvomt/>

Table B4 lists in detail all the sources used to construct the yearly macroeconomic variables, such as bank credit, nominal GDP, inflation, unemployment, and other variables.

## II. Validation

To help validate bank equity returns as an informative measure of banking crises, we show that bank equity has a better signal-to-noise ratio than other financial and macroeconomic variables, in terms of identifying Narrative Crises in real time. In other words, bank equity declines, compared to a host of other indicators, most closely coincide with the onset of Narrative Crises. Later, in Appendix Section IV, as another form of validation, we show that, conditional on a Narrative Crisis episode, the magnitude of the peak-to-trough bank equity decline is correlated with the economic severity of banking crises and many of the characteristics and policy responses commonly associated with banking crises (e.g., deposit runs, bank failures, non-performing loans).

### A. Bank Equity Provides the Best Real Time Signal of a Banking Crisis.

Using receiver operating characteristic (ROC) analysis, a standard tool for assessing classification performance, we find that bank equity returns provide the best real time signal of narrative banking crisis relative to a host of other variables, including nonfinancial equity returns, credit spreads, and macroeconomic conditions. To be clear, the goal of this analysis not *predicting* banking crises, but simply asking which variable best *coincides* with banking crises identified from existing classifications.

ROC curves are plotted in Figure A2. A ROC curve is a simple tool that allows one to assess the signal-to-noise ratio of bank equity in identifying Narrative Crises in real time. For a given variable, say bank equity returns, ROC analysis works by classifying observations into “banking crises” or “non-banking crises” using a given threshold  $X$  (e.g., a more than -30% decline in bank equity). By using the Narrative Crises as our “true” list of banking crises, ROC analysis plots the “true positive” rate against the “false positive” rate using this classification threshold  $X$ .<sup>3</sup> Then, by varying the threshold  $X$  across *all possible thresholds*, it produces the full ROC curve. For a given classifying variable, a higher value of the ROC curve indicates a better classifying variable, as it implies a higher “true positive rate” for a given “false positive” rate. It is typical in this literature to use the area under the curve (AUC) as a summary measure of the performance of

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<sup>3</sup> We use the Narrative Crisis list as the set of “true” banking crises for ROC analysis, simply because it is a natural starting point from which to evaluate the informativeness of bank equity. We do not use the BVX Crisis List because it incorporates information from bank equity and might give bank equity returns an unfair advantage in picking up these crises.

the classifying variable. Note that the 45-degree line represents the benchmark uninformative classifier for a variable having no information content, which has an AUC of 0.50.

Panel A compares the ROC curve constructed from bank equity returns with ROC curves constructed using other equity market variables, while Panels B and C perform the comparison with credit market and macroeconomic variables. Each panel uses the sample for which all variables are non-missing. The bank equity ROC curve therefore varies across panels.

All the panels in Figure A2 suggest that bank equity returns provide the best real time signal of Narrative Crises. Panel A, which compares bank equity to returns on nonfinancial equity, broad market equity, and bank minus nonfinancial equity, shows that bank equity has the highest ROC curve and therefore the highest area under the curve ( $AUC = 0.71$ ) and thus the highest signal-to-noise ratio. Panel B shows that bank equity also provides a better signal of a crisis compared to bank credit spreads and corporate credit spreads. Bank credit spreads provide the next best signal of a Narrative Crisis after bank equity, with an AUC of 0.63 (compared to 0.69 for bank equity on this sample).<sup>4</sup> Finally, Panel C repeats the ROC analysis for several macroeconomic variables, showing that bank equity returns provide a more accurate real time signal of a Narrative Crisis than the increase in the unemployment rate, the decline in GDP growth, and future credit contraction from  $t$  to  $t+5$ .<sup>5</sup> Adverse changes in macroeconomic conditions are not as useful for detecting Narrative Crises because they frequently also occur during “normal” recessions, thus generating many “false positives” and a lower signal-to-noise ratio.

## B. Distribution of Bank and Nonfinancial Equity Returns

Figure A3 presents histograms of annual bank and nonfinancial equity real total returns during Narrative Crisis years. For comparison, we also present the histogram during other years (“No crisis”). The figure shows that the bank equity return distribution for Narrative Crisis years relative to non-crisis years is shifted further left and more left-skewed. These patterns are qualitatively similar but quantitatively weaker for the nonfinancial equity return distribution.

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<sup>4</sup> The ROC curve for corporate credit spreads in Figure A2 uses the *level* of corporate credit spreads. The diagnostic performance of corporate credit spreads is similar, albeit slightly weaker, using the change in the spread or the spread relative to its five-year moving average. We should note that we only have credit spreads for about one-third of our overall sample.

<sup>5</sup> Boyd et al. (2019) use bank credit contraction as their definition of a “systemic bank shock.”

### III. Robustness Analysis

#### A. Bank Equity and Subsequent Macroeconomic Outcomes: Robustness to Alternative Specifications

We start with Table A3, which simply restates the estimates from Figure II (the impact of bank equity and nonfinancial equity returns on real GDP and bank credit-to-GDP) but in table form and at the three-year horizon.

The following analysis shows that the results in Figure II are robust to a variety of other specifications. As in Figure II, these impulse responses are all estimated using Jordà (2005) local projections with controls for three lags in the bank and nonfinancial equity variables, country fixed effects, and contemporaneous and lagged real GDP growth and credit-to-GDP change.

Figure A4 presents the same impulse responses as in Figure II but the specification includes year fixed effects, in addition to the baseline controls. This figure shows that the results in Figure II are not sensitive to the inclusion of year fixed effects.

Figure A5 presents the same impulse responses as in Figure II, but the specification adjusts the timing to allow for bank and nonfinancial equity returns to affect the outcome variable within the same year, instead of with a one-year lag. Figure A5 shows that bank equity crashes are associated with larger declines in real GDP and credit-to-GDP when bank equity crashes are assumed to affect the outcome variable within the same year.

Figure A6 demonstrates the robustness of the results in Figure II to other alternative specifications. Panel A plots the response of real GDP and credit-to-GDP to 30% crashes in bank equity and nonfinancial equity. It shows that a 30% crash in bank equity (controlling for a nonfinancial equity crash) is associated with a future decline in output of around 3 percentage points and future decline in credit-to-GDP of around 8 percentage points. The dotted lines represent 95% confidence intervals based on double-clustered standard errors.

Panel B plots the response to continuous innovations in bank and nonfinancial equity returns. It shows that a hypothetical 100% log-decline in bank equity returns is associated with a maximum 2.5 percentage point decrease in real GDP and 6 percentage point decrease in credit-to-GDP, though this specification does not distinguish between a positive or negative sign of the bank equity return or any potential nonlinearities. Therefore, Table A4 explores this nonlinearity in the alternative specification by showing that the predictive content of bank equity returns is nonlinear

by including quadratic terms (columns (2) and (5)) and by separately estimating the predictive content of positive and negative bank and nonfinancial equity returns (columns (3) and (6)).

## B. Bank Equity Crashes and Subsequent Macroeconomic Outcomes: Subsample Analysis

Figure A7 demonstrates the robustness of the results in Figure II to various subsamples of countries and time periods. Because of the limited data in such subsamples, we choose a simpler nonlinear specification in which we look at the impulse response subsequent to 30% crashes in both bank and nonfinancial equity estimated jointly, as in Figure A6, Panel A.<sup>6</sup> Similar to Figure II, impulse responses are estimated using Jordà (2005) local projections with controls for three lags in the bank and nonfinancial equity crash variables, country fixed effects, and contemporaneous and three-year lagged values of real GDP growth and credit-to-GDP change. The dotted lines represent 95% confidence intervals based on double-clustered standard errors.

Figure A7 shows that the results are qualitatively similar in the following subsamples: excluding the Great Depression and the Great Recession (Panel A), the pre-WWII subsample (Panel B), the post-WWII subsample (Panel C), the period 1946-1970 (Panel D), the period 1971 to 2016 (Panel E). Table A5 reports these results in tabular form.

Figure A8 also reports the same results but for the U.S. only. Figure A8 is estimated just for the U.S. on the full sample (Panel A) and excluding the Great Depression and the Great Recession (Panel B). Results are qualitatively similar to those on the full panel.

## IV. Analysis Conditional on Narrative Crises

### A. Bank Equity Declines are Correlated with the Severity and Symptoms of Banking Crises

We validate the usefulness of bank equity declines by showing that they are correlated with the severity of banking crises along a number of dimensions, conditional on a crisis as defined by narrative accounts. Specifically, we ask whether banking crises with larger peak-to-trough bank equity declines are more macroeconomically severe and have greater frequency and intensity of

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<sup>6</sup> One can estimate the full nonlinear specification on the subsamples, and the results are qualitatively similar to those in Figure II. However, because of the large number of indicator variables used in the full nonlinear specification relative to the number of observations, the impulse responses are often noisy and have large confidence bands.



characteristics and policy responses commonly associated with banking crises (e.g., deposit declines, bank failures, nonperforming loans).

We estimate the following regression equation, with each observation being a single banking crisis from the Narrative Crisis list,

$$y_{i,t} = \alpha_i + \beta r_{i,t}^B + \gamma 1_t^{postwar} + \varepsilon_{i,t} \quad (A1)$$

where  $\alpha_i$  is a country fixed effect,  $1_t^{postwar}$  is a dummy variable that takes on the value of 1 if the year of the crisis is greater than 1945, and  $r_{i,t}^B$  is the peak-to-trough change in the real bank equity total return index during the crisis.<sup>7</sup> The sample size of regressions across the different dependent variables varies due to differences in data availability. As with the ROC analysis, we take the Narrative Crises as a starting point from which to evaluate the informativeness of bank equity.

Panel A in Table A6 presents estimates of Equation (A1) where the dependent variable is a measure of the decline in real GDP. The table shows that greater declines in bank equity are associated with larger output declines. For example, columns (1) through (3) show that a 100% peak-to-trough decline in bank equity returns is associated with a 13.9% peak-to-trough decline in real GDP, a 13.0 percentage point decline in the real GDP growth rate (peak-to-trough), and a 9.1 percentage point decline in the real GDP growth rate from its past 10-year average.

Panel B shows that bank equity peak-to-trough declines during Narrative Crises are correlated with other characteristics of banking crises. Larger bank equity declines are associated with a significantly larger declines in bank deposits, an increased incidence of failure of the largest banks, and higher nonperforming loans. Moreover, larger bank equity declines predict an increased probability of various forms of government intervention including significant liquidity support, bank nationalization, and government equity injections. We conclude that greater bank equity declines are associated with increased likelihood and severity of typical banking crisis characteristics and policy responses.

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<sup>7</sup> The postwar dummy is important because, empirically, we find that bank equity declines have to be greater in the postwar period to get the same crisis symptoms, perhaps because of greater government protections and assistance for the banking sector, countercyclical fiscal and monetary policy, etc. Without the postwar dummy, the coefficient estimates in Table A6 are similar, but the  $R^2$  is substantially reduced.

## B. Using Alternative Measures of Bank Equity Declines

We next show that the validation results in the previous subsection are robust to two alternative measures of bank equity declines: *bank abnormal returns* (bank minus nonfinancial returns) and *bank market capitalization returns* (which seeks to capture the total change in the market value of equity within the banking sector).

One may be concerned, for example, that in the validation analysis of the previous subsection, the bank equity decline simply reflects a general decline in equity markets, rather than something specific about bank equity. Therefore, Table A7, Panel A shows that our results are robust to replacing bank equity returns with *bank abnormal returns* (defined as bank equity total returns minus nonfinancial equity total returns). However, it is important to note that, in terms of the magnitude of the estimates and the adjusted  $R^2$ , the bank equity return is a substantially better predictor of crisis severity than bank abnormal return. For example, the adjusted  $R^2$  for real GDP peak-to-trough decline on the bank equity decline is 18.6%, compared to 7.0% for the bank abnormal returns. Thus, both as a signal of a Narrative Crisis and as a measure of crisis severity, bank equity returns dominate bank abnormal returns. Nonfinancial equities fall substantially during severe bank crisis, likely in part because of banking sector distress, and the overall level of bank equity provides valuable information beyond the differential information contained in *bank abnormal returns*.

Panel B re-estimates Equation (A1) with *bank market capitalization returns* as the independent variable. *Bank market capitalization returns* is defined specifically as the bank equity price returns plus new issuance of bank equity. This variable seeks to capture the change in the market value of equity within the banking sector. Equity issuance is new capital raised by the bank, which may be important as banks seek to recapitalize. Price returns rather than total returns are used to calculate *bank market capitalization returns*, because dividends are paid out from the bank and hence deplete bank equity. An index of bank equity issuance is constructed for each country using new historical data and the methodology from Baron (2020). Data sources include *Moody's Bank and Finance* manuals, *Investor's Monthly Manual*, and Jane's and Beerman's manuals of European firms. It is important to note that *bank market capitalization returns* can only be constructed on a subsample of the data, due to historical data limitations on the availability of data on new bank equity issuance.

Panel B shows that *bank market capitalization* declines strongly predict output declines. Given that theory (e.g. Bernanke, Gertler, and Gilchrist, 1999; Brunnermeier and Sannikov, 2014) links the net equity of the banking sector to macroeconomic outcomes, we should expect *bank market capitalization returns* to have the strongest predictability for output. Indeed, this is the case, as Panel B shows the adjusted  $R^2$  to be 23.4%, substantially higher than 18.6% in Table A6. However, as historical data on bank market capitalization are difficult to obtain and could be collected for only a subset of Narrative Crisis episodes, we do not use this variable for the main analysis of the paper.

Panel C of Table A7 is similar to Table A6 but has an additional independent variable, the *bank equity recovery* (the positive returns in the bank equity total returns index subsequent to the trough within three years after a banking crisis). Rebounds in bank equity returns may be due to unexpected policy interventions or to the fact that the crisis may not have been as severe as initially perceived by equity investors. However, surprisingly, Panel C shows that the *bank equity recovery* has no predictive power for economic output, a result which is robust to various other measures of bank equity recoveries.

## **V. Additional Results on Non-Panic Bank Distress**

### **A. Bank Equity Crashes Outside of Narrative Crisis Episodes**

Table A8 estimates future real GDP and bank credit-to-GDP conditional on bank equity crashes excluding a window around Narrative Crisis episodes. Table A8 shows the magnitudes of the real GDP and bank credit decline are just as large excluding narrative-based banking crises as they are in the full sample. Table A8 is obtained by estimating a specification similar to Equation (3) but interacting the bank equity crash indicator variables with an indicator variable for whether a given observation falls within a  $\pm 3$ -year window of a Narrative Crisis episode. According to the estimates at the  $t + 1$  and  $t + 3$  horizons reported in Table A8, the interaction term with a Narrative Crisis episode is small in magnitude and not statistically significant for output, thus signifying that the predictive content from bank equity crashes is similar in magnitude outside of Narrative Crises. We conclude there is generally little difference in the predictive content of bank equity between Narrative Crisis and non-Narrative Crisis episodes.

## B. Bank Equity Crashes Outside of Panic Episodes

We show as a robustness test that bank equity crashes predict real output and credit contraction even excluding panic episodes. Specifically, Figure A9 plots estimates of local projection impulse responses to bank equity returns across different bins, as in Figure II, but excluding observations within a  $\pm 3$ -year window of a panic (as defined in Table A2). The results in Figure A9 are nearly identical to those in Figure II, demonstrating that the predictability from bank equity returns holds even outside of panic events.

## C. Impact of BVX Crises With and Without Panics

Figure A10 plots the response of real GDP and credit-to-GDP to episodes on the BVX Crisis List without panics and with panics. The dotted lines represent 95% confidence intervals based on double-clustered standard errors. Figure A10 demonstrates that both panic and non-panic BVX Crises are associated with adverse macroeconomic outcomes, which are worse for non-panic BVX Crises.

## D. Results Using a Finer Panic Classification

Figure A11 is similar to Figure III but uses a finer classification for creditor runs. The figure distinguishes between episodes with “isolated runs,” defined as episodes featuring isolated runs on a single large bank or a few small banks or borderline episodes with inconclusive historical evidence, and “clear-cut panics,” defined as all panic episodes from Table A2 not labeled as “isolated runs.” The responses of real GDP and credit-to-GDP are estimated using local projections, as in Figure III.

## E. Frequency of Panic and Non-Panic Crises Across Decades

Figure A12 plots the frequency of crisis episodes for each decade for the 46 countries in our sample. The frequency is calculated as the number of crises divided by the total number of country-years in each decade.

#### F. Timing of Bank Equity Crashes Relative to Panic Dates and Other Crisis Indicators: Robustness

Figure A13 shows that the timing of bank equity crashes relative to panic dates and other crisis indicators is robust to conducting the analysis on the sample of Narrative Crises instead of episodes on the BVX Crisis List. Figure A13 presents the same results as in Figure VI, but on the sample of Narrative Crises instead of episodes on the BVX Crisis List. Similarly, Table A9 shows that the timing results reported in Table III are robust to conducting the analysis on the sample of Narrative Crises instead of the BVX Crisis List.

#### G. Timing of Bank vs. Nonfinancial Equity Crashes: Country and Time Subsamples

Table A10 compares the timing of bank versus nonfinancial equity crashes as in Table III but on country and time subsamples. Table A10 shows that bank equity crashes tend to precede nonfinancial equity crashes in post-WWII and advanced economy banking crises but is often the opposite for prewar and emerging market crises. Panel A performs the analysis on the BVX Crisis List sample, and Panel B uses the Narrative Crisis List sample as robustness, as in Table A9.

### **VI. BVX Crisis List: Additional Information**

#### A. Additional Information on Constructing the BVX Crisis List

We describe some additional information on constructing the BVX Crisis List.

Table A11 lists “removed banking crises”, episodes from the Narrative Crisis list that are not considered banking crises on the BVX Crisis List. Of the “removed banking crises”, we mark a subset of them with a “\*” which we consider “spurious banking crises”, defined as episodes which have few or no characteristics typically associated with banking crises and are likely the result of typographical or historical errors on one of the Narrative Crisis chronologies (e.g., in Reinhart and Rogoff 2009). Several of these spurious banking crises have missing bank equity returns data; because there is discretion in marking these events as spurious, along with the lack of quantitative evidence in these cases, we list them separately at the bottom of Table A11 to be transparent about the fact that these episodes could not be verified with bank equity data.

Turning back to the BVX Crisis List reported in Table VI, we compute the peak-to-trough decline in bank equity as an “intensity measure” of each banking crisis, also reported in Table VI. We date the start of each crisis as the year in which the bank equity real total return first falls more

than -30% from its peak. In cases in which there is no cumulative 30% decline, we date the crisis based on narrative information. Of course, there are important reasons why the narrative accounts date the starting year when they do. With the new dates, our goal is simply to offer additional and alternative information about when markets first recognized the bank equity losses. Table A12, Panel A lists all the changes to starting dates on the BVX Crisis List. See Table A2 for a comparison with the Narrative Crisis dates, which in most cases are very similar.

We occasionally combined several pairs of episodes occurring close together in time, when it seems more appropriate to consider them as a single crisis (i.e. when bank equity prices did not show two separate declines and when the narrative evidence on bank failures and panics conveyed a continuous sequence of banking distress across time, not clustered into two phases). These combined episodes are listed in Table A12, Panel B.

## B. Bank and Nonfinancial Equity around BVX Banking Crises and Normal Recessions

Figure A14 plots the average dynamics of bank equity and nonfinancial equity around BVX banking crisis recessions and normal recessions. A recession is defined as a period in which real GDP declines. As in Jordà, Schularick, and Taylor (2013), the first year of the recession is marked as the real GDP peak, and if there are two peaks in three years, then it is the first peak. Banking crisis recessions are defined as recessions that coincide with a BVX Crisis List episode. Normal recessions are the remaining recessions in the sample.

Figure A14, Panel A shows that the dynamics of bank and nonfinancial equity are similar around normal recessions, with a fall in both bank and nonfinancial equity of ~10% on average in the year prior to the start of the recession, followed by a quick recovery afterwards. If anything, bank equity falls slightly less than nonfinancial equity in a normal recession, which is consistent with the finding that the bank equity index has an unconditional beta (on the full sample) slightly less than 1.

Figure A14, Panel B, in contrast, show that, conditional on a banking crisis recession, bank equity falls substantially more than nonfinancial equity—over 60% on average for bank equity, compared to 30% for nonfinancial equity—and that the bank equity decline, unlike the nonfinancial equity decline, is persistent over the 5-year window. This result is consistent with the results in Figures V and VI of the main text.

### C. Revisiting the Global Great Depression

To showcase the usefulness of the crisis intensity measure constructed from bank equity returns, we revisit the banking crises of the Great Depression. While there is no doubt of the presence of severe banking crises in some countries (e.g., Germany and the U.S.) and their absence in other countries (e.g., Japan and the U.K.), there is considerable debate about the presence and severity of banking crises in certain countries. Additionally, because of previous data limitations, the literature has had difficulty assessing the degree to which banking crises help explain the severity of the Great Depression. For example, in their cross-country study, Bernanke and James (1991) write, “A weakness of our approach is that, lacking objective indicators of the seriousness of financial problems, we are forced to rely on dummy variables to indicate periods of crisis.”

We use bank equity declines to assess the severity of banking problems across countries in the Great Depression. Figure A15 plots the peak-to-trough decline in real GDP against the peak-to-trough bank equity decline over the period 1929-1933. This figure plots all countries in the sample for which data is available, not just those that may have experienced banking crises.<sup>8</sup>

The decline in bank equity has moderate explanatory power ( $R^2 = 15\%$ ), consistent with the evidence in Bernanke and James (1991) on the role of banking crises in explaining the severity of the Great Depression. However, from Figure A15, there is still substantial unexplained heterogeneity in outcomes. Much of this is surely measurement error in real GDP plus other idiosyncratic country shocks. Other potential reasons for this heterogeneity, which are non-mutually exclusive, include: the duration of adherence to the gold standard (Eichengreen and Sachs 1985), the sharp monetary contraction in certain countries (Friedman and Schwartz 1963), the trade collapse (Madsen 2001), and political instability (e.g., the 1930 coups in Argentina and Brazil). Nevertheless, the severity of banking losses explains an important part of the variation across countries.

Do bank equity declines line up with the narrative evidence on crisis severity across countries in the Great Depression? In general, yes. For example, Figure A15 shows large declines

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<sup>8</sup> The picture is similar if one plots the peak-to-trough decline in industrial production on the y-axis. Using our data on real GDP (taken from Maddison’s database and from Schularick and Taylor 2012), in contrast to industrial production, makes the Great Depression look less severe in Belgium and the Netherlands (which may be attributable to the larger service sector in these economies) but much more severe in Latin America (attributable to the higher share of commodity production in these economies).

in bank equity for well-known examples of severe banking crises: Austria, Belgium, France, Germany, Switzerland, and the U.S. Similarly, Japan and the U.K. are considered not to have had banking crises during this period and have minimal bank equity declines.

Furthermore, the quantitative data helps resolve uncertainty within narrative account about the extent of banking crises. Thus, in the BVX Crisis List, we remove Denmark and India, since these countries had mild bank stock declines (less than 30%) and the narrative evidence further confirms a lack of panics or widespread bank failures. Italy also had a relatively mild bank stock decline (though there was, in fact, a severe banking crisis), but this is due to the unusually early and vigorous policy intervention in 1931, culminating in a near-total nationalization of the banking sector by 1933. Thus, bank stock prices did not decline as much as in other countries.

We also highlight several newly identified banking crises to the BVX Crisis List that are overlooked in the previous narrative approaches: newly identified banking crises in Chile, Colombia, Iceland, the Netherlands, and Peru during the Great Depression. All of these countries experienced large bank stock declines (greater than 30%), and the narrative evidence supports either panics or widespread bank failures (or both) in these countries.

Finally, there is the case of Canada in the Great Depression, which has previously been discussed in the main text in the context of quiet banking crises. While not labeled a banking crisis on the BVX Crisis List, since there were no panics and only a single tiny bank, Weyburn Security Bank, failed, there was nevertheless a steep decline in bank stock prices. This evidence is consistent with the argument of Kryzanowski and Roberts (1993), that the large Canadian banks “were insolvent at market values and remained in business only due to the forbearance of regulators coupled with an implicit guarantee of all deposit”, both policies being holdovers from the previous Canadian banking crisis of 1923.<sup>9</sup> Consistent with Section III.C on quiet crises, the large and widespread bank equity losses in Canada, as reflected by the large fall in bank stock prices, may help explain the severity of the Great Depression in Canada, in which the fall in real GDP and rise in unemployment rivaled the U.S. in severity.

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<sup>9</sup> The largest Canadian bank at the time, the Bank of Montreal, had estimated non-performing loans in excess of 40% (Kryzanowski and Roberts 1993).



#### D. Comparison to Other Chronologies of Banking Crises

How does our BVX Crisis List compare to other banking crisis chronologies? We discuss the evidence in detail here. We find that the consequences of the BVX Crisis List episodes are actually *more* severe, compared to Reinhart and Rogoff's list of banking crises, both in terms of GDP, credit contraction, and characteristics of crises. This is due, in large part, to eliminating many spurious crises from their list.

Table A13 compares the average severity of crises by looking at declines in real GDP and other selected characteristics of crises. Panel A compares the BVX Crisis List to Reinhart and Rogoff's chronology and Panel B to Laeven and Valencia's chronology. Similarly, Figure A16 plots impulse responses of GDP and credit-to-GDP subsequent to episodes on the BVX Crisis List compared to episodes on Reinhart and Rogoff's and Laeven and Valencia's chronologies.

In the BVX Crisis List, the average crisis has a -5.5% peak-to-trough decline in real GDP. In comparison, Reinhart and Rogoff's (2009, online update 2014) headline number is an average peak-to-trough decline in real GDP per capita of -9.6%. However, Reinhart and Rogoff's headline statistic overstates the severity of banking crises, since it is calculated over a subsample of severe banking crises (it is unclear what criteria is used to select this sample, other than ex-post severity). Instead, estimating the consequences of banking crises on Reinhart and Rogoff's entire list of banking crises, the average fall in real GDP that we calculate for Reinhart and Rogoff in Table A13, Panel A is -4.5%—and is in fact *less* severe than using the BVX Crisis List (a difference of 0.9% with a *t*-statistic of 2.92). Looking at the likelihood and magnitude of other symptoms of crises and policy interventions—including failed banks, nonperforming loans, declines in deposits, liability guarantees, and liquidity support—the BVX Crises are also more severe. We also note that, in unreported results, the BVX Crisis List episodes are more severe than Schularick and Taylor's (when compared on their sample of 14 countries) and Bordo et al.'s crises.

Panel B, which compares the BVX Crisis List to Laeven and Valencia's chronology, shows the opposite, that the BVX Crisis List is slightly less severe than Laeven and Valencia's (when compared on their time sample 1970-2012), perhaps because Laeven and Valencia only identify crises that are serious enough to warrant several forms of major government intervention.

In general, we conclude that, comparing the BVX Crisis List to previous chronologies, the aftermath of banking crises tends to be *more* severe (the exception being with Laeven and

Valencia), especially when restricting our chronology to crises featuring large bank equity declines. However, it is important to note that the evidence is nuanced and also that the comparisons are sensitive to the sample studied.

#### E. ROC Curve Comparisons for BVX Crises and Other Crisis Chronologies

Table A14 compares the area under the ROC curve (AUC) when using a variety of variables to classify BVX crises and Reinhart-Rogoff crises (Panel A) or BVX crises and Laeven-Valencia crises (Panel B). The table shows that, across a variety of classifiers (e.g., real GDP growth), the AUC is generally higher for BVX Crises than for Reinhart-Rogoff and Laeven-Valencia crises. Panel A compares the AUC on the full sample, while Panel B focuses on the post-1970 sample covered by Laeven and Valencia (2013). Thus, BVX Crises tend to better coincide with declines in real GDP, credit-to-GDP, bank equity, and nonfinancial equity, relative to Reinhart-Rogoff and Laeven-Valencia crises.

#### F. Other Episodes of Minor Bank Distress from Narrative Accounts

Table A15 list additional episodes of minor bank distress from narrative sources. These episodes are listed purely for historical interest and the aid of future researchers who are interested in other periods of minor banking distress. They are not used in any of the analyses in this paper.

#### G. Panics Without Bank Equity Crashes

Table A16 demonstrates that nearly all panics without bank equity crashes are associated with narrative evidence of bank solvency concerns and that there is almost no evidence of non-fundamentally driven runs over our 1870-2016 sample. The top panel features a two-by-two table of all episodes from Table A2, sorted on the incidence of panics and 30% bank equity crashes; there are 47 episodes of panic banking crises without 30% bank equity crashes.

The bottom panel analyzes each of these 47 episodes individually and demonstrates that nearly all the panics without bank equity crashes are associated with narrative evidence of bank solvency concerns. The bottom table also analyzes why the bank equity decline was nevertheless less than 30% in magnitude: 29 episodes (62%) are due to possible bank equity measurement errors (either the banking panics were centered around small or regional banks and thus are not captured

by the bank equity index, or the bank equity index contains a very small number of banks for a given episode); 14 (30%) are “near misses,” defined as episodes where the decline is between 20% and 30%; and 2 (4%) are triggered by the onset of wars. (In addition to these 47 episodes, there are another 36 banking panic episodes for which we do not have bank equity data, which also presents a measurement problem.) See Appendix Section I.B for a link to the historical documentation and sources from which the information in this chart was taken.

Thus, there is almost no evidence of non-fundamentally driven runs over our 1870-2016 sample. Only the remaining 2 (4%) episodes can *potentially* be considered non-fundamental panics (Japan in 1927 and Hong Kong in 1991, both being triggered by false rumors leading to widespread runs).

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Figure A1: Sample Historical Data

This figure shows scans of three historical newspapers containing bank stock price data. Panel A shows Italian bank stock prices at the end of 1904 from the newspaper *La Stampa*. Panel B shows Dutch bank stock prices at the end of 1908 from the newspaper *De Telegraaf*. Panel C shows German bank stock prices at the end of 1873 from the newspaper *Berliner Boersen-Zeitung*. The full list of historical primary sources for bank stock prices and dividends can be found in the Data Appendix.

(A) Italian bank stock prices, 1904

BORSE ITALIANE.					
Corse di chiusura del 23 dicembre 1904.					
Valori	Roma	Milano	Genova	Firenze	
Rend. It. 5 0/0 per. c.	105 35	105 25	105 32 1/2	105 37	
"    "    "    "    "    "	105 30	105 30	105 37 1/2	105 32 1/2	
5 1/2 0/0 p. c.	103 42 1/2	103 32 1/2	103 37 1/2	103 35	
"    "    "    "    "    "	103 35	103 32 1/2	103 37 1/2	103 30	
Az. Banca d'It.	1132	1134 50	1133 50	—	
• Banca Comm.	829	828 50	828	—	
• Credito Ital.	611	611	612	—	
• Meridionali	720	720	720	720	
• Mediterranee	—	450	450	450 50	
• Rubattino	—	450 10	470	—	
• Terai	—	1945	1940	—	
• Elba	—	—	—	—	
• Savona	—	—	—	—	
• Molini Alta It.	—	—	—	—	
• Kridania	—	—	—	—	
• Cardaro Rom.	—	—	—	—	

(B) Dutch bank stock prices, 1908

	V.K.	L.N.	H.K.
Amst. Lq.-Kas. dito...	115	—	—
Rot. Bankv. A-U. dito	64	—	—
Cent. Bank v. L. & N. dito	—	—	—
Cent. Cred.-Bank S. ....	99 1/2	—	—
Cent. Werkg. Ris.-B. O. 4	100 1/4	100 1/4	—
Crediet-Vereen. A. ....	101 1/2	—	—
Disc. on Eff. b. 1 & 2 ser. do.	112	—	—
Disc.-Mij te Rotterd. do.	—	—	—
Fin. Mij v. Zuid-Afr. do.	75	—	—
Geld. Credietvereenig.	165	—	—
Gemeente-Cred. Obl. 4	101 1/2	—	—
dito    dito    dito 3 1/2	96 1/4	96 1/8	—
dito    dito    dito 3	85 1/4	85 3/8	—
dito    dito    dito 2 1/2	—	—	—
Holl. Belegg. Cie. dito 4	90	—	—
Holl. Voorsch. Bk. S. E.	100	—	—
Inasso-Bank Aand...	116 1/2	—	—
Ind. Bnk. te Haarl. dito	—	—	—
Kas Vereeniging Aand.	112	142 1/2	—

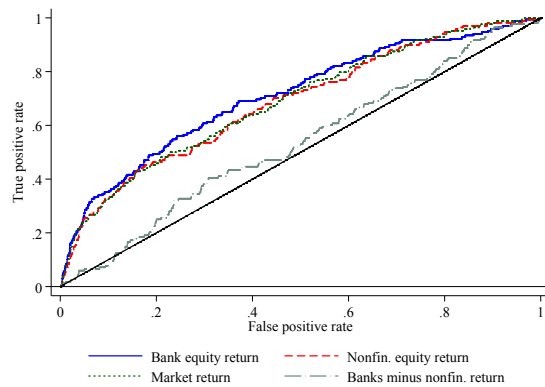
(C) German bank stock prices, 1873

Bank- und Creditbank-Actien.									
	Div 71	Div 72	EF	Zins-Termin.	Appoints	h		Div 71	Div 72
Aschener Bank f. H. u. L. (40% E.)	—	—	4	1/2	100	98 bz B.		8 1/2	—
Aschener Disconto-Ges. (40% E.)	—	—	5	do.	200	107 bz G		—	—
Allg. Depositen-Bank (60% E.)	—	—	5	1/1	1000 u. 200	84 bz G		7 1/2	—
Allg. Deutsche Handelsg. (70% E.)	—	—	5	do.	100	98 1/2 bz G		7 1/2	—
Amsterdamer Bank	—	—	4	do.	250 fl. Holl.	10 1/2		9 1/2	—
Anglo-Deutsche Bank	—	—	5	do.	100	13 1/2 G, j. 117 B		11 1/2	—
Anh.-Deutsche Landes-Bank	12 1/2	—	4	do.	100	149 B		5 1/2	—
do. do. neu	—	—	4	do.	100	136 bz		—	—
Antwerpener Central-Bank	—	—	5	do.	500 Frcs	108 bz G		—	—
Austro-Italienische Bank (50% E.)	—	—	5	do.	500 Lire	—		—	—
Austro-Türk. Cred.-Anst. (40% E.)	—	—	6	1/3 p. Stock.	200 fl. S.	—		—	—
Badische Bank	5	—	4	1/1	200	115 1/2 bz G		—	—
Bank f. Rheinal. u. Westph. (50% E.)	—	—	4	do.	200	103 1/2 bz		—	—
Bank für Spirit u. Prod.-Handel	—	—	5	do.	200	83 1/2 bz G		—	—
Barmer Bankverein	7 1/2	—	5	do.	200	122 1/2 G		11	—
Gothaer Privat-Bank	—	—	4	1/1	200	—		—	—
Halle'sche Credit-Anst. (40% E.)	—	—	4	1/2	200	—		—	—
Hamburger Commers-Bank	—	—	5	1/1	200	—		—	—
Hamburger Hyp.-Bank (40% E.)	—	—	5	do.	250	—		—	—
Hamburger Internat. B. (40% E.)	—	—	5	do.	200	—		—	—
Hamburger Vereins-B. (20% E.)	—	—	4	do.	200	—		—	—
Hannoversche Bank	—	—	4	1/1 u. 7.	250	—		—	—
Hannov. Disconto-Bank (60% E.)	—	—	5	1/1	200	—		—	—
Hessische Bank	—	—	4	1/1	200	—		—	—
Internat. Handelsges. (40% E.)	—	—	4	1/1	200	—		—	—
Kieler Bank (40% E.)	—	—	5	1/1	200	—		—	—
Kölnische Wechsel-Bank	—	—	4	1/2 72	200	—		—	—
Königsberger Vereins-Bank	—	—	4	1/8	200	—		—	—
Landw. u. Industrieb. Kwielen	—	—	5	1/7	200	—		—	—
Leinw. Credit-Anstalt	—	—	4	1/1	100	—		—	—

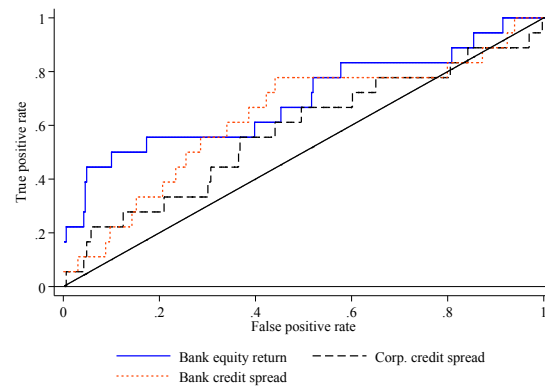
Figure A2: Bank Equity Returns Provide the Best Real Time Signal of Narrative Banking Crises: ROC Analysis

This figure presents receiver operating characteristic (ROC) analysis to understand which variables best coincide with banking crises from the Narrative Crisis list. The higher the ROC curve, the better a given variable is at classifying episodes on the list of Narrative Crises. Panel A compares the ROC curve constructed from bank equity returns with the ROC curves constructed using other equity market variables. Panels B and C perform the comparison with credit market and macroeconomic variables. Each panel uses the sample for which all variables are non-missing. The bank equity ROC curve therefore varies across panels.

(A) Bank equity compared with other equity market variables



(B) Bank equity compared with credit market variables



(C) Bank equity compared with macroeconomic variables

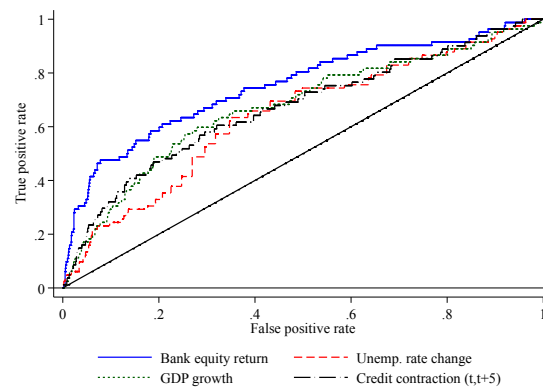


Figure A3: Distribution of Bank and Nonfinancial Equity Returns

This figure presents histograms of annual bank and nonfinancial equity returns during Narrative Crisis episodes. For comparison, it also presents the histogram during other years (“No crisis”). Bank and nonfinancial equity returns are annual real total returns winsorized at the top 1% level. The figure shows that the bank equity return distribution for Narrative Crises relative to non-crisis years is shifted further left and more left-skewed. These patterns are qualitatively similar but quantitatively weaker for the nonfinancial equity return distribution.

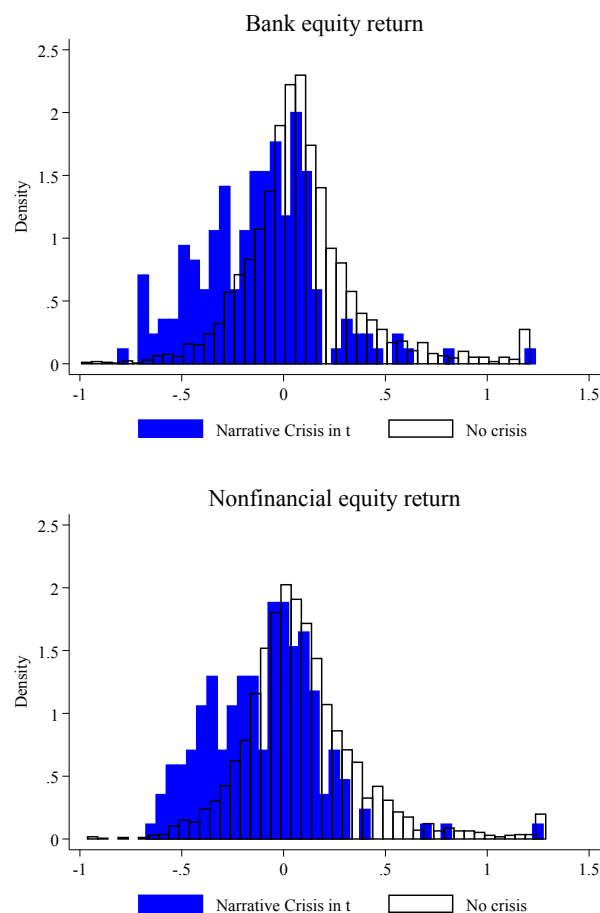
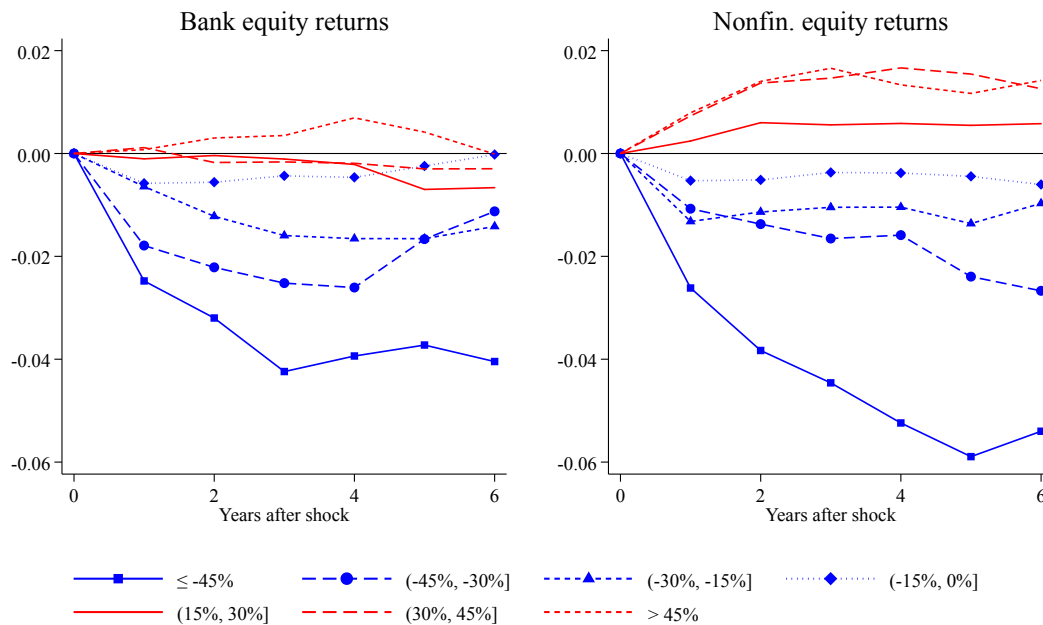


Figure A4: Bank Equity Crashes Predict Output Gaps and Credit Contraction: Robustness Including Year Fixed Effects

This figure presents the same impulse responses as in Figure II, but the specification includes year fixed effects, in addition to the baseline controls. This figure shows that the results in Figure II are robust to the inclusion of year fixed effects.

(A) Real GDP response



(B) Credit-to-GDP response

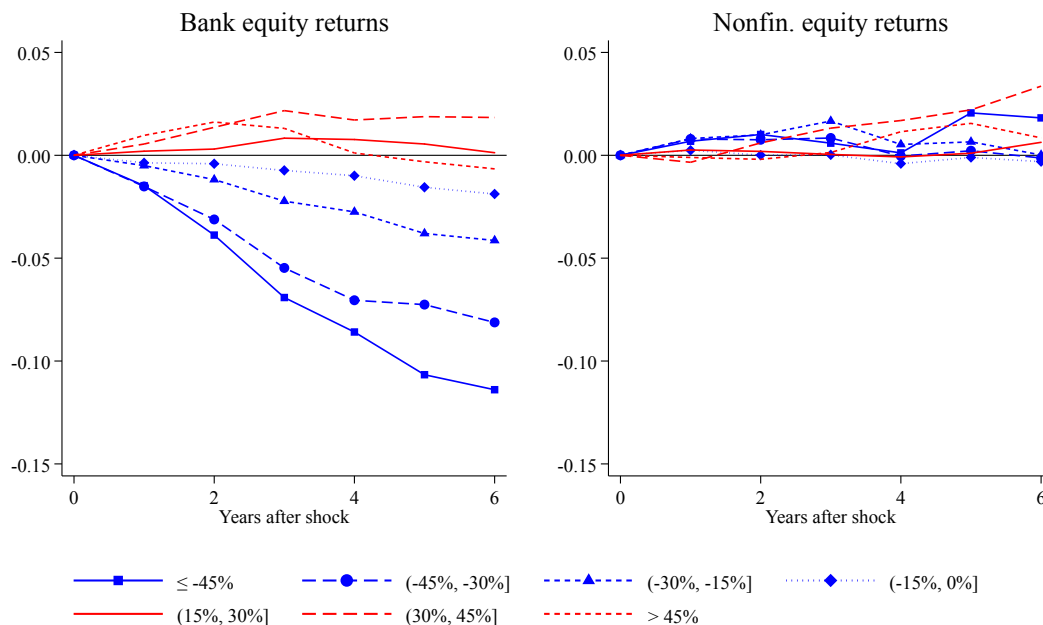
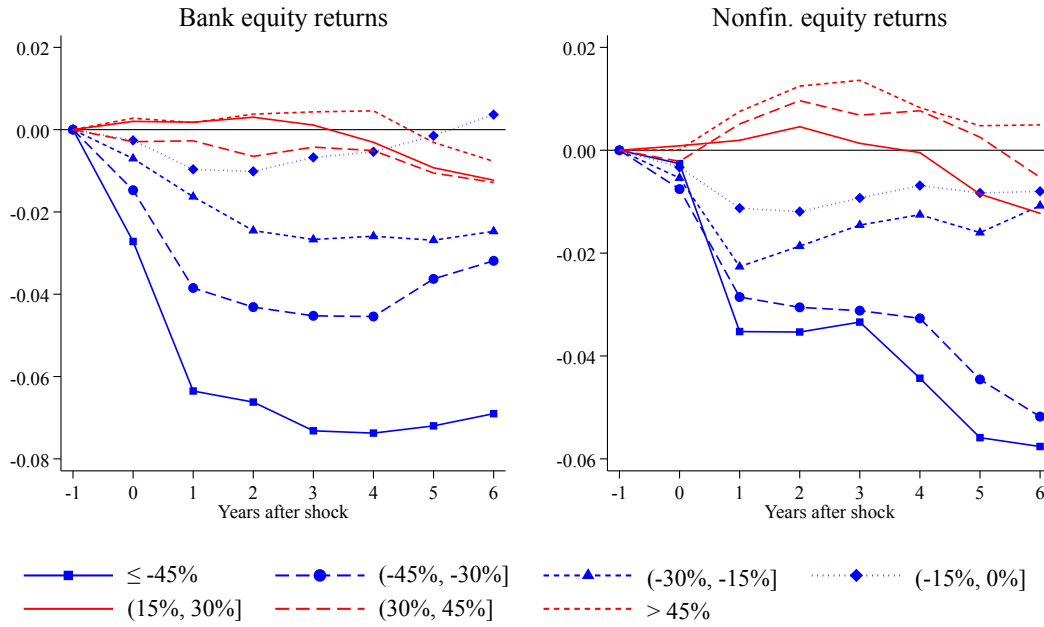




Figure A5: Bank Equity Crashes Predict Output Gaps and Credit Contraction: Alternative Timing

This figure presents the same impulse responses as in Figure II, but the specification adjusts the timing to allow for bank and nonfinancial equity returns to affect the outcome variable within the same year (year “0”), instead of with a one year lag. This figure shows that bank equity crashes are associated with larger declines in real GDP and credit-to-GDP when bank equity crashes are assumed to affect the outcome variable within the same year.

(A) Real GDP response



(B) Credit-to-GDP response

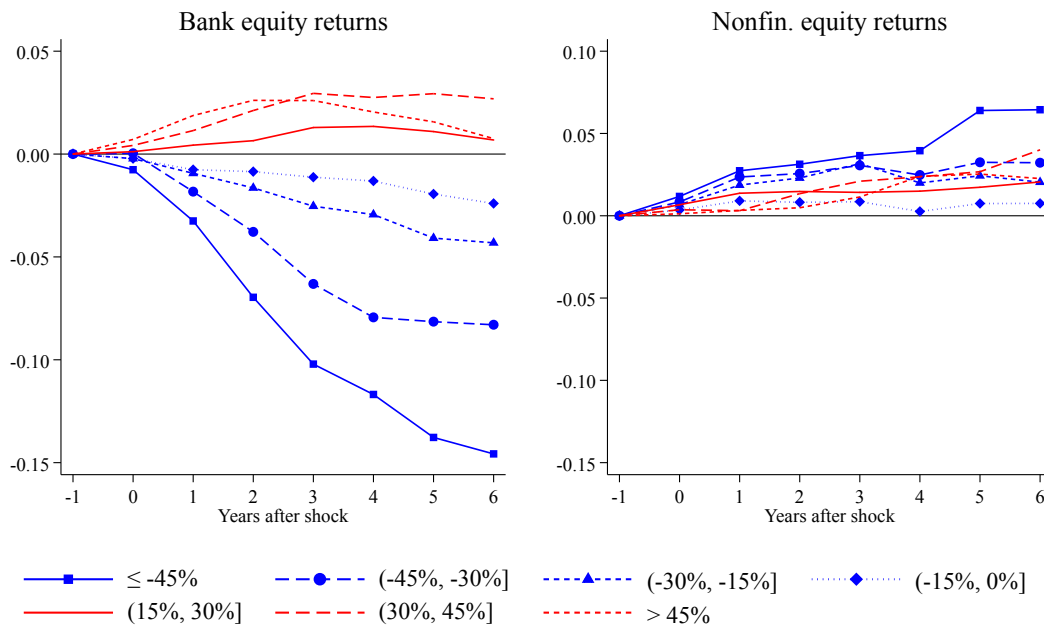
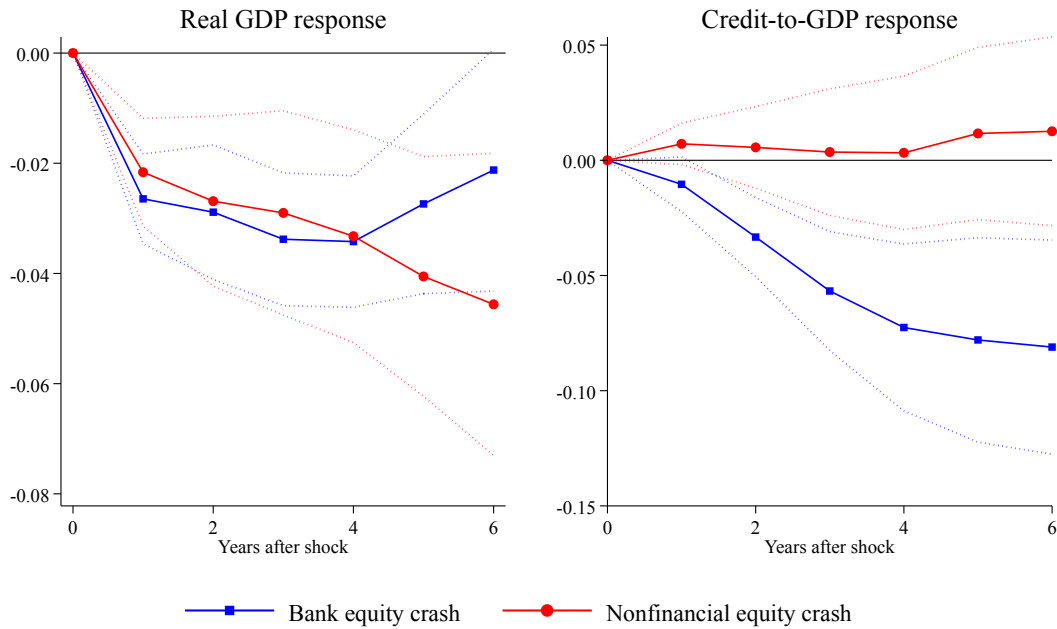


Figure A6: Bank Equity and Subsequent Macroeconomic Outcomes: Robustness to Alternative Specifications

Panel A plots the response of real GDP and credit-to-GDP to 30% crashes in bank equity and nonfinancial equity. Panel B plots the response to innovations in bank and nonfinancial equity continuous negative returns (i.e., returns times  $-1$ ). Continuous returns are winsorized at the top 1% level. Impulse responses are estimated using Jordà (2005) local projections with controls for three lags in the bank and nonfinancial equity variables, country fixed effects, and contemporaneous and lagged values of real GDP growth and change in credit-to-GDP. The dotted lines represent 95% confidence intervals based on standard errors double-clustered on country and year.

(A) 30% bank equity crashes



(B) Bank equity continuous negative return innovations

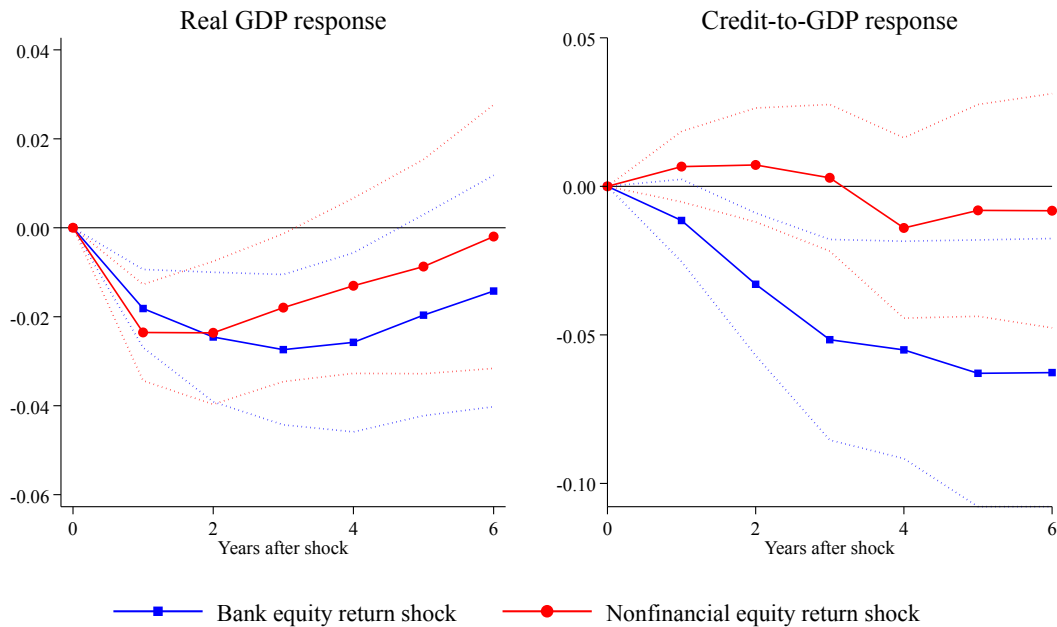
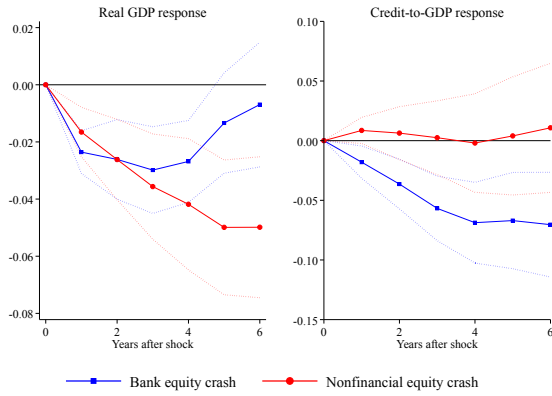


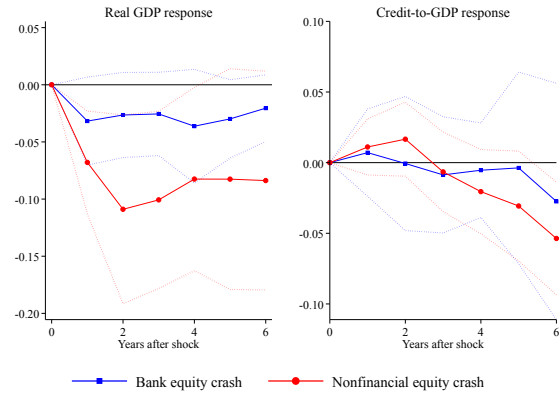
Figure A7: Bank Equity Crashes and Subsequent Macroeconomic Outcomes: Subsamples

This figure plots the response of real GDP and credit-to-GDP to 30% crashes in bank equity and nonfinancial equity across various subsamples. Impulse responses are estimated using Jordà (2005) local projections with controls for three lags in the bank and nonfinancial equity crash variables, country fixed effects, and contemporaneous and lagged values of real GDP growth and change in credit-to-GDP. The dotted lines represent 95% confidence intervals based on standard errors double-clustered on country and year.

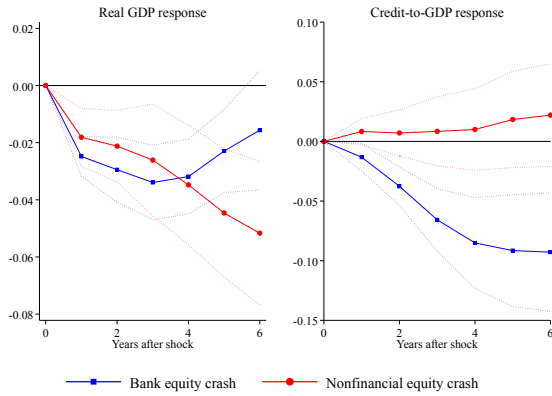
(A) Excluding the Great Depression and Great Recession



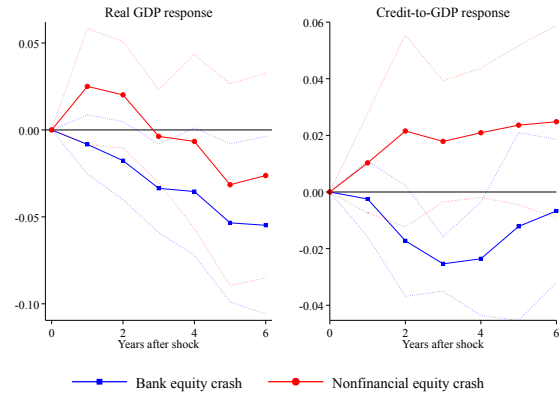
(B) Pre-WWII subsample



(C) Post-WWII subsample



(D) 1946–1970



(E) 1971–2016

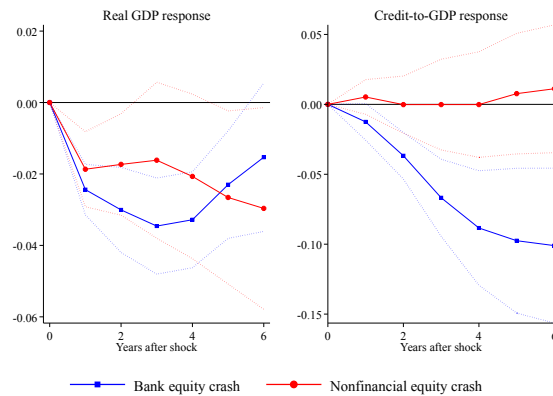
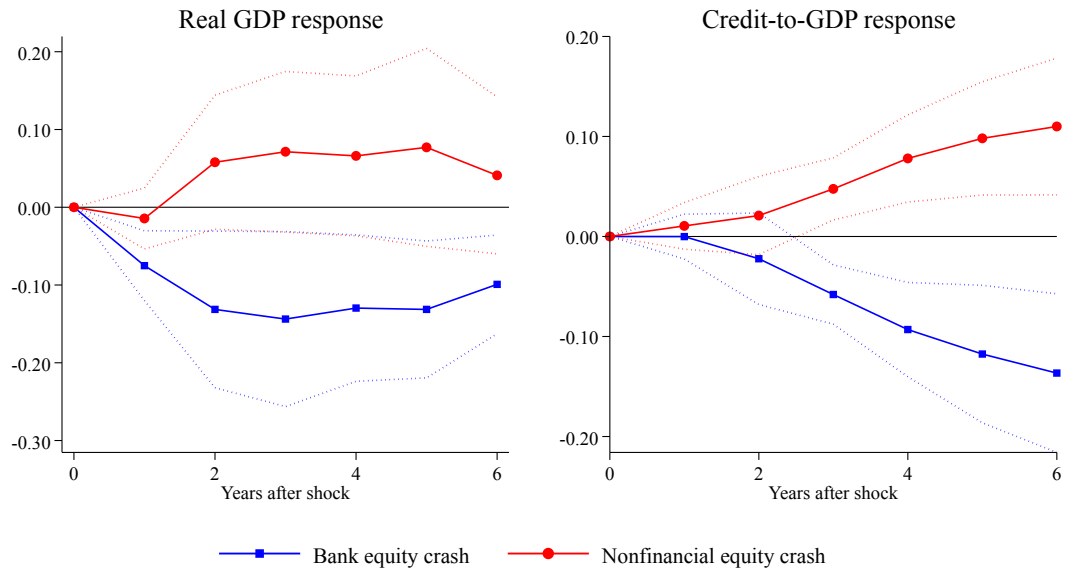


Figure A8: Bank Equity Crashes and Subsequent Macroeconomic Outcomes: U.S. Only

This figure plots the response of real GDP and credit-to-GDP to 30% crashes in bank equity and nonfinancial equity for the U.S. time series. The impulse responses are estimated using local projections, controlling for contemporaneous real GDP growth and change in credit-to-GDP, as well as three lags in bank equity returns, nonfinancial equity returns, real GDP growth, and change in credit-to-GDP. The dotted lines represent 95% confidence intervals based on Newey-West standard errors with six lags.

(A) Full sample



(B) Excluding the Great Recession and Great Depression

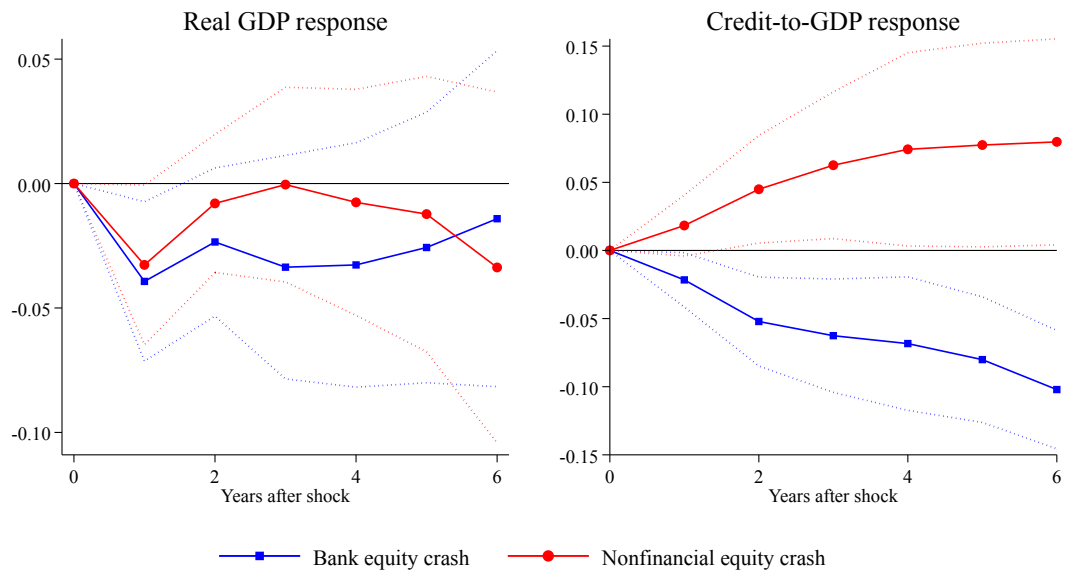
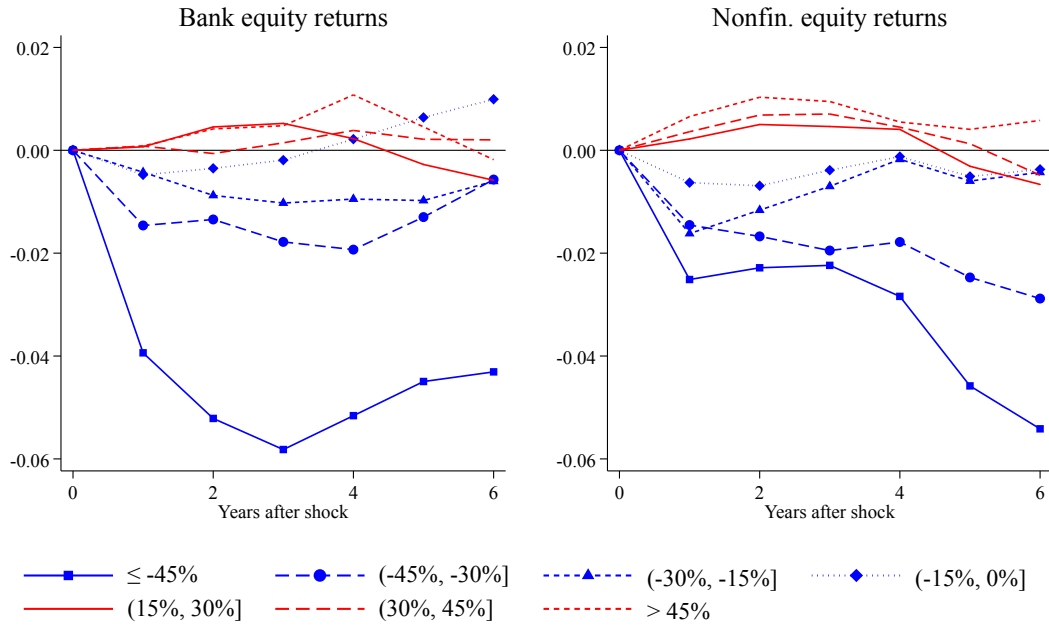


Figure A9: Bank Equity Crashes Excluding Panic Episodes

This figure shows that bank equity crashes predict real output and credit contraction even excluding panic episodes. We estimate local projection impulse responses to bank equity returns across different bins, as in Figure II, but excluding observations within a  $\pm 3$ -year window of a panic (as defined in Table A2).

(A) Real GDP response excluding panic episodes



(B) Credit-to-GDP response excluding panic episodes

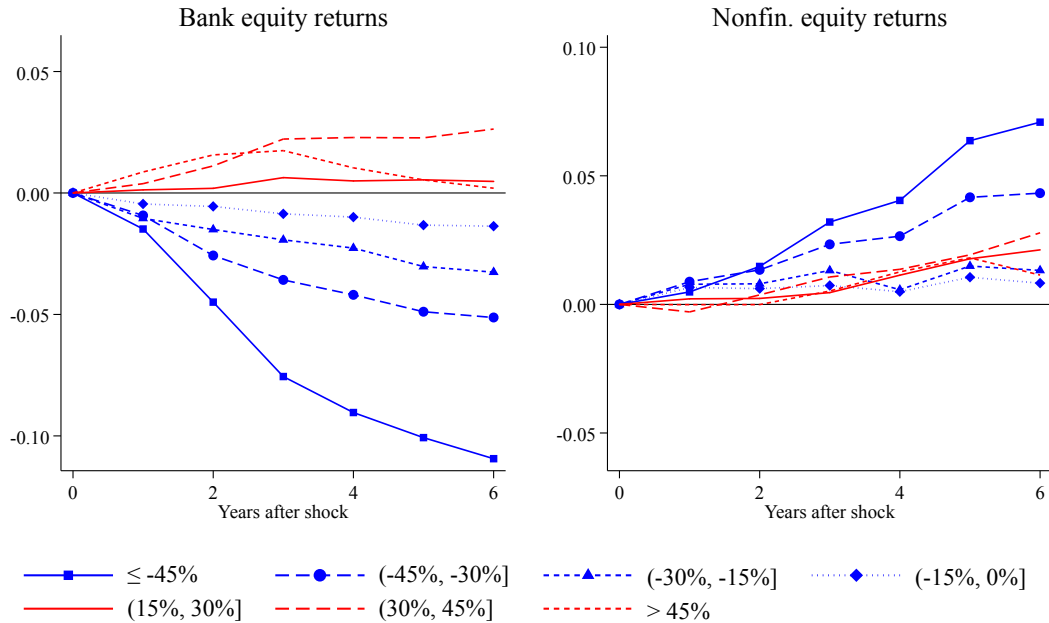


Figure A10: Impact of BVX Crises With and Without Panics

This figure plots the response of real GDP and credit-to-GDP to episodes on the BVX crisis list without panics and with panics. The impulse responses are estimated using local projections, controlling for country fixed effects, contemporaneous real GDP growth, change in credit-to-GDP, and nonfinancial equity returns, as well as three lags in all independent variables. The dotted lines represent 95% confidence intervals based on standard errors double-clustered on country and year.

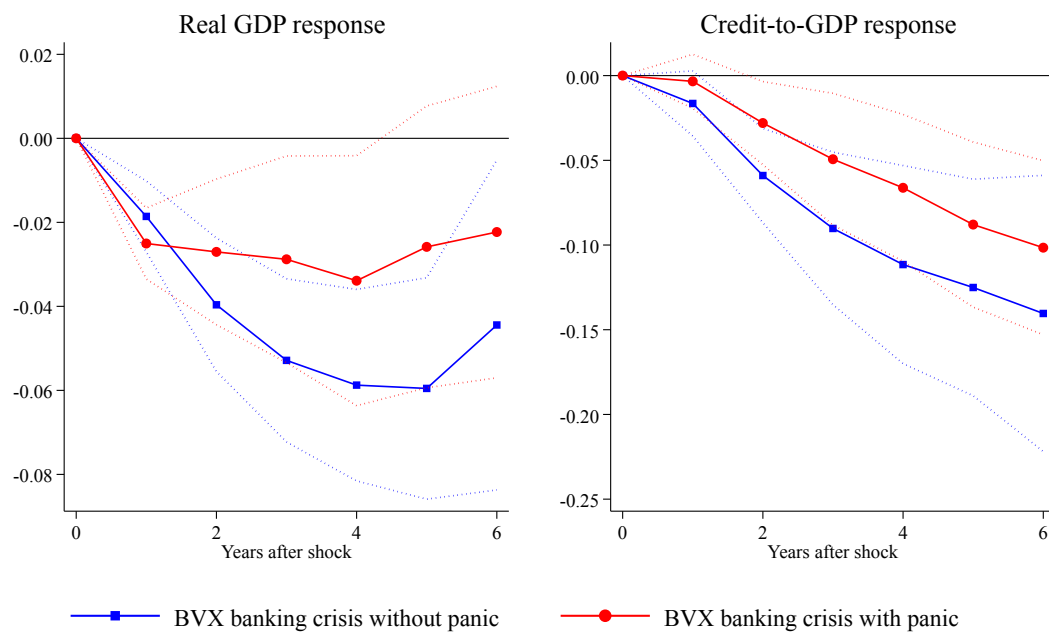
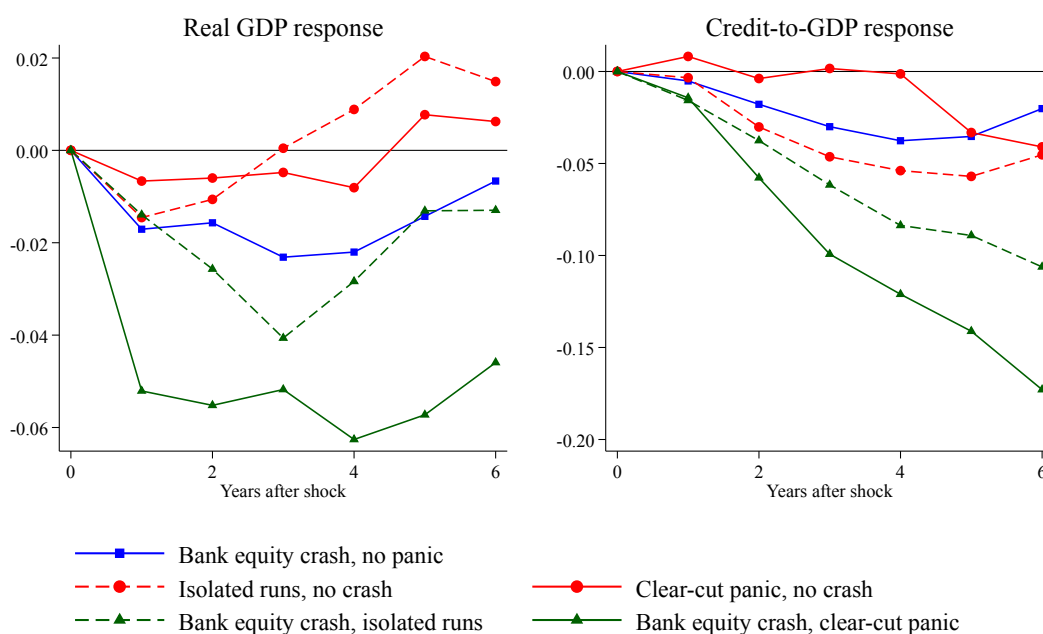


Figure A11: Banking Distress With and Without Banking Panics: Finer Panics Classification

This figure is similar to Figure III but uses a finer classification for creditor runs. The figure distinguishes between episodes with “isolated runs,” defined as episodes featuring isolated runs on a single large bank or a few small banks or borderline episodes with inconclusive historical evidence, and “clear-cut panics,” defined as all panic episodes from Table A2 not labeled as “isolated runs.” The responses of real GDP and credit-to-GDP are estimated using local projections, as in Figure III.

(A) Baseline



(B) Conditioning on bank failures

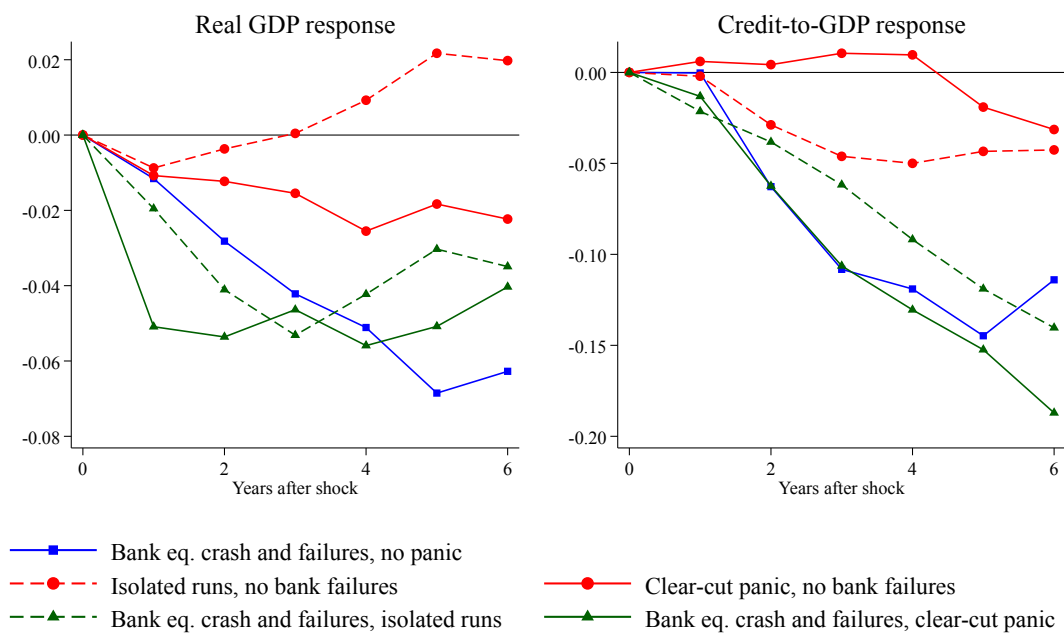


Figure A12: Frequency of Panic and Non-Panic Crises Across Decades

This figure plots the frequency of crisis episodes for each decade for the 46 countries in our sample. The frequency is calculated as the number of crises divided by the total number of country-years in each decade. “BVX panic crisis” refers to episodes on the BVX Crisis List with a panic. “BVX non-panic crisis” refers to episodes on the BVX Crisis List that do not feature a banking panic. “All 30% bank equity crashes without panic” refers to all 30% annual declines in bank equity that are not associated with a panic in Table A2.

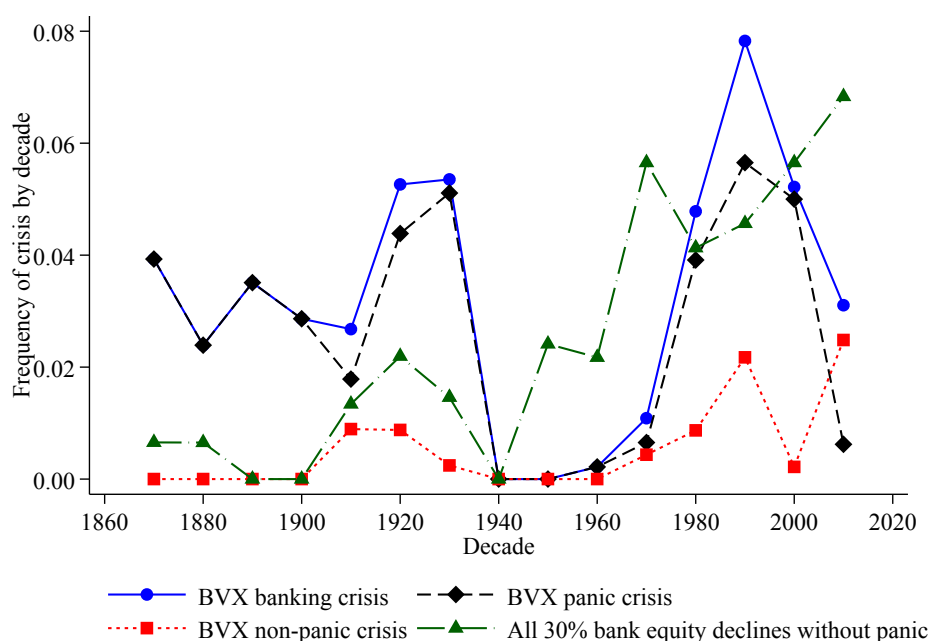
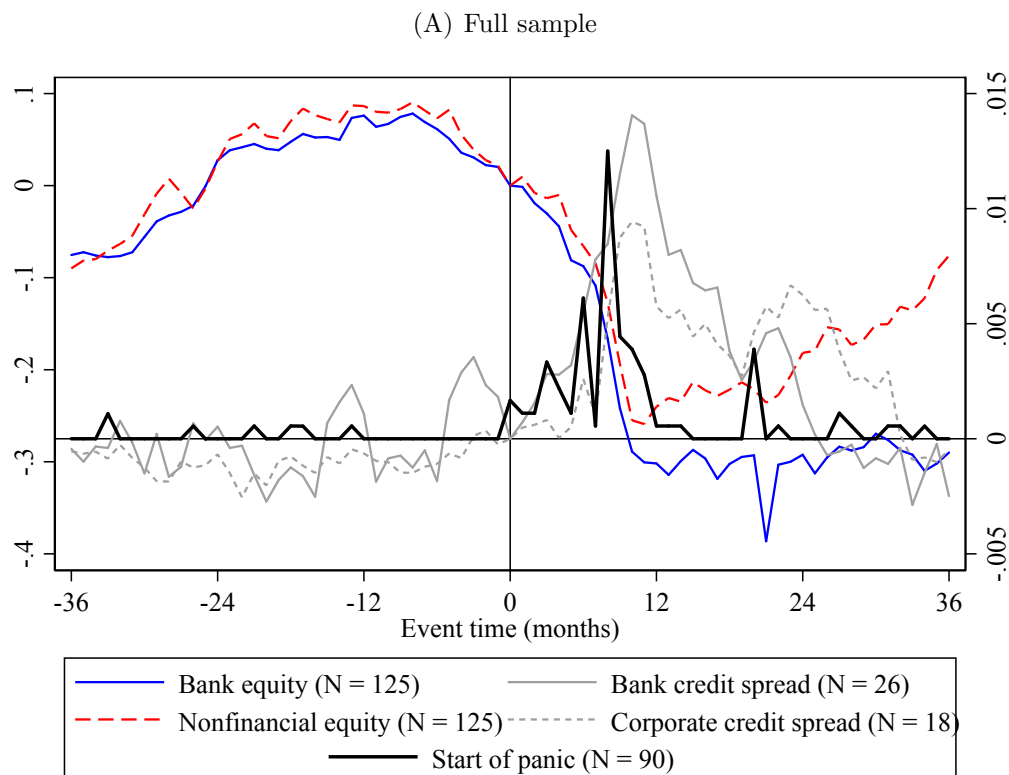


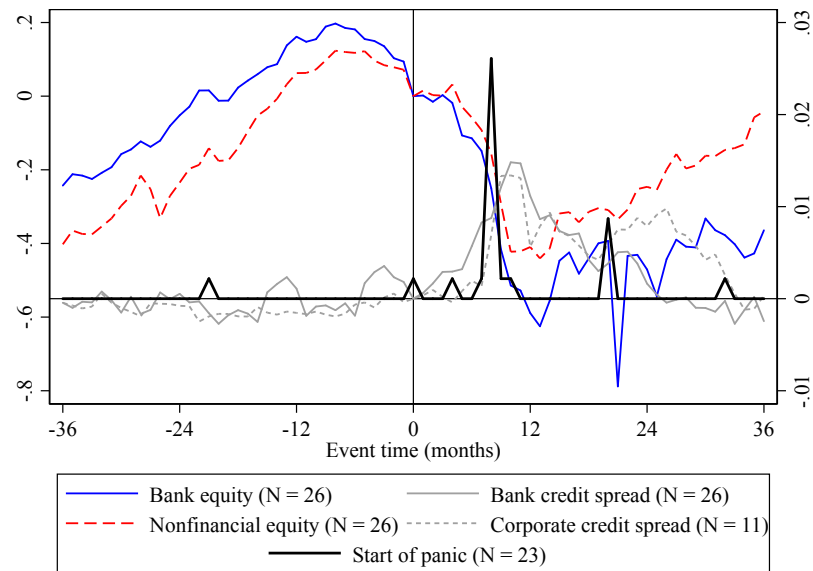


Figure A13: Timing of Bank Equity Crashes Relative to Panics and Other Indicators: Robustness on the Sample of Narrative Crises

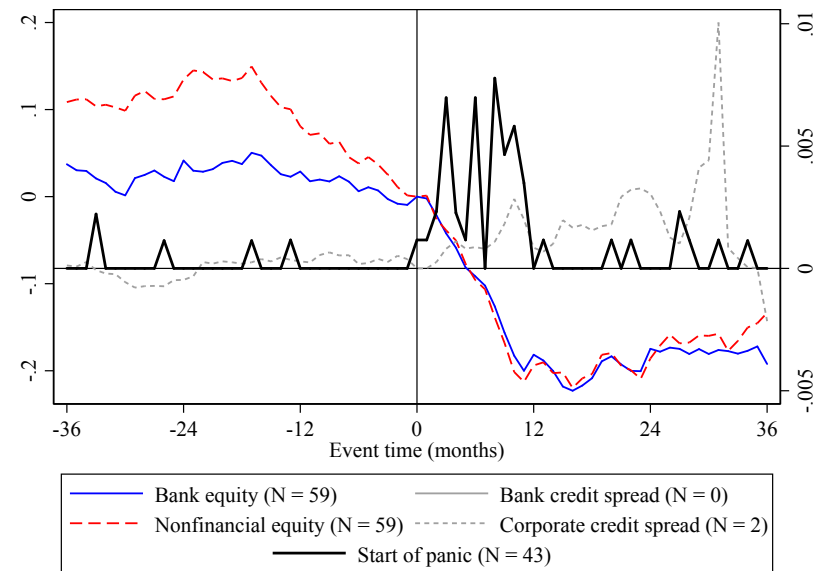
This figure presents the same results as in Figure VI, but on the sample of Narrative Crises instead of episodes on the BVX Crisis List.



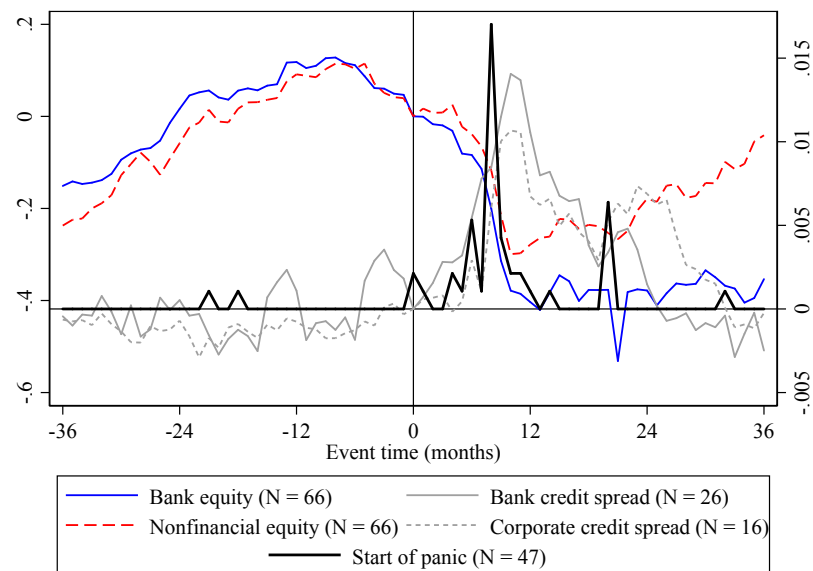
(B) Consistent sample



(C) 1870–1939



(D) 1940–2016



(E) 1940–2006

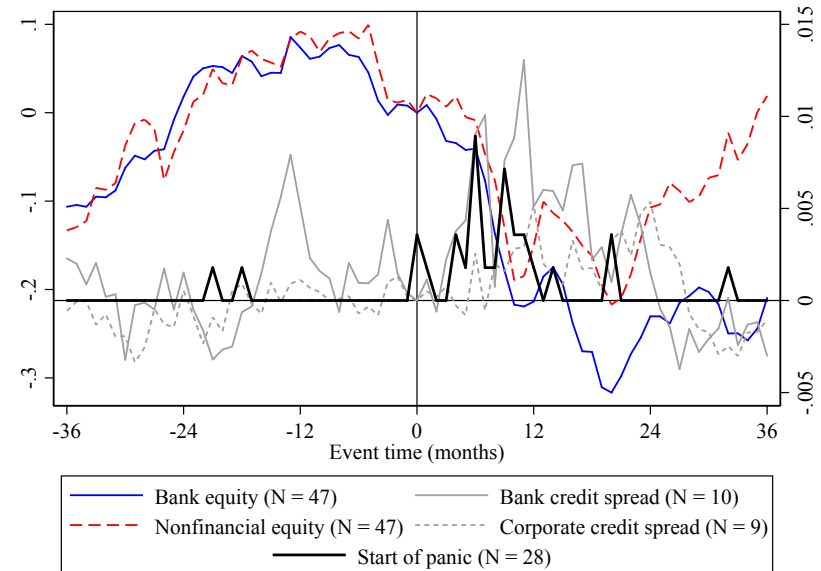
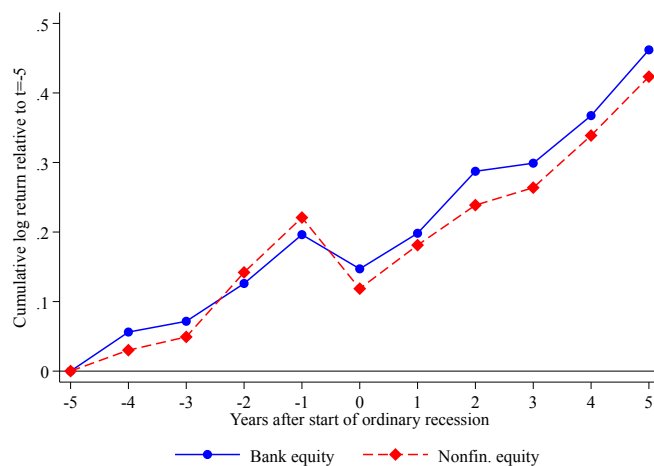


Figure A14: Bank and Nonfinancial Equity Around Banking Crises and Normal Recessions

This figure plots the average dynamics of bank equity and nonfinancial equity around banking crisis recessions and normal (i.e. non-banking crisis) recessions. Banking crisis recessions are defined as recessions that coincide with a BVX Crisis List episode within a year of the peak in GDP. Normal recessions are the remaining recessions in the sample. Time  $t = 0$  refers to the GDP peak year.

(A) Normal recessions



(B) Banking crisis recessions

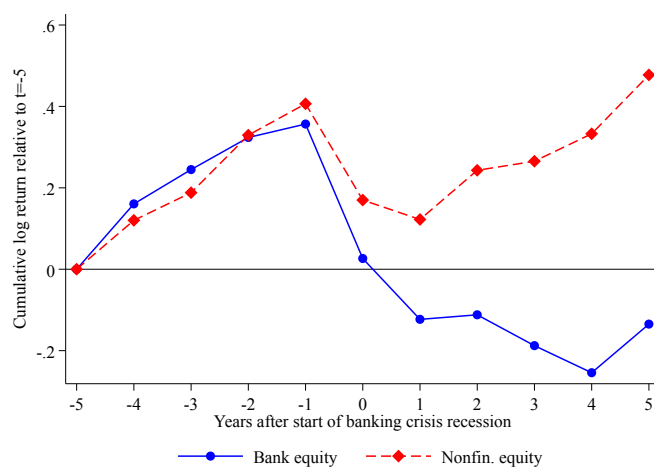


Figure A15: Bank Equity Declines and the Global Great Depression

This figure plots the peak-to-trough decline in real GDP against the peak-to-trough bank equity decline over the period 1929–1933. Note that this figure plots all countries in the sample for which data is available, not just those that experienced banking crises. We omit from the plot one outlier observation, Chile, which reported a real GDP decline of 48% and a bank equity decline of 30%.

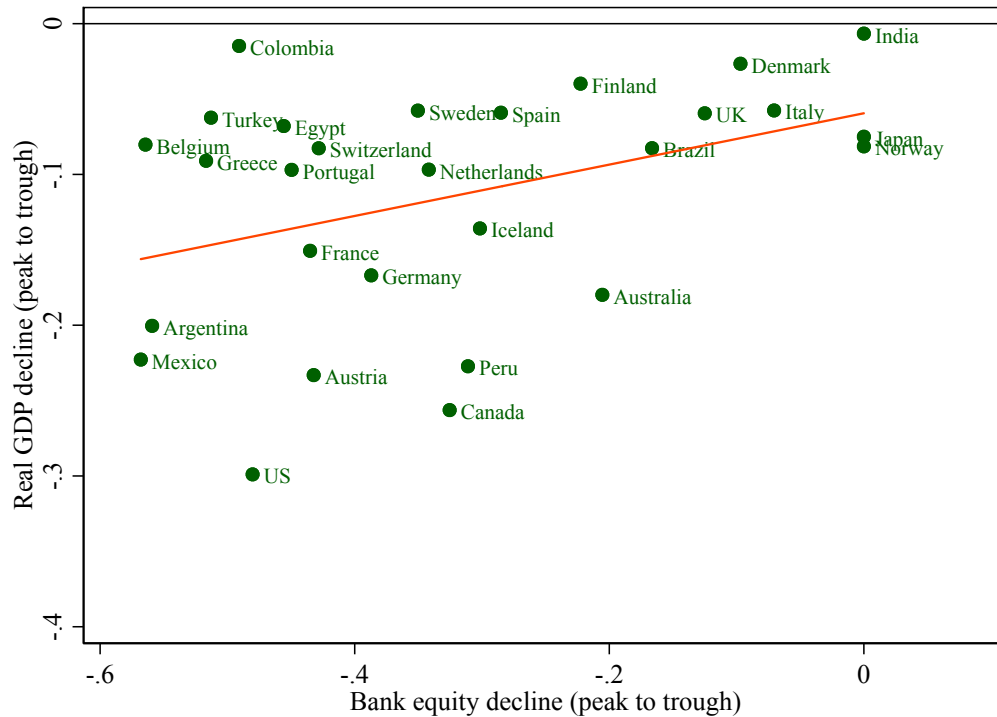
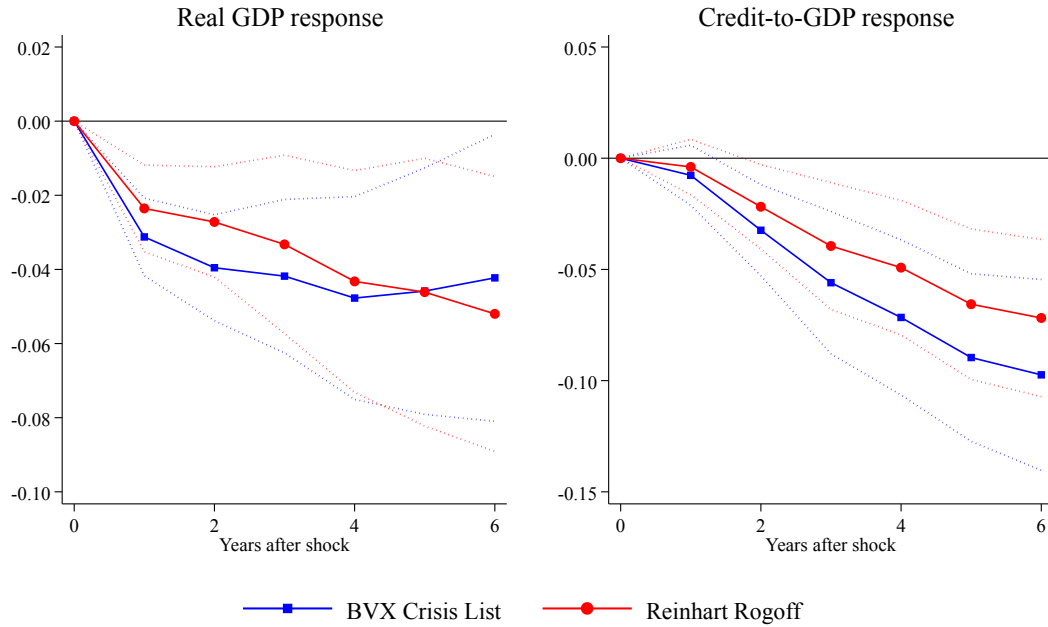


Figure A16: Comparisons with Other Banking Crisis Chronologies

This figure compares the BVX Crisis List with the Reinhart and Rogoff (2009) and Laeven and Valencia (2013) banking crisis chronologies. The comparisons in each panel are estimated separately using local projections on consistent samples (i.e. the same sample covered by Reinhart and Rogoff (2009) or Laeven and Valencia (2013)). All specifications control for country fixed effects, along with contemporaneous and lagged real GDP growth and change in credit-to-GDP. The dotted lines represent 95% confidence intervals based on standard errors double-clustered on country and year.

(A) Comparison with Reinhart and Rogoff



(B) Comparison with Laeven and Valencia

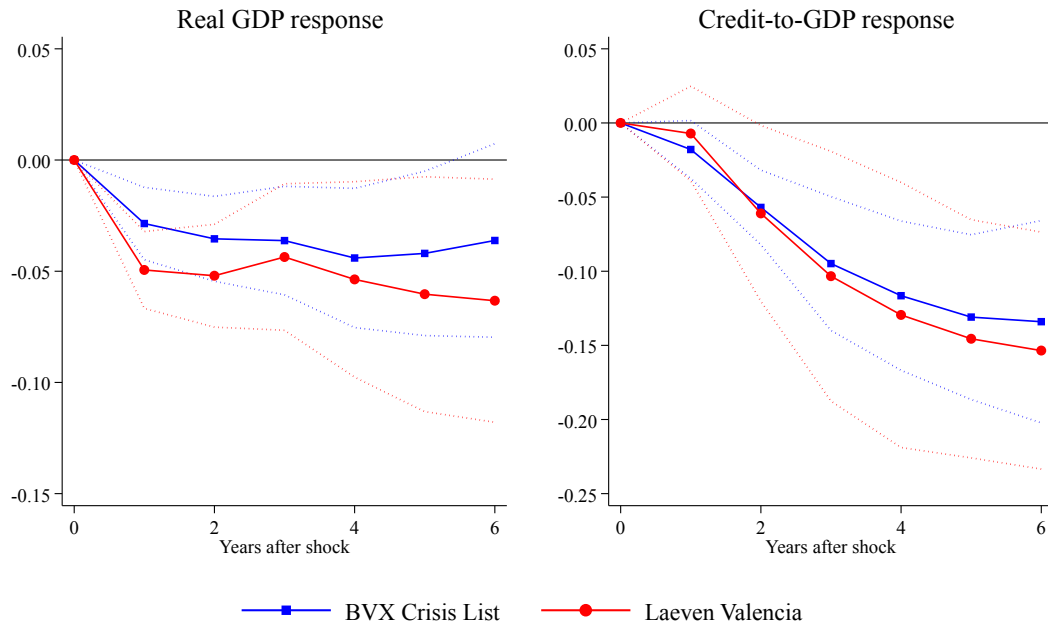


Table A1: Narrative Crises

This table reports the list of Narrative Crises, defined as the union of all banking crises from six prominent papers: Bordo et al. (2001), Caprio and Klingebiel (2003) Demirgüç-Kunt and Detragiache (2005), Laeven and Valencia (2013), Reinhart and Rogoff (2009, and online spreadsheets updated 2014), and Schularick and Taylor (2012, online update 2017). We use the most recent update of each paper. The years listed correspond to the starting year of the banking crisis according to each paper. The starting year of the Narrative Crisis list (reported in column (8)) is the earliest year across all six papers. A “0” means that the source reports no banking crisis in a given year, while a blank cell means that the crisis is not covered in the sample period (i.e. no information provided either way as to whether a banking crisis occurred).

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	Reinhart Rogoff	Schularick Taylor	Laeven Valencia	Bordo et al.	Caprio Klingebiel	Demirgüç-Kunt Detrag.	Narrative Crises
Argentina	1885						1885
	1890			1890			1890
	1914			1914			1914
	1931			1931			1931
	1934			1934			1934
	1980		1980	1980	1980	1980	1980
	1985		0	0	0	0	1985
	1989		1989	1989	1989	1989	1989
	1995		1995	1995	1995	1995	1995
	2001		2001		2001	2001	2001
Australia	1893	1893		1893			1893
	1931	0		0			1931
	1989	1989	0	1989	1989	0	1989
Austria	1873						1873
	1924						1924
	1929						1929
	1931						1931
	2008		2008				2008
Belgium	1870	1870					1870
	0	1885					1885
	1914	0		1914			1914
	1925	1925		1925			1925
	1931	1931		1931			1931
	1934	1934		1934			1934
	1939	1939		1939			1939
Brazil	2008	2008	2008				2008
	1890			1890			1890
	1897			1897			1897
	1900			1900			1900
	1914			1914			1914
	1923			1923			1923
	1926			0			1926
	1929			0			1929
	1963			1963			1963
	1985		0	0	0	0	1985
	1990		1990	1990	1990	1990	1990
	1994		1994	1994	1994	1994	1994
Canada	1873	0					1873
	1906	0					1906
	1908	1907					1907
	1912	0					1912
	1923	0		1923			1923

Continued on next page

Table A1: Narrative Crises

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	Reinhart Rogoff	Schularick Taylor	Laeven Valencia	Bordo et al.	Caprio Klingebiel	Demirgüç-Kunt Detrag.	Narrative Crises
Chile	1983	0	0	1983	1982	0	1982
	1890			1889			1889
	1898			1898			1898
	1907			1907			1907
	1914			1914			1914
	1926			1925			1925
Colombia	1976		1976	1976	1976		1976
	1980		1981	1981	1981	1981	1980
	1982		1982	1982	1982	1982	1982
	1998		1998	0	0	1999	1998
Czech	1931						1931
	1991		0		1991		1991
	0		1996		0		1996
Denmark	1877	1877					1877
	1885	1885		1885			1885
	1902	0		0			1902
	1907	1908		1907			1907
	1914	0		1914			1914
	1921	1921		1921			1921
	1931	1931		1931			1931
	1987	1987	0	1987	1987	0	1987
Egypt	2008	2008	2008				2008
	1907						1907
	1931						1931
	1980		1980	1981	1980s	0	1980
	1990		0	1991	1991	0	1990
Finland	0	1877					1877
	1900	1900		1900			1900
	1921	1921		1921			1921
	1931	1931		1931			1931
	1939	0		1939			1939
	1991	1991	1991	1991	1991	1991	1991
France	1871						1871
	1882	1882		1882			1882
	1889	1889		1889			1889
	1904	0		0			1904
	1907	0		1907			1907
	1914	0		0			1914
	1930	1930		1930			1930
	1939	0		0			1939
	1994	0	0	1994	1994	0	1994
	2008	2008	2008				2008
Germany	0	1873					1873
	1880	0					1880
	1891	1891		0			1891
	1901	1901		1901			1901
	0	1907		0			1907
	1925	0		0			1925
	1929	1931		1931			1929
	1977	0	0	0	late 1970s		1977
	2008	2008	2008		0		2008

Continued on next page

Table A1: Narrative Crises

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	Reinhart Rogoff	Schularick Taylor	Laeven Valencia	Bordo et al.	Caprio Klingebiel	Demirgüç-Kunt Detrag.	Narrative Crises
Greece	1931			1931			1931
	1991		0	1991	1991	0	1991
	2008		2008				2008
Hong Kong	1982		0	1982	1982		1982
	1983		0	1983	1983		1983
	1998		0		1998		1998
Hungary	1931						1931
	1991		1991		1991	0	1991
	2008		2008				2008
Iceland	1985		0	1985	1985	0	1985
	1993		0	1993	1993	0	1993
	2007		2008				2007
India	1908						1908
	1913						1913
	1921						1921
	1929						1929
	1947						1947
	1993		1993	1993	1993	1991	1991
Indonesia	1992		0	0	0	1992	1992
	1994		0	1994	1994	0	1994
	1997		1997	1997	1997	1997	1997
Ireland	2007		2008				2007
Israel	1977		1977	1977	1977	0	1977
	1983		0	counted above	counted above	1983	1983
Italy	0	1873					1873
	1887	1887					1887
	1891	0		1891			1891
	1893	1893		1893			1893
	1907	1907		1907			1907
	1914	0		1914			1914
	1921	1921		1921			1921
	1930	1930		1930			1930
	1935	1935		1935			1935
	1990	1990	0	1990	1990	1990	1990
	2008	2008	2008				2008
Japan	1872	1871					1871
	1882	0					1882
	0	1890		0			1890
	1901	0		1901			1901
	1907	1907		1907			1907
	1914	0		0			1914
	1917	0		1917			1917
	0	1920		0			1920
	1923	0		0			1923
	1927	1927		1927			1927
	1992			1992	1991	1992	1991
	counted above	1997	1997	counted above	counted above	counted above	1997
Korea	1983		0	0	0	0	1983
	1986		0	0	0	0	1986
	1997		1997	1997	1997	1997	1997
Luxembourg			2008				2008

Continued on next page



Table A1: Narrative Crises

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	Reinhart Rogoff	Schularick Taylor	Laeven Valencia	Bordo et al.	Caprio Klingebiel	Demirgüç-Kunt Detrag.	Narrative Crises
Malaysia	1985		0	1985	1985	1985	1985
	1997		1997	1997	1997	1997	1997
Mexico	1883						1883
	1893						1893
	1908						1908
	1913						1913
	1920						1920
	1929						1929
	1981		1981	1981	1981	0	1981
	1982		counted above	0	counted above	1982	1982
	1992		0	0	0	0	1992
	1994		1994	1995	1994	1994	1994
Netherlands	0	1893		0			1893
	1897	0		1897			1897
	0	1907		0			1907
	1914	0		1914			1914
	1921	1921		1921			1921
	1939	1939		1939			1939
	2008	2008	2008				2008
New Zealand	1890						1890
	1893						1893
	1987		0	1987	1987	0	1987
Norway	1898	1899		0			1898
	1914	0		0			1914
	1921	1922		1921			1921
	1927	0		0			1927
	1931	1931		1931			1931
	1936	0		0			1936
	1987	1988	1991	1987	1987	1987	1987
Peru	1872						1872
	1983		1983	1983	1983	1983	1983
	1999		0		0	0	1999
Philippines	1981		1983	1983	1981	1981	1981
	1997		1997		1998	1998	1997
Portugal	1890	1890		1891			1890
	1920	1920		1920			1920
	1923	1923		1923			1923
	1931	1931		1931			1931
	0	0	0	0	0	1986	1986
	2008	2008	2008				2008
Russia	1875						1875
	1896						1896
	1995		0		1995	0	1995
	1998		1998		1998	0	1998
	2008		2008				2008
Singapore	1982		0	1982	1982		1982
South Africa	1877						1877
	1881						1881
	1890						1890
	1977		0	1977	1977		1977
	0		0	0	0	1985	1985

Continued on next page

Table A1: Narrative Crises

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	Reinhart Rogoff	Schularick Taylor	Laeven Valencia	Bordo et al.	Caprio Klingebiel	Demirgüç-Kunt Detrag.	Narrative Crises
Spain	1989		0	0	1989	0	1989
	0	1883					1883
	0	1890		0			1890
	0	1913		0			1913
	1920	1920		1920			1920
	1924	1924		1924			1924
	1931	1931		1931			1931
	1977	1977	1977	1977	1977		1977
Sweden	2008	2008	2008				2008
	1876	1878					1876
	1897	0		1897			1897
	1907	1907		1907			1907
	1922	1922		0			1922
	1931	1931		1931			1931
	1991	1991	1991	1991	1991	1990	1990
	2008	2008	2008				2008
Switzerland	1870	1870					1870
	1910	1910		0			1910
	1921	0		0			1921
	1931	1931		1931			1931
	1933	0		1933			1933
	0	1991	0	0	0	0	1991
	2008	2008	2008				2008
	1923						1923
Taiwan	1927						1927
	1983			1983	1983	0	1983
	1995			1995	1995	0	1995
	1997			1997	1997	1997	1997
	1979		0	0	0		1979
	1983		1983	1983	1983	1983	1983
	1996		1997	1997	1997	1997	1996
	1931						1931
Turkey	1982		1982	1982	1982	1982	1982
	1991		0	0	0	1991	1991
	1994		0	1994	1994	1994	1994
	2000		2000		2000	2000	2000
	1878	0					1878
	1890	1890		1890			1890
	1908	0		0			1908
	1914	0		0			1914
U.K.	1974	1974	0	1974	1974		1974
	1984	0	0	0	1980s-90s	0	1984
	1991	1991	0	0	0	0	1991
	1995	0	0	0	0	0	1995
	2007	2007	2007				2007
	1873	1873					1873
	1884	0		1884			1884
	1890	0		0			1890
U.S.	1893	1893		1893			1893
	1907	1907		1907			1907
	1914	0		1914			1914

Continued on next page

Table A1: Narrative Crises

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	Reinhart Rogoff	Schularick Taylor	Laeven Valencia	Bordo et al.	Caprio Klingebiel	Demirgüç-Kunt Detrag.	Narrative Crises
	1929	1929		1930			1929
	1984	1984	1988	1984	1984	1980	1984
	counted above	counted above	counted above	0	counted above	counted above	1990
	2007	2007	2007				2007
Venezuela	1978		0	1978	late 1970s		1978
	1993		1994	1994	1994	1993	1993
	2009		0				2009

Table A2: Master List of Episodes

This table reports the master list of episodes, which is intended to be a very broad list of potential crises, many of which may not necessarily be “banking crises” according to any definition. The master list of episodes is the union of: i) the Narrative Crises list defined in Table A1, and ii) years in which the bank equity real total return index cumulatively declines by more than 30% (relative to its previous peak). The year of each episode, reported in column (2), is defined as the first year in which the bank equity index cumulatively falls by more than 30% from its previous peak. In cases in which the bank equity index does not decline by 30% or more, the year in column (2) is the year from the Narrative Crises list. Column (3) indicates whether the episode is a Narrative Crisis. If the year from the Narrative Crisis list is different from the year defined by the bank equity decline (column (2)), that is also indicated in column (3). Column (5) indicates the presence or absence of a banking “panic,” which is defined in the main text. Column (6) records the starting month of the panic, according to narrative accounts. Column (7) records whether there is a 30% cumulative bank equity decline associated with a given episode (or blank if there is no bank equity data). Column (8) indicates the presence or absence of narrative evidence of widespread bank failures, which is defined in the main text. Column (9) records whether the episode is included on the BVX Crisis List.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Argentina	1885	1		0		0	0	
	1891	1890		1	March 1890	1	1	1
	1914	1	1	1	July 1914	1	0	1
	1930	1931		1	April 1931	1	0	1
	1934	1		1	September 1934	1	1	1
	1980	1		1	March 1980		1	1
	1985	1		1	May 1985		1	1
	1989	1		1	April 1989		1	1
	1995	1		1	December 1994	1	1	1
	2000	2001		1	March 2001	1	1	1
	2008			0		1	0	
	2011			0		1	0	
Australia	1893	1		1	April 1893	1	1	1
	1931	1		1	April 1931	0	0	1
	1952			0		1	0	
	1974			0		1	0	
	1989	1		1	March 1990	0	1	1
	2008			0		1	0	
Austria	1873	1		1	May 1873	1	1	1
	1888			0		1	0	
	1920			0		1	0	
	1924	1		0		1	1	1
	1931	1929, 1931		1	May 1931	1	1	1
	1966			0		1	0	
	1982			0		1	0	
	1995			0		1	0	
	2008	1		1	September 2008	1	1	1
	2011			0		1	1	1
Belgium	1870	1		1	July 1870	0	0	1
	1876			1	March 1876	1	1	1

Continued on next page

Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded Panic due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Brazil	1883	1885		1		0	1	1
	1914	1	1	1	July 1914		1	1
	1925	1		0		0	0	
	1929	1931, 1934		1	May 1931	1	1	1
	1939	1	1	1	December 1939		1	1
	1974			0		1	0	
	1980			0		1	0	
	2002			0		1	0	
	2008	1		1	September 2008	1	1	1
	2011			0		1	1	1
	1890	1		1	December 1890	0	1	1
	1897	1		0		0	0	
	1900	1		1	October 1900	0	1	1
	1914	1	1	1	July 1914	1	0	1
	1923	1		0		0	0	
	1926	1		0		0	0	
	1929	1		1	June 1932	0	0	1
	1953			0		1	0	
	1957			0		1	0	
	1962	1963		0			0	
	1985	1		1	September 1985		1	1
	1990	1		1	February 1990		0	1
	1994	1		1	July 1994		1	1
	1998			0		1	0	
	2008			0		1	0	
	2012			0		1	0	
Canada	1873	1		1	July 1879	0	1	1
	1906	1		0		0	0	
	1907	1		0		0	1	
	1912	1		0		0	0	
	1920	1923		1	December 1921	1	1	1
	1932			0		1	0	
	1974			0		1	0	
	1982	1		1	July 1982	0	1	1
	2008			0		1	0	
	1878			1	December 1877		1	1
Chile	1889	1		0		0	0	
	1898	1		1	July 1898	0	1	1
	1907	1		1	October 1907		1	1
	1914	1	1	1	July 1914		0	1
	1925	1		1	December 1925		1	1
	1931			1	June 1932	1	1	1
	1954			0		1	0	
	1962			0		1	0	
	1970			0		1	0	

Continued on next page

Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded Panic due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Colombia	1976	1		1	June 1975	0	1	1
	1982	1980		1	September 1981	1	1	1
	1998			0		1	0	
	1931			1	June 1929	1	0	1
	1972			0		1	0	
	1982	1		0		1	1	1
Czech	1998	1		1	June 1998	1	1	1
	2008			0		1	0	
	1923			1	May 1923		1	1
	1931	1		0		0	0	
Denmark	1991	1		1	April 1994		1	1
	1995	1996		1	June 2000	1	1	1
	1877	1		1		0	1	1
	1885	1		1	September 1885	0	1	1
	1902	1		0		0	0	
	1907	1		1	February 1908	0	1	1
Egypt	1914	1	1	0			0	
	1919	1921		1	September 1922	1	1	1
	1931	1		0		0	0	
	1974			0		1	0	
	1992	1987		0		1	1	1
	2008	1		1	September 2008	1	1	1
	2011			0		1	1	1
	1907	1		1	May 1907	0	1	1
	1914		1	1	July 1914	1	0	1
	1931	1		1	July 1931	1	1	1
Finland	1980	1		0			0	
	1990	1		0			0	
	1877	1		0			0	
	1900	1		1	November 1900		1	1
	1921	1		0		1	1	1
	1931	1		1	October 1931	0	1	1
France	1939	1	1	0		0	0	
	1974			0		1	0	
	1990	1991		1	September 1991	1	1	1
	2002			0		1	0	
	2008			0		1	0	
	1871	1	1	1			0	1
	1882	1		1	January 1882	1	1	1
	1889	1		1	March 1889	0	1	1
	1904	1		0		0	0	
	1907	1		0		0	0	
	1914	1	1	1	July 1914	1	0	1
	1919			0		1	0	
	1930	1		1	October 1930	1	1	1

Continued on next page

Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded Panic due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Germany	1937			1	September 1938	1	0	1
	1939	1	1	0		0	0	
	1974			0		1	0	
	1987			0		1	0	
	1994	1		0		0	1	
	2008	1		1	September 2008	1	0	1
	2011			0		1	0	
	1874	1873		1	October 1873	1	1	1
	1880	1		0		0	0	
	1891	1		1	September 1891	0	1	1
	1901	1		1	June 1901	0	1	1
	1907	1		0		0	0	
	1914		1	1	July 1914		0	1
	1920			0		1	0	
	1925	1		0		0	0	
	1930	1929		1	April 1931	1	1	1
	1962			0		1	0	
	1973			0		1	0	
	1977	1		0		0	0	
	1987			0		1	0	
Greece	2002			0		1	0	
	2008	1		1	September 2008	1	1	1
	2011			0		1	0	
	1929	1931		1	September 1931	1	1	1
	1973			0		1	0	
	1980			0		1	0	
	1988			0		1	0	
	1992	1991		0		1	0	
	2001			0		1	0	
	2008	1		1	September 2008	1	0	1
Hong Kong	2010			1	August 2011	1	1	1
	1874			0		1	0	
	1892			1	March 1892	1	1	1
	1950			0		1	0	
	1965			1	February 1965	0	1	1
	1974			0		1	0	
	1982	1982, 1983		1	September 1983	1	1	1
	1991			1	July 1991	0	0	1
	1998	1		1	January 1998	1	1	1
	2011			0		1	0	
Hungary	1873			1	July 1873	1	1	1
	1883			0		1	0	
	1924			0		1	0	
	1931	1		1	October 1930		1	1
	1991	1		0			1	1

Continued on next page

Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded Panic due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Iceland	1995			1	February 1997	1	1	1
	2008	1		1	September 2008	1	0	1
	2011			0		1	0	
	1920			1	Late 1920	1	1	1
	1930			1	February 1930	1	1	1
	1985	1		0			1	1
India	1993	1		0			1	1
	2008	2007		1	September 2008	1	1	1
	1908	1		0		0	0	
	1913	1		1	November 1913	0	1	1
	1920	1921		0		1	1	1
	1929	1		0		0	0	
Indonesia	1947	1	1	0			0	
	1993	1991		0		1	1	1
	1998			0		1	0	
	2011			0		1	0	
	1990	1992, 1994		1	November 1992	1	1	1
	1998	1997		1	January 1998	1	1	1
Ireland	1974			0		1	0	
	1990			0		1	0	
	2007	1		1	September 2008	1	1	1
	2010			1	November 2010	1	1	1
	2016			0		1	0	
	1977	1		0		0	0	
Israel	1983	1		0		1	1	1
	1988			0		1	0	
	2002			0		1	0	
	2008			0		1	0	
	2011			0		1	0	
	1873	1		1		0	1	1
Italy	1889	1887		1	August 1889	1	1	1
	1891	1891, 1893		1	November 1893	1	1	1
	1907	1		1	September 1907	1	1	1
	1914	1	1	1	July 1914	1	1	1
	1921	1		1	November 1921	1	1	1
	1930	1		1	December 1930	0	1	1
	1935	1		0			0	
	1962			0		1	0	
	1974			0		1	0	
	1982			0		1	0	
	1992	1990		0		1	1	1
	2001			0		1	0	
	2008	1		1	September 2008	1	0	1
	2011			0		1	1	1
	2016			0		1	1	1

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Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded Panic due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Japan	1871	1		1	August 1871		1	1
	1882	1		1			1	1
	1890	1		1			1	1
	1901	1		1	April 1901	0	1	1
	1907	1		1	February 1907	1	1	1
	1914	1	1	0		0	0	
	1917	1	1	0		0	0	
	1920	1		1	April 1920	1	1	1
	1922			1	February 1922	1	1	1
	1923	1		1	September 1923	1	1	1
	1927	1		1	March 1927	0	1	1
	1953			0		1	0	
	1974			0		1	0	
	1990	1991		0		1	1	1
	1997	1		1	November 1997	1	1	1
	2001			0		1	1	1
	2008			0		1	0	
Korea	1976			0		1	0	
	1984	1983		0		1	0	
	1986	1		0		0	0	
	1990			0		1	0	
	1997	1		1	October 1997	1	1	1
Luxembourg	2008			0		1	0	
	1879			0		1	0	
	1924			0		1	0	
	1930			0		1	0	
	2008	1		1	September 2008	1	1	1
Malaysia	2012			0		1	0	
	1973			0		1	0	
	1985	1		1	July 1985	1	1	1
	1997	1		1	August 1997	1	1	1
Mexico	2008			0		1	0	
	1883	1		1	March 1883		1	1
	1893	1		1		1	0	1
	1908	1		0		0	1	
	1913	1	1	1	November 1913		1	1
	1921	1920		1	December 1920		1	1
	1924			0		1	0	
	1928	1929		1	July 1931	1	1	1
	1974			0		1	0	
	1981	1981, 1982		1	September 1982		1	1
	1992	1		0		0	0	
	1994	1		1	December 1994	1	1	1
	1998			0		1	0	
Netherlands	1893	1		0		0	0	

Continued on next page

Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
New Zealand	1897	1		0		0	0	
	1907	1		1	November 1907	0	1	1
	1914	1	1	1	July 1914		0	1
	1921	1		0		1	1	1
	1931			0		1	1	1
	1939	1	1	0			0	
	1957			0		1	0	
	1965			0		1	0	
	1987			0		1	0	
	2002			0		1	0	
	2008	1		1	September 2008	1	1	1
	2011			0		1	0	
	1888	1893		1	January 1893	1	1	1
	1931			0		1	0	
	1960			0		1	0	
	1984			0		1	0	
Norway	1987	1		1	August 1988	1	1	1
	1998			0		1	0	
	2008			0		1	0	
	1898	1		1	June 1899		1	1
	1914	1	1	1	July 1914		0	1
	1919	1921		1	April 1923	1	1	1
	1927	1		0		0	0	
	1931	1		1	December 1931	0	1	1
	1936	1		0		0	0	
	1951			0		1	0	
Peru	1964			0		1	0	
	1971			0		1	0	
	1987	1		1	October 1991	1	1	1
	2008			1	September 2008	1	0	1
	1876	1872		1	August 1875	1	1	1
	1914		1	1	July 1914	1	0	1
	1931			1	October 1930	1	1	1
	1981	1983		0		1	1	1
	1987			0		1	0	
	1998	1999		0		1	1	1
Philippines	1971			1	June 1974	1	0	1
	1981	1		1	January 1981	1	1	1
	1997	1		0		1	1	1
	2008			0		1	0	
Portugal	1876			1	August 1876		1	1
	1890	1		1	May 1891		1	1
	1921	1920		1		1	1	1
	1923	1		1		1	1	1
	1931	1		1	November 1930	1	1	1

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Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded Panic due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Russia	1956			0		1	0	
	1986	1		0			0	
	2002			0		1	0	
	2008	1		1	September 2008	1	1	1
	2011			0		1	1	1
	2014			0		1	1	1
	1875	1		1	October 1875	0	1	1
	1900	1896		1	August 1899	1	1	1
	1995	1		1	August 1995		1	1
	1998	1		1	August 1998	1	1	1
Singapore	2008	1		1	September 2008	1	1	1
	1973			0		1	0	
	1982	1		0		0	0	
	1877	1		0		0	0	
	1881	1		1		0	1	1
	1890	1		1	September 1890	0	1	1
	1920			0		1	0	
	1969			0		1	0	
	1973			0		1	0	
	1977	1		0		0	0	
Spain	1984	1985		0		1	0	
	1989	1		0		0	0	
	1882	1883		1	February 1882	1	1	1
	1890	1		1	November 1890	0	1	1
	1913	1		1	December 1913	0	1	1
	1920	1		1	November 1920	0	1	1
	1924	1		1	September 1924	0	1	1
	1931	1		1	April 1931	1	1	1
	1958			0		1	0	
	1971			0		1	0	
Sweden	1975	1977		0		1	1	1
	1991			0		1	0	
	2002			0		1	0	
	2008	1		1	September 2008	1	1	1
	2010			0		1	1	1
	1878	1876		1	December 1878		1	1
	1897	1		0		0	0	
	1907	1		1	October 1907	0	1	1
	1919	1922		0		1	1	1
	1932	1931		0		1	0	
Switzerland	1991	1990		1	September 1992	1	1	1
	2002			0		1	0	
	2008	1		1	September 2008	1	1	1
	1870	1		1	July 1870	0	1	1
	1910	1		0		0	1	

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Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded Panic due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Taiwan	1914		1	1	July 1914		0	1
	1919	1921		0		1	1	1
	1931	1931, 1933		1	July 1931	1	1	1
	1963			0		1	0	
	1974			0		1	0	
	1987			0		1	0	
	1990	1991		1	October 1991	1	1	1
	2008	1		1	September 2008	1	0	1
	1923	1		1	September 1923		0	1
	1927	1		1	April 1927		1	1
	1983	1		1	August 1985		1	1
	1990			0		1	0	
	1995	1		1	July 1995	1	1	1
	1998	1997		0		1	1	1
Thailand	2008			0		1	0	
	1979	1		0		1	1	1
	1983	1		1	October 1983	0	1	1
	1997	1996		1	May 1996	1	1	1
Turkey	2008			0		1	0	
	1875			0		1	0	
	1883			0		1	0	
	1914		1	1	August 1914	1	1	1
U.K.	1930	1931		1	July 1931	1	1	1
	1974			0		1	0	
	1980	1982		1	November 1983	1	1	1
	1988			0		1	0	
	1991	1		1	January 1991	1	0	1
	1994	1		1	April 1994	0	1	1
	1998			0		1	0	
	2001	2000		1	November 2000	1	1	1
	2008			0		1	0	
	2011			0		1	0	
	1878	1		1	September 1878	0	1	1
	1890	1		1	November 1890	0	0	1
	1908	1		0		0	0	
	1914	1	1	1	July 1914	1	0	1
U.S.	1951			0		1	0	
	1973	1974		1	February 1974	1	1	1
	1984	1		0		0	0	
	1991	1		1	July 1991	0	1	1
	1995	1		0		0	0	
	2008	2007		1	September 2008	1	1	1
	2011			0		1	0	
	1873	1		1	September 1873	0	1	1
	1884	1		1	May 1884	0	1	1

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Table A2: Master List of Episodes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Country	Year by bank eq. decline	Narrative Crisis (Narrative start year, if different)	Excluded Panic due to war	Panic	Panic month	Bank eq. 30% cumulative decline	Widespread bank failures	BVX Crisis List
Venezuela	1890	1		1	November 1890	0	1	1
	1893	1		1	May 1893	0	1	1
	1907	1		1	October 1907	1	1	1
	1914	1	1	0		0	0	
	1930	1929		1	November 1930	1	1	1
	1937			0		1	0	
	1974			0		1	0	
	1984	1		1	May 1984	0	1	1
	1990	1		0		1	1	1
	2007	1		1	September 2008	1	1	1
	1960			0		1	0	
	1981	1978		1	December 1978	1	1	1
	1988			0		1	0	
	1992	1993		1	October 1993	1	1	1
	1998			0		1	0	
	2008	2009		1	November 2009	1	1	1
	2014			0		1	0	

Table A3: Bank Equity Return Bins, Real GDP, and Credit-to-GDP

This table presents the predictive content of bank equity return bins for real GDP growth and the change in credit-to-GDP. The table corresponds to the estimates in Figure II at the three year horizon. Nonfinancial equity bin controls refer to the same bins in nonfinancial equity returns from  $t - 1$  to  $t$ . Other controls refer to contemporaneous real GDP growth and credit-to-GDP change, three lags of real GDP growth and credit-to-GDP change, as well as three lags of the bank and nonfinancial equity return bins.  $t$ -statistics in brackets are computed from standard errors double-clustered on country and year. \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	Real GDP growth <sub><math>t,t+3</math></sub>			Credit-GDP change <sub><math>t,t+3</math></sub>		
	(1)	(2)	(3)	(4)	(5)	(6)
$r_{it}^B \leq -45\%$	-0.065*** [-4.00]	-0.036*** [-2.78]	-0.042*** [-3.23]	-0.12*** [-4.81]	-0.080*** [-3.81]	-0.069*** [-3.13]
$-45\% < r_{it}^B \leq -30\%$	-0.039*** [-4.38]	-0.025*** [-2.92]	-0.025*** [-3.81]	-0.071*** [-4.18]	-0.058*** [-3.26]	-0.055*** [-3.06]
$-30\% < r_{it}^B \leq -15\%$	-0.022*** [-3.09]	-0.017** [-2.59]	-0.016*** [-3.06]	-0.031*** [-3.98]	-0.019* [-1.94]	-0.022** [-2.25]
$-15\% < r_{it}^B \leq 0\%$	-0.0052 [-1.23]	-0.0032 [-0.90]	-0.0043 [-1.39]	-0.013** [-2.38]	-0.0070 [-0.98]	-0.0074 [-0.98]
$15\% < r_{it}^B \leq 30\%$	-0.0021 [-0.33]	-0.0017 [-0.30]	-0.0011 [-0.21]	0.012 [1.47]	0.010 [1.21]	0.0083 [1.13]
$30\% < r_{it}^B \leq 45\%$	-0.0040 [-0.61]	-0.000095 [-0.015]	-0.0016 [-0.23]	0.025 [1.61]	0.024 [1.43]	0.022 [1.47]
$r_{it}^B > 45\%$	0.0025 [0.31]	0.00073 [0.100]	0.0035 [0.51]	0.016 [1.48]	0.014 [1.33]	0.013 [1.20]
Country fixed effects	✓	✓	✓	✓	✓	✓
Nonfin. eq. bins	✓	✓	✓	✓	✓	✓
Other controls		✓	✓		✓	✓
Year fixed effects			✓			✓
Adj. $R^2$ (within)	0.06	0.17	0.10	0.04	0.17	0.15
N	2548	2548	2548	2536	2536	2536

Table A4: Bank Equity Returns, Output, and Credit: Alternative Specifications

This table presents the predictive content of bank and nonfinancial equity continuous returns for real GDP growth and the change in credit-to-GDP. Both outcome variables are measured from years  $t$  to  $t + 3$ . The table also shows that the predictive content of bank equity returns is nonlinear by including quadratic terms (columns (2) and (5)) and by separately estimating the predictive content of positive and negative bank and nonfinancial equity returns (columns (3) and (6)). Controls variables are contemporaneous real GDP growth and credit-to-GDP change, three lags of real GDP growth and credit-to-GDP change, as well as three lags of the independent variables reported in each respective column.  $t$ -statistics in brackets are computed from standard errors double-clustered on country and year. \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	Real GDP growth <sub><math>t,t+3</math></sub>			Credit-to-GDP change <sub><math>t,t+3</math></sub>		
	(1)	(2)	(3)	(4)	(5)	(6)
Bank eq. ret.	0.027*** [3.18]	0.041*** [4.25]		0.052*** [3.00]	0.075*** [3.74]	
(Bank eq. ret.) <sup>2</sup>		-0.033*** [-2.98]			-0.048** [-2.33]	
Nonfin. eq. ret.	0.018** [2.12]	0.025** [2.04]		-0.0029 [-0.23]	-0.013 [-0.64]	
(Nonfin. eq. ret.) <sup>2</sup>		-0.015 [-0.97]			0.017 [0.71]	
Positive bank eq. ret.			0.0050 [0.48]			0.030* [1.70]
Negative bank eq. ret.			0.078*** [5.30]			0.11*** [3.25]
Positive nonfin. eq. ret.			0.013 [1.12]			0.010 [0.59]
Negative nonfin. eq. ret.			0.028 [1.23]			-0.042 [-1.38]
Country fixed effects	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓
Adj. $R^2$ (within)	0.13	0.14	0.14	0.14	0.15	0.15
N	2548	2548	2548	2536	2536	2536

Table A5: Bank Equity Crashes and Subsequent GDP and Credit Growth: Subsample Analysis

This table is similar to Table I but estimates Equation (2) on various subsamples. A bank (nonfinancial) equity crash is defined as an annual return of less than -30% of the bank (nonfinancial) equity total return index. Control variables are contemporaneous real GDP growth and credit-to-GDP change, as well as three lags of the bank equity crash, nonfinancial equity crash, credit-to-GDP change, and real GDP growth.  $t$ -statistics in brackets are computed from standard errors double-clustered on country and year. \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Real GDP growth from year $t$ to $t + 3$						
	Pre-1939		1946-1970		1971-2016	
	(1)	(2)	(3)	(4)	(5)	(6)
Bank equity crash	-0.018 [-0.91]	-0.026 [-1.37]	-0.027*** [-4.08]	-0.034** [-2.59]	-0.042*** [-5.17]	-0.035*** [-5.04]
Nonfinancial equity crash	-0.12** [-2.46]	-0.10** [-2.55]	-0.011*** [-22.6]	-0.0037 [-0.27]	-0.017* [-1.84]	-0.016 [-1.45]
Country fixed effects	✓	✓	✓	✓	✓	✓
Controls		✓		✓		✓
Adj. $R^2$ (within)	0.05	0.17	0.01	0.10	0.06	0.13
N	545	545	523	523	1478	1478

Panel B: Credit-to-GDP change from year $t$ to $t + 3$						
	Pre-1939		1946-1970		1971-2016	
	(1)	(2)	(3)	(4)	(5)	(6)
Bank equity crash	-0.036 [-1.45]	-0.0087 [-0.41]	-0.028*** [-5.14]	-0.025*** [-5.15]	-0.093*** [-5.24]	-0.067*** [-4.68]
Nonfinancial equity crash	-0.0052 [-0.25]	-0.0065 [-0.45]	0.0087 [1.68]	0.018 [1.64]	0.0098 [0.87]	-0.00019 [-0.012]
Country fixed effects	✓	✓	✓	✓	✓	✓
Controls		✓		✓		✓
Adj. $R^2$ (within)	0.00	0.19	0.00	0.03	0.04	0.18
N	544	544	523	523	1466	1466



Table A6: Bank Equity Captures the Symptoms and Severity of Banking Crises

This table shows that bank equity peak-to-trough declines during Narrative Crises are correlated with characteristics of banking crises and their economic severity. The table reports estimates from Equation (A1), which regresses various dependent variables (in the various columns) on the bank equity peak-to-trough decline (which is always a negative number, if there is a decline, or zero, if there is no decline). Each observation is an individual Narrative Crisis episode. We control for an indicator variable that equals one in the post-1945 sample, as prewar data tends to be more volatile, but results are similar without this indicator. The sample size in different columns varies due to data availability of the dependent variable.  $t$ -statistics in brackets are computed using robust standard errors. \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Severity of banking crises – Real GDP			
	Real GDP (peak-to-trough decline)	Real GDP growth (%.-pt. decline, peak-to-trough)	Real GDP growth (max deviation from trend)
	(1)	(2)	(3)
Bank equity peak-to-trough decline	0.139*** [5.488]	0.130*** [6.594]	0.0906*** [4.890]
Post-1945 dummy	✓	✓	✓
Adj. $R^2$ (within)	0.186	0.195	0.131
N	183	183	183

Panel B: Characteristics of banking crises				
	Decline in deposits (prewar only)	Failed banks (% of total bank assets)	Largest banks failing	NPL at peak
	(1)	(2)	(3)	(4)
Bank equity peak-to-tr. decline	0.314*** [3.152]	-0.476*** [-3.282]	-0.631*** [-2.620]	-0.221** [-2.290]
Post-1945 dummy	✓	✓	✓	✓
Adj. $R^2$ (within)	0.133	0.084	0.053	0.058
N	56	67	127	71
	Significant liability guarantees	Significant liquidity support	Banks nationalized	Govt equity injections
	(5)	(6)	(7)	(8)
Bank equity peak-to-tr. decline	-0.464* [-1.935]	-0.882*** [-3.935]	-0.794*** [-2.833]	-1.519*** [-6.159]
Post-1945 dummy	✓	✓	✓	✓
Adj. $R^2$ (within)	0.021	0.104	0.077	0.282
N	135	142	110	94

Table A7: Alternative Measures of Bank Equity Declines

This table is similar to Table A6 but uses alternate measures of bank equity declines as the independent variable. In Panel A, the independent variable is the *abnormal bank equity decline*, which is defined as the peak-to-trough decline of the bank equity total return minus nonfinancial equity total return. In Panel B, the independent variable is *bank market capitalization decline*, defined as the peak-to-trough decline in an index defined by annual returns of  $(1 + \text{bank equity price returns}) \cdot (1 + \text{bank equity new issuance})$ . Panel C has two independent variables: *bank equity peak-to-trough decline* (as in Table A6) and *bank equity recovery* (positive returns in the bank equity total returns index subsequent to the trough within three years after a banking crisis).

Panel A: Abnormal bank equity decline (i.e. bank equity minus nonfinancial equity returns)

	Real GDP (peak-to-trough decline)	Real GDP growth (%.-pt. decline, peak-to-trough)	Real GDP growth (max deviation from trend)
	(1)	(2)	(3)
Abnormal bank decline	0.0569*** [3.273]	0.0480*** [3.500]	0.0385*** [3.243]
Post-1945 dummy	✓	✓	✓
Adj. $R^2$ (within)	0.0704	0.0585	0.0529
N	174	174	174

Panel B: Bank market capitalization decline

	Real GDP (peak-to-trough decline)	Real GDP growth (%.-pt. decline, peak-to-trough)	Real GDP growth (max deviation from trend)
	(1)	(2)	(3)
Bank market cap decline	0.109*** [4.046]	0.0829*** [4.912]	0.0763*** [5.181]
Post-1945 dummy	✓	✓	✓
Adj. $R^2$ (within)	0.234	0.194	0.212
N	78	78	78

Panel C: Bank equity recoveries

	Real GDP (peak-to-trough decline)	Real GDP growth (%.-pt. decline, peak-to-trough)	Real GDP growth (max deviation from trend)
	(1)	(2)	(3)
Bank equity decline	0.143*** [4.581]	0.125*** [5.638]	0.0856*** [4.238]
Bank equity recovery	0.00973 [0.364]	-0.0134 [-0.647]	-0.0120 [-0.591]
Post-1945 dummy	✓	✓	✓
Adj. $R^2$ (within)	0.182	0.193	0.128
N	183	183	183

Table A8: Impact of Bank Equity Crashes Outside of Narrative Crises

This table shows that bank equity crashes predict output gaps and credit contraction even outside of narrative-based banking crisis episodes. *Narrative crisis* is an indicator that equals one within a  $\pm 3$ -year window around a crisis on the list of Narrative Crises. The specification controls for country fixed effects, contemporaneous real GDP growth and change in credit-to-GDP, and three lags of real GDP growth, change in credit-to-GDP, and all right-hand-side variables in the table.  $t$ -statistics in brackets are computed from standard errors double-clustered on country and year. \*, \*\*, \*\*\* indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Real GDP growth				
	Real GDP growth <sub><math>t,t+1</math></sub>		Real GDP growth <sub><math>t,t+3</math></sub>	
	(1)	(2)	(3)	(4)
Bank equity crash	-0.024*** [-5.64]	-0.021*** [-4.48]	-0.028*** [-4.82]	-0.026*** [-3.05]
Narrative crisis	-0.0034 [-1.16]	-0.0029 [-0.93]	-0.031*** [-3.34]	-0.030*** [-3.11]
Bank eq. crash $\times$ Narrative crisis		-0.0061 [-0.96]		-0.0047 [-0.33]
Nonfinancial equity crash	-0.021*** [-4.12]	-0.021*** [-4.14]	-0.028*** [-2.94]	-0.028*** [-2.94]
Country fixed effects	✓	✓	✓	✓
Controls	✓	✓	✓	✓
Adj. $R^2$ (within)	0.20	0.20	0.16	0.16
N	2548	2548	2548	2548
Panel B: Credit-to-GDP change				
	Credit/GDP change <sub><math>t,t+1</math></sub>		Credit/GDP change <sub><math>t,t+3</math></sub>	
	(1)	(2)	(3)	(4)
Bank equity crash	-0.0086 [-1.37]	0.0011 [0.17]	-0.046*** [-3.90]	-0.016 [-1.20]
Narrative crisis	0.017*** [2.76]	0.018*** [2.90]	0.046*** [3.30]	0.051*** [3.64]
Bank eq. crash $\times$ Narrative crisis		-0.018* [-1.86]		-0.058*** [-3.04]
Nonfinancial equity crash	0.0070 [1.58]	0.0068 [1.54]	0.0045 [0.34]	0.0037 [0.29]
Country fixed effects	✓	✓	✓	✓
Controls	✓	✓	✓	✓
Adj. $R^2$ (within)	0.24	0.24	0.17	0.18
N	2535	2535	2536	2536

Table A9: Timing of Bank Equity Crashes Relative to Panics, Credit Spread Spikes, and Nonfinancial Equity Crashes: Robustness on the Sample of Narrative Crises

This table shows that the results reported in Table III are robust to conducting the analysis on the sample of Narrative Crises instead of the BVX Crisis List.

Panel A: Bank equity crashes detect the crisis before panics, narrative crisis dates, and credit spread spikes

	Before panic	Before Reinhart- Rogoff start dates	Before earliest narrative start dates	Before 2% spike in bank credit spread	Before 1% spike in bank credit spread	Before 2% spike in corp credit spread	Before 1% spike in corp credit spread
Average (in months, signed)	7.49***	2.95**	2.60**	6.18***	3.44**	9.68***	5.84***
<i>t</i> -stat	4.68	2.36	2.22	6.14	2.03	8.76	2.86
N	85	97	106	40	41	19	19
Pos	63	38	32	32	23	17	13
Zero	5	36	57	4	2	1	0
Neg	17	23	17	4	16	1	6
Pos / (Pos + Neg)	78.8%***	62.3%**	65.3%**	88.8%***	59.0%	94.4%***	68.4%*
<i>p</i> -value	0.000	0.036	0.022	0.000	0.168	0.000	0.084

Panel B: Bank equity crashes pick up the crisis first before nonfinancial equity crashes

	Before nonfin. eq. crash	Bank equity peak before nonfin eq peak	Duration of bank equity decline
Average (in months, signed)	1.02	0.64	26.85***
<i>t</i> -stat	1.12	0.82	24.42
N	132	148	151
Pos	66	61	Duration $\geq$ 24 mo. = 89 episodes
Zero	15	41	
Neg	51	46	Duration $<$ 24 mo. = 62 episodes
Pos / (Pos + Neg)	56.4%*	57.0%*	% Duration $\geq$ 24 mo. = 58.9%**
<i>p</i> -value	0.098	0.088	0.017

Table A10: Timing of Bank vs. Nonfinancial Equity Crashes: Subsample Analysis

This table performs the same analysis as Table III, Panel B, column (1) for various subsamples. The table shows that bank equity crashes tend to precede nonfinancial equity crashes in postwar and advanced economy banking crises, but not in prewar and emerging market crises. Panel A performs the analysis on the BVX Crisis List sample. Panel B uses the Narrative Crisis List sample as robustness, as in Table A9.

Panel A: BVX Crisis List sample					
	Prewar	Postwar	Postwar & Emerging	Postwar & Advanced	Postwar (pre-2006) & Advanced
Average (in months, signed)	-0.27	3.42***	0.89	5.82***	3.87*
<i>t</i> -stat	-0.20	3.71	0.69	4.82	1.75
N	51	76	37	39	15
Pos	21	44	17	27	9
Zero	4	12	5	7	2
Neg	26	20	15	5	4
Pos / (Pos + Neg)	44.7%	68.8%***	53.1%	84.4%***	69.2%
<i>p</i> -value	0.191	0.002	0.430	0.000	0.133
Panel B: Narrative Crisis List sample					
	Prewar	Postwar	Postwar & Emerging	Postwar & Advanced	Postwar (pre-2006) & Advanced
Average (in months, signed)	-0.96	1.97*	0.05	4.47***	4.29*
<i>t</i> -stat	-0.66	1.95	0.03	3.87	1.87
N	49	69	39	30	14
Pos	19	37	17	20	9
Zero	3	11	5	6	2
Neg	27	21	17	4	3
Pos / (Pos + Neg)	41.3%*	63.8%**	50.0%	83.3%***	75.0%*
<i>p</i> -value	0.092	0.024	0.568	0.001	0.073

Table A11: Removed Banking Crises

This table lists episodes from the list of Narrative Crises (crises identified by six previous prominent studies) that do not appear on the the BVX Crisis List. “Spurious banking crises”, episodes which have few or no characteristics typically associated with banking crises and are likely the result of typographical or historical errors, are marked with a “\*”

Country	Starting year of crisis	Bank equity return	Country	Starting year of crisis	Bank equity return
Argentina	1885	0	Israel	1977	0
Belgium	1925	-0.193	Japan	1914	-0.232
Brazil	1897	0		1917*	-0.239
	1923	-0.131	Korea	1984	-0.326
	1926*	0		1986*	0
Canada	1906	0	Mexico	1908	-0.029
	1907	-0.081		1992*	0
	1912	-0.002	Netherlands	1893	0
Chile	1889	-0.254		1897*	0
Czech	1931	-0.099	Norway	1927*	0
Denmark	1902*	0		1936*	-0.209
	1914	-0.296	Singapore	1982	-0.275
	1931	-0.102	South Africa	1877	-0.004
Finland	1939	-0.111		1977	-0.153
France	1904*	0		1984	-0.492
	1907*	-0.049		1989	0
	1939	-0.121	Sweden	1897*	-0.183
	1994	-0.246		1932	-0.431
Germany	1880*	0	Switzerland	1910	0
	1907	-0.051	U.K.	1908*	-0.011
	1977*	-0.117		1984	0
Greece	1992	-0.391		1995	-0.159
India	1908	0	U.S.	1914	-0.158
	1929	0			
<i>Probably spurious banking crises, but with no bank equity data</i>					
Brazil	1963*		Italy	1935*	
Germany	1925*		Netherlands	1939*	
India	1947*		Portugal	1986*	

Table A12: Changes to Start Years of Banking Crises Based on Bank Equity Crashes

This table lists modifications made in constructing the BVX Crisis List. Panel A lists changes in start dates of banking crises that were made by examining the year in which bank equity returns index declined 30% or more. Panel B lists episodes from the Narrative Crises list which were deemed to be part of the same episode and thus combined.

Panel A: Changes in starting dates of banking crises			
Country	Change in starting date	Country	Change in starting date
Argentina	1890 → 1891	New Zealand	1890 → 1888
	1931 → 1930	Norway	1921 → 1919
	2001 → 2000	Peru	1872 → 1876
Austria	1929 → 1931		1983 → 1981
Belgium	1885 → 1883		1999 → 1998
	1931 → 1929	Portugal	1920 → 1921
Brazil	1963 → 1962	Russia	1896 → 1900
Canada	1923 → 1920	South Africa	1985 → 1984
	1982 → 1983	Spain	1977 → 1975
Chile	1980 → 1982		1883 → 1882
Czech	1996 → 1995	Sweden	1876 → 1878
Denmark	1921 → 1919		1922 → 1919
	1987 → 1992		1931 → 1932
Finland	1991 → 1990		1990 → 1991
Germany	1873 → 1874	Switzerland	1921 → 1919
	1929 → 1930		1991 → 1990
Greece	1931 → 1929	Taiwan	1997 → 1998
	1991 → 1992	Thailand	1996 → 1997
Iceland	2007 → 2008	Turkey	1931 → 1930
India	1921 → 1920		1982 → 1980
	1991 → 1993		2000 → 2001
Indonesia	1992 → 1990	U.K.	1974 → 1973
	1997 → 1998		2007 → 2008
Italy	1887 → 1889	U.S.	1929 → 1930
	1990 → 1992	Venezuela	1978 → 1981
Japan	1991 → 1990		1993 → 1992
Korea	1983 → 1984		2009 → 2008
Mexico	1920 → 1921		
	1929 → 1928		

Panel B: Combined episodes for the BVX Crisis List

Country	Combined Events
Austria	1929 and 1931
Belgium	1931 and 1934
Hong Kong	1982 and 1983
Indonesia	1992 and 1994
Italy	1891 and 1893
Mexico	1981 and 1982
Switzerland	1931 and 1933

Table A13: Comparison of Banking Crisis Chronologies

This table compares key outcomes in episodes on the BVX Crisis List to episodes on other crisis chronologies. Panel A compares episodes from Reinhart and Rogoff's (2009) chronology to episodes on the BVX Crisis List. Panel B compares episodes from Laeven and Valencia's (2013) chronology to episodes on the BVX Crisis List (over Laeven and Valencia's sample period 1970-2012). The table reports differences in averages (computed as Reinhart-Rogoff or Laeven-Valencia minus BVX) and *t*-statistics (in brackets), computed using the pooled variance across the differenced groups.

Panel A: Comparison of Reinhart and Rogoff episodes with BVX Crisis List episodes					
	Reinhart Rogoff	Difference with BVX Crisis List		Difference with BVX Crisis List having bank eq. decline >30%	
Bank equity decline	-0.376	0.086	[6.27]	0.234	[17.21]
Abnormal bank equity decline	-0.311	0.033	[2.29]	0.126	[7.93]
Bank market cap decline	-0.318	0.097	[4.85]	0.216	[10.62]
Real GDP decline (pk to tr)	-0.045	0.009	[2.92]	0.018	[4.98]
Real GDP growth decline (pk to tr)	-0.080	0.005	[1.76]	0.011	[3.81]
Real GDP growth (max dev from trend)	-0.055	0.006	[2.47]	0.011	[4.46]
Failed banks (% of total bank assets)	0.260	-0.036	[-1.65]	-0.057	[-2.37]
NPL at peak	0.160	-0.010	[-1.01]	-0.010	[-0.88]
Decline in deposits (prewar only)	-0.165	0.031	[2.32]	0.044	[2.97]
Significant liability guarantees	0.523	-0.037	[-1.29]	-0.115	[-3.62]
Significant liquidity support	0.701	-0.060	[-2.38]	-0.125	[-4.62]
Panel B: Comparison of Laeven and Valencia episodes with BVX Crisis List episodes					
	Laeven Valencia	Difference with BVX Crisis List (1970-2012)		Difference with BVX Crisis List having bank eq. decline >30% (1970-2012)	
Bank equity decline	-0.641	-0.046	[-2.30]	0.019	[1.06]
Abnormal bank equity decline	-0.472	-0.038	[-1.36]	0.014	[0.50]
Bank market cap decline	-0.625	-0.068	[-2.93]	-0.015	[-0.75]
Real GDP decline (pk to tr)	-0.053	-0.006	[-1.51]	-0.006	[-1.27]
Real GDP growth decline (pk to tr)	-0.093	-0.015	[-3.87]	-0.013	[-3.25]
Real GDP growth (max dev from trend)	-0.070	-0.011	[-3.32]	-0.009	[-2.36]
Failed banks (% of total bank assets)	0.406	0.037	[1.01]	0.013	[0.33]
NPL at peak	0.168	-0.007	[-0.48]	-0.011	[-0.76]
Decline in deposits (prewar only)			N/A		
Significant liability guarantees	0.630	-0.050	[-1.14]	-0.120	[-2.62]
Significant liquidity support	0.913	0.056	[1.84]	-0.014	[-0.52]



Table A14: Area Under the ROC Curve for BVX Crises and Other Crisis Chronologies

The table compares the area under the ROC curve (AUC) when using a variety of variables to classify BVX crises and Reinhart-Rogoff crises (Panel A) or BVX crises and Laeven-Valencia crises (Panel B). The table shows that, across a variety of classifiers (e.g., real GDP growth), the AUC is generally higher for BVX crises than Reinhart-Rogoff and Laeven-Valencia crises. Panel A compares the AUC on the full sample, while Panel B focuses on the post-1970 sample covered by Laeven and Valencia (2013).

Panel A: Comparison of AUCs for BVX and Reinhart-Rogoff crises				
	BVX Crisis		Reinhart-Rogoff Crisis	
	AUC	se(AUC)	AUC	se(AUC)
Real GDP growth, $t - 1$ to $t$	0.67	0.02	0.62	0.02
Bank eq. return, $t - 1$ to $t$	0.86	0.02	0.71	0.02
Nonfin. eq. return, $t - 1$ to $t$	0.78	0.02	0.66	0.02
Credit-to-GDP change, $t$ to $t + 5$	0.66	0.02	0.63	0.02
Panel B: Comparison of AUCs for BVX and Laeven-Valencia crises				
	BVX Crisis		Laeven-Valencia Crisis	
	AUC	se(AUC)	AUC	se(AUC)
Real GDP growth, $t - 1$ to $t$	0.67	0.03	0.66	0.04
Bank eq. return, $t - 1$ to $t$	0.91	0.02	0.84	0.04
Nonfin. eq. return, $t - 1$ to $t$	0.79	0.03	0.77	0.04
Credit-to-GDP change, $t$ to $t + 5$	0.72	0.03	0.75	0.04

Table A15: Additional Episodes of Minor Bank Distress from Narrative Accounts

This table lists additional episodes of minor bank distress that are not classified as banking crises on the BVX Crisis List or as episodes in Table A2 (because the bank equity declines are less than 30% in magnitude). These episodes are listed purely for historical interest and are not analyzed in this paper.

Country	Starting year of bank distress
Australia	1974
Belgium	1900, 1920
Canada	1887, 1891, 1901, 1905, 1908, 1912, 1966, 1991
Czech	1884, 1931, 1936
Denmark	1914, 1931, 1984
France	1991, 1994
Germany	1907, 1974, 2002
Hong Kong	1914, 1961
India	1914, 1938
Ireland	1885
Israel	1935
Italy	1926, 1982, 1997
Netherlands	1981
Norway	1886
Peru	1992
Philippines	1968
South Africa	1977, 1991
Spain	1991
Switzerland	1910
Turkey	1998
U.K.	1911, 1984, 1995
U.S.	1998

Table A16: Panics Without Bank Equity Crashes

The top panel features a two-by-two table of all episodes from Table A2, sorted on the incidence of panics and 30% bank equity crashes; there are 47 episodes of panic banking crises without 30% bank equity crashes. The bottom panel analyzes each of these 47 episodes individually and demonstrates that nearly all the panics without bank equity crashes are associated with narrative evidence of bank solvency concerns. The bottom table also analyzes why the bank equity decline was nevertheless less than 30% in magnitude: 29 episodes (62%) are due to likely bank equity measurement errors (either the banking panics were centered around small or regional banks and thus not captured by the bank equity index, or the bank equity index contains a very small number of banks for a given episode); 14 (30%) are “near misses,” defined as episodes where the decline is between 20% and 30%; and 2 (4%) are triggered by the onset of wars. See Online Appendix Section I.B for a link to the historical documentation and sources from which the information in this chart was taken.

		Panic		Total
		0	1	
No BE data		3	36	48
30% bank	0	43	47	90
eq. crash	1	160	109	269
Total		206	192	407 episodes from Table A2

According to the above table, there are 47 panic banking crises without 30% bank equity crashes, which we examine below. In addition, there are 36 other panic banking crises that do not have bank equity data.

Country	Year	Panic	BE decline	Category	Why the bank equity decline is small	Evidence of solvency issues
Australia	1931	4/1931	-0.230	near miss		
Australia	1989	4/1990	-0.281	near miss		
Belgium	1870	7/1870	-0.018	due to onset of war	The panic was quickly resolved when Finance Minister Malou had the bank Société Générale transfer gold holdings from London to Belgium. As soon as convertibility was restored, the panic faded away.	The panic in July 1870 was caused by the evacuation of gold reserves from the capital, due to the start of the Franco-Prussian War. (Buyst & Maes, 2007, p. 17).
Belgium	1883	1885	-0.139	bank equity measurement	The crisis consisted mostly of smaller banks and is thus not captured well by the bank equity index, which consists of the very largest banks.	“The first banks hit were those already weakened by the turmoil of the 1870s. [...] The 1885-1886 financial crises coincided with a deep industrial slump” (Buyst & Maes, 2008a, p. 170). As a result, the third-largest bank Banque des Travaux Publics failed in 1885, along with many smaller banks.
Brazil	1890	12/1890	-0.275	near miss		
Brazil	1900	10/1900	0	bank equity measurement	Our bank equity index only has two banks at that time, giving rise to likely measurement error in our bank equity index.	This crisis, featuring the collapse of 58 banks, was preceded by the collapse of a large bubble and banking crisis in 1890, which led to a decade of civil war, deflation, currency depreciation, and other severe macroeconomic and political problems.
Brazil	1929	6/1932	-0.182	bank equity measurement	The crisis consisted mostly of smaller banks and is thus not captured well by the bank equity index, which consists of the very largest banks.	According to Triner (2000), the banking losses were overall relatively mild in Brazil. However, the price for coffee, Brazil’s main export good, peaked in March 1929 and plummeted afterwards, which led to banking losses. In addition, according to Scranton (2012): “The Great Depression deepened an ongoing Brazilian political crisis that had intensified during the 1920s and resulted in a military coup and the rise to power of Getulio Vargas in 1930. Civil war broke out in 1932.”

Table A16: Panics Without Bank Equity Crashes (cont.)

Canada	1873	7/1879	0	bank equity measurement	The crisis consisted mostly of smaller banks (Bank of Acadia, Mechanics Bank, Bank of Liverpool, and Banque Sainte Hyacinthe) and is thus not captured well by the bank equity index, which consists of the very largest banks.	According to Grossman (2010), "Towards the end of the severe cyclical downturn ushered in by the commercial crisis of 1873, several banks failed or were liquidated [...] These accounted for about 7.5 per-cent of total bank capital at the time. [...] Although the banks were criticized for reducing outstanding credit during this period, most banks survived by relying on their capital and reserves and by mergers" (p. 300)
Canada	1982	7/1982	-0.164	bank equity measurement	The crisis consisted mostly of smaller banks (Canadian Commercial Bank, Northland, and several others) and is thus not captured well by the bank equity index, which consists of the very largest banks.	Many of the banking problems resulted from the Alberta oil price bust. For example, Canadian Commercial Bank and Northland Bank, both based in Alberta, were heavily investing in real estate and energy sector companies and became insolvent in 1985 during a period of rising interest rates and falling oil prices.
Chile	1898	7/1898	-0.003	bank equity measurement	Our bank equity index only has one bank at that time, giving rise to likely measurement error in our bank equity index.	Brock, P. L. (2016): "In August 1898, following an abortive three-year gold standard regime, a run on the banks resulted in the government assuming responsibility for all bank notes, thereby putting all currency issue in the hands of the government." Subercaseaux, G. (1922): "...the relations between Chile and the Argentine Republic were becoming alarmingly strained, the danger of war causing it to be rumoured in Santiago that the government was preparing to return to the regime of paper currency. In consequence of this rumour bank depositors began to withdraw their money in order to save their gold. It was not so much a question of redeeming bank notes, since there were but few of them in circulation, as it was a question of withdrawing deposits. Presently the movement of distrust became more general and finally culminated in a run on the Santiago banks..."
Chile	1976	6/1975	0	bank equity measurement	The crisis consisted mostly of smaller banks and is thus not captured well by the bank equity index, which consists of the very largest banks.	The SINAP system failed in 1976, along with the medium-sized bank Banco Osorno y La Union in 1977, due to sudden liberalization of the financial system, combined with a drop in worldwide copper prices.
Denmark	1877	1877	-0.207	near miss		
Denmark	1885	9/1885	-0.043	bank equity measurement	The crisis consisted of few banks (Varda Bank, Handels- og Landmandsbanken, Nyborg Bank) and is thus not captured well by the broad bank equity index.	Varde bank failed in 1885 largely due to fraud. Bankruptcies among nonfinancial firms caused the banking sector's liquidity to come under pressure (Abildgren, 2014, p. 23).
Denmark	1907	2/1908	-0.269	near miss		

Table A16: Panics Without Bank Equity Crashes (cont.)

Egypt	1907	5/1907	-0.132	bank equity measurement	We only have six banks in the bank equity index at that time (foreign-owned Egyptian banks trading on the London and Paris exchange), giving rise to likely measurement error in our bank equity index.	The crisis was probably driven by the global collapse of cotton prices, one of Egypt's biggest exports. One important bank failed (Noyes 1909, p. 203), and Commercial, Industrial, & Land Co. of Egypt and Société immobilière d'Égypte also failed. Credit Franco-Egyptien was absorbed. Credit Foncier Egyptien failed and required a gold infusion from the Bank of England.
Finland	1931	10/1931	-0.252	near miss		
France	1889	3/1889	-0.106	bank equity measurement	The crisis mainly involved just one bank and is thus not captured well by the broad bank equity index.	Hautcoeur, River, White (2014) report a large-scale run on the Comptoir d'Escompte (CdE), caused by a failed corner of the copper market. Further contagion was prevented by an aggressive response from the Bank of France.
Germany	1891	9/1891	-0.23	near miss		
Germany	1901	6/1901	-0.05	bank equity measurement	The crisis was mostly among mortgage banks and is thus not captured well by the bank equity index, which is of commercial banks.	Two mortgage banks failed in the autumn of 1900. Pommersche Hypotheken Bank, Mortgage Bank of Mecklenburg-Strelitz failed and were saved by discount banks in 1901. Preussische Hypothekenaktienbank, Deutsche Grundschuldbank, Dresdner Creditanstalt and Leipziger Bank failed in 1901, as well, followed by some other smaller banks.
Hong Kong	1965	2/1965	-0.196	bank equity measurement	Our bank equity index only has one bank at that time, giving rise to likely measurement error in our bank equity index.	Chiu Tai Bank failed in 1963. Ming Tak, Canton Trust and Savings, and the second-largest bank Hang Seng failed in 1965. All were due to gross mismanagement and fraud (Goodstadt, 2007).
Hong Kong	1991	7/1991	-0.096	potential non-fundamental-driven panic	The solvency problems mainly involved just one minor bank (the BCCI Group subsidiary in Hong Kong) and thus not captured well by our broad bank equity index.	Li (1999, p. 133) reports that the failure of the BCCI Group subsidiary in Hong Kong (which was due to fraud and mismanagement) led to several bank runs (Standard Chartered Bank, Dao Heng Bank, International Bank of Asia, First Pacific Bank, and Citibank Hong Kong [Goodhart, 1995, p. 389; Basler, 1991]) and protests by depositors (no deposit insurance scheme). These runs seemed to be purely fueled by rumors and mistrust of the colonial government, and subsided after several days.
India	1913	11/1913	-0.249	near miss		
Italy	1873	?	-0.237	near miss		

Table A16: Panics Without Bank Equity Crashes (cont.)

Italy	1930	12/1930	-0.073	bank equity measurement	The government nationalized nearly the entire banking sector in 1930, leaving almost no public bank equity to be traded.	Russo (2012): "When the 1929 crisis hit Italy with full force, the interconnections among industry and banks spread the meltdown in both the financial and the industrial sectors, provoking a sharp increase in the unemployment rate and a reduction in foreign trade, as well as the virtual closure of the stock market because of the steep share value depreciation. Moreover, the former bank-industry fights and the bailouts of the mid-1920s had seriously weakened the financial system's ability to absorb any unexpected and severe losses and withstand a crisis."
Japan	1901	4/1901	-0.221	near miss		
Japan	1927	3/1927	-0.168	potential non-fundamental-driven panic	The crisis consisted mostly of smaller banks (Tokyo Watanabe Bank, Omi Bank, Fifteenth Bank, and 29 other small banks failed) and is thus not captured well by the bank equity index, which consists of large banks.	Shizume (2012) suggests this panic may have been set off by a false rumor: "On March 14, in the courses of heated debate on the government's measures in the Diet, Finance Minister Naoharu Kataoka falsely declared that the Tokyo Watanabe Bank had failed (the bank had not yet failed at the time of this declaration). This statement set off a surge of financial panic in the regions surrounding the two great metropolises, Tokyo and Osaka. On March 23, the Diet approved the legislation, temporarily calming the depositors' panic." However, Yamamura (1972): "Runs were especially intense for those banks suspected of close ties with unhealthy firms." The banking sector also still had large problems left over from the earlier crisis in 1923.
Netherlands	1907	11/1907	-0.083	bank equity measurement	The crisis consisted mostly of smaller banks and is thus not captured well by the bank equity index, which consists of the very largest banks.	Several banks were heavily exposed to American shares and other American investments in Panic of 1907.
Netherlands	1914	7/1914	-0.093	due to onset of war	No banks failed due to aggressive intervention, and the crisis subsided.	The panic started on July 28, 1914, right at the outbreak of World War I.
Norway	1931	12/1931	0	bank equity measurement	The crisis was centered around only two banks. Also, the crisis was mitigated by aggressive central bank actions.	Bergens Privatbank and Den norske Creditbank, two of the country's largest banks, were saved with considerable liquidity support and would have otherwise failed.
Russia	1875	10/1875	-0.188	bank equity measurement	Our bank equity index only has three banks at that time, giving rise to likely measurement error in our bank equity index. Also, the crisis was centered on only some banks, most prominently Commercial Loan Bank, and is thus not captured well by our broad bank equity index.	Owen (2005, pp. 118-120) reports that the panic began on October 08, 1875 when Commercial Loan Bank announced that it had suffered severe losses from a railroad-related bankruptcy in Germany.
South Africa	1881	?	-0.27	bank equity measurement	Our bank equity index only has one bank at that time, giving rise to likely measurement error in our bank equity index.	

Table A16: Panics Without Bank Equity Crashes (cont.)

South Africa	1890	9/1890	-0.062	bank equity measurement	Our bank equity index only has three banks at that time, giving rise to likely measurement error in our bank equity index.	Cape of Good Hope Bank failed, and a bank run on Natal Bank occurred in September 1890 (The Mercury, 1890, p. 3).
Spain	1890	11/1890	-0.124	bank equity measurement	Our bank equity index only has three banks at that time, giving rise to likely measurement error. Also, the crisis was centered mainly around smaller banks and is thus not captured well by our bank equity index, which consists of the very largest banks.	The immediate consequences of the Baring crisis in the U.K. produced a fall in Spanish stock prices (Betrán & Pons, 2013, p. 19) and triggered a panic in Spain in November 1890 when Baring Brothers failed in London.
Spain	1913	12/1913	-0.038	bank equity measurement	Our bank equity index only has four banks at that time, giving rise to likely measurement error. Also, the crisis was centered on only one large bank (Banco Hispano Americano) and regional Barcelona and Vizcaya banks, which may limit its impact on our broad bank equity index.	Banco Hispano Americano was rescued by the central bank in January 1914 after it had suspended payments in December 1913. Later in 1914, Crédito de la Unión Minera faced financial difficulties, along with other Barcelona and Vizcaya banks.
Spain	1920	11/1920	-0.14	bank equity measurement	Our bank equity index only has six banks at that time, giving rise to likely measurement error. Also, the crisis was centered on only Barcelona banks, which may limit its impact on our broad bank equity index.	Banco de Barcelona suspended payments in November 1920 after an announcement of severe losses, leading to depositor runs first at the bank itself but, later, at other banks in Barcelona (Martín-Aceña, 1995, p. 509).
Spain	1924	9/1924	-0.222	near miss		
Sweden	1907	10/1907	-0.135	bank equity measurement	The crisis was centered on only the subset of banks that had exposure to the U.S. Panic of 1907 is thus not captured well by our bank equity index, which consists of the very largest banks.	16 banks went bankrupt or were reorganized. Among the failed banks were Aktiebolaget Stockholms Kreditbank (1907), AB Sundsvalls Köpmansbank (1910), AB Sundsvalls folkbank (1910), AB Hudiksvalls Folkbank (1910), AB Linköpingsbank (taken over, 1910), AB Gäfle handelsbank (reorganized, 1910), Halmstads Bankaktiebolag (taken over, 1911), AB Sollefteå folkbank (merged, 1911), and Bankaktiebolaget Stockholm Öfre Norrland (taken over, 1911).
Thailand	1983	10/1983	0	bank equity measurement	The crisis consisted mostly of mid-sized banks and securities firms and is thus not captured well by our bank equity index, which consists of the very largest banks.	Solvency issues, as in the other contemporaneous banking crises in Southeast Asia, were likely due to the U.S. raising interest rates. 3 commercial banks representing 13% of total assets failed, and the government intervened in 50 securities firms and 5 commercial banks.
Turkey	1994	4/1994	-0.203	near miss		

Table A16: Panics Without Bank Equity Crashes (cont.)

U.K.	1878	9/1878	-0.132	bank equity measurement	The crisis was centered on only a few banks (a mid-sized Scottish bank and English provincial banks) and is thus not captured well by our bank equity index, which consists of the very largest banks.	The events surrounding the collapse of City of Glasgow Bank in September-October 1878 triggered a nationwide banking panic that resulted in bank runs at several other banks (Collins, 1989). The City of Glasgow Bank collapsed due to risky investments (in Australasian farming, mining stocks, and American railway shares) and massive fraud (false reports of gold holdings, falsified financial statements, and secret purchases of the bank's own stock to increase its share price).
U.K.	1890	11/1890	-0.128	bank equity measurement	The crisis mainly involved just one bank and is thus not captured well by our bank equity index.	Crisis driven by large losses at Barings Bank, connected to its bad investments in the Argentina boom and bust. Crisis likely would have spread more broadly to other British banks, if not for the forceful intervention of the Bank of England (see White 2018).
U.K.	1991	7/1991	-0.147	bank equity measurement	The crisis was centered on smaller banks (BCCI and mortgage lenders) and is thus not captured well by our bank equity index, which consists of the very largest banks.	Confidence in British & Commonwealth Holdings, a financial services group, was gradually lost following a heavy write-down at its leasing subsidiary, Atlantic Computers. The Bank of Credit and Commerce International (BCCI) was closed by the Bank of England in 1991 due to financial crimes, which led to wholesale runs on other banks. Many small banks and building societies closed because of bad mortgage lending (Balluck, Gallay, Ferrara, and Hoggarth, 2016).
U.S.	1873	9/1873	-0.172	bank equity measurement	U.S. banks limited stock ownership and managed their stock prices to avoid them being informative in crises, see O'Sullivan (2007) and Gorton and Tallman (2016)	
U.S.	1884	5/1884	0	bank equity measurement	U.S. banks limited stock ownership and managed their stock prices to avoid them being informative in crises, see O'Sullivan (2007) and Gorton and Tallman (2016)	
U.S.	1890	11/1890	0	bank equity measurement	U.S. banks limited stock ownership and managed their stock prices to avoid them being informative in crises, see O'Sullivan (2007) and Gorton and Tallman (2016)	
U.S.	1893	5/1893	-0.29	near miss		
U.S.	1984	5/1984	-0.263	near miss		



Table B1: Bank Equity Index Coverage and Sources

This figure provides an overview of the coverage and sources for the bank equity index total return variable. Cells with numbers indicate the number of underlying banks used to construct new bank equity return indexes. Shaded areas refer to pre-made indexes.

	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	
Argentina	2	3	4	Nakamura-Zaragoza index								Datastream index				
Australia	11	S&P/ASX 200 Banking Index from GFD														
Austria	5	6	4	5	4	Austria National Bank Banks Index from GFD		2			Austria Bank and Insurance Stocks" index from GFD		Baron-Xiong bank index			
Belgium	Annaert, Buelens, and De Ceuster (2012, Appendix 2) financials index					3	Two bank price indexes from GFD							Baron-Xiong bank index		
Brazil	2	2	2	1	1	1	3	1	1	1	Datastream index					
Canada	4	3	6	5	Canada S&P/TSX Banks index from GFD											
Chile	1					Chile BEC Finance price index from GFD										
Colombia						Colombia IBOMED Financial Sector price index from GFD										
Czech						Czech Bank index from GFD							Datastream index			
Denmark	6	6	7	7	Copenhagen SE Banks index from GFD											
Egypt	3	3	2	6	5	4	4	1	1	Datastream index						
Finland						11	14	8	6	4	Finland Unitas Banks index from GFD			Datastream index		
France	14	17	13	14	13	16	14	France INSEE Credit Banks index from GFD				Paris CAC financials index from GFD				
Germany	6	8	8	10	10	10	CDAX Banks Price index from GFD									
Greece	1	1	1	2	2	4	4	Greece National Bank Finance index from GFD								
Hong Kong	1	1	1	1	1	1	1	1	1	1	Datastream index					
Hungary	Hungary Korosy Bank index from GFD			2								Datastream index				
Iceland	Datastream index															
India	4	3	3	3	3	2	Datastream index									
Indonesia	Datastream index															
Ireland	9	9	9	8	8	7	6	2		3	Datastream index					
Israel											Israel Finance and Insurance Composite		Datastream index			
Italy	7	9	11	7	5	6	6	2		6	Datastream index					

Table B1: Bank Equity Index Coverage and Sources (cont.)

	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	
Japan				7	4	3	6	Oriental Economist Bank & Trust index from GFD			Japan TOPIX Banks index from GFD					
Korea											Korea SE Banks/Finance index from GFD					
Luxembourg	1	1	1	1	1	1	Luxembourg SE Banks index from GFD					Datastream index				
Malaysia										Malaysia KLSE Financial Index from GFD						
Mexico		2	2	4	4	3	Mexico Nacional Financiera Bank index from GFD					Datastream index				
Netherlands	2	4	4	5	5	5	Netherlands ANP-CBS Banks & Insurance index from GFD			Netherlands CBS Banks index from GFD						
New Zeal.	4	3	3	3	2	2	2	2	1	1	4		Datastream index			
Norway							Oslo SE Banks and Insurance Index from GFD						Baron-Xiong bank index			
Peru	2				1	Lima SE Banks index from GFD						Datastream index				
Philippines										Manila Banks index from GFD			Datastream index			
Portugal						3	4	Portugal Banks/Financials index from GFD					Datastream index			
Russia	3	3	3	3	5								Datastream index			
Singapore										4	Singapore SE Finance GFD index		Datastream index			
S. Africa	2	1	3	4	4	2	1	1	1	Johannesburg SE Financial index from GFD			Datastream index			
Spain	1	2	2	1	4	6	6	Madrid SE Banking and Finance from GFD					Baron-Xiong bank index			
Sweden			3	Stockholm SX Banks index from GFD						Datast.						
Switzerland	12	16	18	13	12	12	12	SWX ICB Banks index from GFD								
Taiwan											Datastream index					
Thailand											Thailand SE Banks index		Datastream index			
Turkey	4	3	3	2	2	2	2	1			1	Datastream index				
UK	70	70	Various bank price indexes from GFD													
US	4	4	4	4	Various bank price indexes from GFD											
Venezuela								Caracas SE Financial index from GFD								

Table B2: Data Sources: Annual Equity Variables

	<u>Yearly bank stock prices</u>	<u>Yearly bank stock dividends</u>	<u>Yearly nonfinancial stock prices</u>	<u>Yearly nonfinancial stock dividends</u>
Notes:	See document linked in Appendix text for individual bank stocks used and their sources. "Baron-Xiong" refers to indexes constructed from individual stocks in Baron and Xiong (2017). Datastream refers to the pre-constructed "DS BANKS" stock index from Datastream. The Datastream index codes used are: BANKSXX (for banks), INDUSXX (for nonfinancials), and TOTMKXX (for broad market), with XX being the two-character country code for each country.		For nonfinancial stocks only, price returns are occasionally used in place of total returns, when dividend returns are not available. Also for nonfinancial stocks only, broad market returns are occasionally used when nonfinancial returns are not available (noted in specific cases below).	
Argentina	Individual bank stocks from various sources (1870-1900, 1935-1938), Nakamura-Zarazaga index (1900-1935), Datastream (1992-2016)	Individual bank stocks from various sources (1870-1938), Datastream (1992-2016)	IMM (1882-1935), Broad market index (Buenos Aires SE General Index (_IBGD) from GFD, 1967-1993), Datastream (1994-2016)	IMM (1882-1935), Broad market index (Datastream: TOTMKAR, 1987-1993), Datastream (1994-2016, INDUSAR)
Australia	Individual bank stocks from various sources (1870-1874), "S&P/ASX 200 Banking Index" (_AXBAJD) from GFD (1875-2016)	Individual bank stocks from various sources (1870-1923), Baron-Xiong (1924-2016)	IMM (1870-1882), "Sydney SE Industrial and Commercial" (AUIINC) price index from GFD (1883-1980), "Australia ASX All-Industrials" (_AAIID) price index from GFD (1981-2002), Datastream (2003-2016)	IMM (1870-1882), Broad market index (Australia ASX Dividend Yield (SYAUSYM) from GFD, 1883-2002), Datastream (2003-2016)
Austria	Individual bank stocks from various sources (1870-1921, 1929-1968, 1981-1985), "Austria National Bank Banks Index" (ATBBANKM) from GFD (1922-1928), "Austria 6 Bank and Insurance Stocks" (ATWBANKM) index from GFD (1969-1980), Baron-Xiong (using Compustat Global) (1986-2016)	Individual bank stocks from various sources (1870-1985), Baron-Xiong (using Compustat Global) (1986-2016)	"Austria National Bank Industrials Index" (ATINDUM) price index from GFD (1921-1934), "Vienna Miscellaneous Stocks" (ATMISCM) price index from GFD (1948-1966), "Austria 36 Industrials" (ATAUT36W) price index from GFD (1967-1980), Datastream (1981-2016)	Broad market index (Vienna SE Dividend Yield (SYAUTYM) from GFD, 1925-38, 1969-80)
Belgium	Financials stock total return index from Appendix 2 of Annaert et al. (2012) (1870-1913), Individual bank stocks from various sources (1914-1933), "Belgium INS Finance and Insurance" (BEFININM) index from GFD (1934-1989), "Brussels Bank Index" (_BXSSBKD) index from GFD (1989-2005), and price index constructed from Compustat global (2005-2012) and Datastream (2013-2016).	Individual bank stocks from various sources (1872-1933), Baron-Xiong (1934-2016)	Broad market index (JST 1870-1955), "Belgium INS Industrials Index" (BEINDUSM) price index from GFD (1956-1972), Datastream (1973-2016)	Broad market index (Annaert et al., 1871-1972), Datastream (1973-2016)
Brazil	Individual bank stocks from various sources (1870-1964), Datastream (1994-2016)	Individual bank stocks from various sources (1870-1959), Datastream (1994-2016)	IMM (1873-1926), newspapers (1927-42), Broad market index (Brazil Bolsa de Valores de Sao Paulo (_BVSPD) from GFD, total returns, 1955-2016)	IMM (1873-1926), newspapers (1927-42)
Canada	Individual bank stocks from various sources (1870-1914), "Canada S&P/TSX Banks" index from GFD (1915-2016)	Individual bank stocks from various sources (1870-1923), Baron-Xiong (1923-2016)	IMM (1870-1914), "Canada Investor's Index Industrials" (CAIINDUM) price index from GFD (1915-1977), "Toronto SE-300 Industrial Products" (_TIPD) price index from GFD (1978-2004), Datastream (2005-2016)	IMM (1870-1929), Broad market index (S&P/TSX-300 Dividend Yield (SYCANYTM) from GFD, 1930-2004), Datastream (2005-2016)
Chile	Individual bank stocks from various sources (1891-1901), "Chile BEC Finance Index" (_FINANCD) price index from GFD (1927-2016)	Individual bank stocks from various sources (1891-1901, 1928-1980), Datastream (1989-2016)	IMM (1870-1928), "Chile BEC Industrials Index" (_INDUSTD) price index from GFD (1927-2009), Datastream (2010-2016)	IMM (1870-1928), Broad market index (Datastream: TOTMKCL, 1983-2009) Datastream (2010-2016, INDUSCL)
Colombia	"Colombia IBOMED Financial Sector" (_IBMFD) price index from GFD (1923-2016)	Individual bank stocks from various sources (1928-1980), Datastream (1992-2016)	"Bogota SE Industrials (old)" (COBINDUM) price index from GFD (1928-1942), "Bogota SE Industrials Index" (COBOINDD) price index from GFD (1956-1964), "Colombia IBOMED Industrials" (_IBMID) price index from GFD (1968-2000), Datastream (2001-2016)	Datastream (2001-2016)
Czech	"Czechoslovakia Banks Index" (CZBANKSM) price index from GFD (1919-1938), Datastream (1994-2016)	Individual bank stocks from various sources (1919-1937), Datastream (1994-2016)	Czechoslovakia Industrials and Transports (CZINDTRM) from GFD (1919-1937), Datastream (1993-2016)	Datastream (1993-2016)

Table B2: Data Sources: Annual Equity Variables (cont.)

	<u>Yearly bank stock prices</u>	<u>Yearly bank stock dividends</u>	<u>Yearly nonfinancial stock prices</u>	<u>Yearly nonfinancial stock dividends</u>
Denmark	Individual bank stocks from various sources (1870-1920), "Copenhagen SE Banks" (_CX4010D) index from GFD (1921-2011), Datastream (2012-2016)	Individual bank stocks from various sources (1870-1951), Baron-Xiong (1952-2016)	Individual nonfinancial stocks from various sources (1875-1915), Denmark Other Shares (DKOTHERM) (1915-1920), Copenhagen SE Industrials Index (_CX20PID) from GFD, 1921-2012, Datastream (2013-2016, INDUSDK)	Individual nonfinancial stocks from various sources (1876-1936), Datastream (1969-2016, INDUSDK)
Egypt	Individual bank stocks from various sources (1870-1959), Datastream (1996-2016)	Individual bank stocks from various sources (1870-1959), Datastream (1996-2016)	IMM (1906-29), Broad market index (Egyptian Stock Exchange Index (EGCAIROM) from GFD, 1949-62), Datastream (1996-2016)	IMM (1906-29), Datastream (1996-2016)
Finland	Individual bank stocks from various sources (1911-1958), "Finland Unitas Banks" (FIUBANKM) index from GFD (1959-1987), Datastream (1988-2016)	Individual bank stocks from various sources (1911-1987), Datastream (1988-2016)	Broad market index (Nyberg-Vaihekoski, 1913-32), "Finland Unitas Industrials Index" (FIUINDUD) price index from GFD (1933-1991), Datastream (1992-2016)	Broad market index (Nyberg-Vaihekoski, 1913-1970, and Datastream: TOTMKFN, 1972-1991), Datastream (1992-2016, INDUSFN)
France	Individual bank stocks from various sources (1870-1923), "France INSEE Credit Banks" (FRBANKCM) price index from GFD (1924-1990), "Euronext Paris CAC Financials 8000" (_FRFIND) price index from GFD (1991-2016)	Individual bank stocks from various sources (1870-1938), Baron-Xiong (1939-1993), Datastream (1994-2016)	Individual nonfinancial stocks from various sources (1870-1920), Euronext Paris CAC Construction and Materials (_FRCMD) from GFD (1921-2016)	Individual nonfinancial stocks from various sources (1870-1899), Broad market index (France Dividend Yield (SYFRAYM) from GFD, 1900-2016)
Germany	Individual bank stocks from various sources (1871-1902, 1915-1929), "Germany Conrad German Banks" (DECBGERM) index from GFD (1903-1914), "CDAX Banks Price" (_CXKBXD) index from GFD (1930-2016)	Individual bank stocks from various sources (1871-1929), Baron-Xiong (1930-2016)	Individual nonfinancial stocks from various sources (1870-1902), "Germany Conrad Metalworking and Machinery" (DECMACHM) index from GFD (1903-1914), "Germany Bundesamt Heavy Industry" (DEBHEAVM) index from GFD (1914-1950), "Germany CDAX Industrials" (_CXKNXD) index from GFD (1950-2016)	Individual nonfinancial stocks from various sources (1871-1929), Broad market index (Germany Dividend Yield (SYDEUYM) from GFD, 1900-2009), Datastream (2009-2016, INDUSDE)
Greece	Individual bank stocks from various sources (1870-1933), "Greece National Bank Finance" (GRFINANM) index from GFD (1952-1996), Datastream (1997-2016)	Individual bank stocks from various sources (1870-1933), Datastream (1990-2016)	Broad market index (Greece Stock Market Index (GRATHENM) from GFD, 1929-1940), "Athens SE Industrials Index" (_ATIDD) price index from GFD (1953-2005), Datastream (2006-2016)	Athens SE Dividend Yield (SYGRCYM) from GFD (1977-2005), Datastream (2006-2016)
Hong Kong	Individual bank stocks from various sources (1870-1972), Datastream (1973-2016)	Individual bank stocks from various sources (1870-1972), Datastream (1973-2016)	Broad market index (Hong Kong Hang Seng Composite Index (_HSID) from GFD, 1965-1972), Datastream (1973-2016)	Broad market index (Datastream: TOTMKHK, 1970-1972), Datastream (1973-2016)
Hungary	"Hungary Korosy Bank Stock" (HUKOBNKA) index from GFD (1874-1899), Individual bank stocks from various sources (1870-1874, 1923-1930), Datastream (1994-2016)	Individual bank stocks from various sources (1870-1890, 1923-1930), Datastream (1994-2016)	"Hungary Korosy Industrials Stock Index" (HUKOINDA) price index from GFD (1873-1898), "Hungary Stock Market Index" (HUBUDAM) price index from GFD (1921-1944), Broad market index (1992-1996), Datastream (1997-2016)	Broad market index (Datastream: TOTMKHU, 1992-1996), Datastream (1997-2016)
Iceland	Datastream (1999-2016)	Datastream (1999-2016)	Datastream (1993-2016)	Datastream (1993-2016)
India	Individual bank stocks from various sources (1870-1929), Datastream (1990-2016)	Individual bank stocks from various sources (1870-1929), Datastream (1990-2016)	IMM (1870-1928), Broad market index (Bombay SE Sensitive Index (_BSESND) from GFD, 1929-1989), Datastream (1990-2016)	IMM (1870-1928), Datastream (1990-2016)
Indonesia	Datastream (1990-2016)	Datastream (1990-2016)	Broad market index (Jakarta SE Composite Index (_JKSED) from GFD, 1978-1992), Datastream (1993-2016)	Broad market index (Datastream: TOTMKID, 1990-1992), Datastream (1993-2016)

Table B2: Data Sources: Annual Equity Variables (cont.)

	<u>Yearly bank stock prices</u>	<u>Yearly bank stock dividends</u>	<u>Yearly nonfinancial stock prices</u>	<u>Yearly nonfinancial stock dividends</u>
Ireland	Individual bank stocks from various sources (1870-1936, 1953-1972), Datastream (1973-2016)	Individual bank stocks from various sources (1870-1936, 1953-1972), Datastream (1973-2016)	IMM (1870-1929), Broad market index (Ireland ISEQ Overall Price Index (_ISEQD) from GFD, 1934-72), Datastream (1973-2016)	IMM (1870-1929), Datastream (1973-2016)
Israel	"Israel Finance and Insurance Composite" (ILXFINSM) index from GFD (1966-1983), Datastream (1984-2016)	Individual bank stocks from various sources (1966-1994), Datastream (1995-2016)	"Tel Aviv SE Industrial and Manufacturing" (ILTLVND) from GFD (1966-1993), Datastream (1993-2016)	Datastream (1993-2016)
Italy	Individual bank stocks from various sources (1870-1972), Datastream (1973-2016)	Individual bank stocks from various sources (1870-1972), Datastream (1973-2016)	Individual bank stocks from L'Economista (1884-1894) and Corriere newspaper (1884-1894), Broad market index (Banca Commerciale Italiana Index (_BCIID) from GFD, 1905-1961), "Milan SE Industrials" (ITMILAND) price index from GFD (1962-1985), "Milan SE Historical Industrials" (_MHIDD) price index from GFD (1986-2009), Datastream (2010-2016)	Broad market index (Italy Dividend Yield (SYITAYM) from GFD, 1925-2009), Datastream (2010-2016)
Japan	Individual bank stocks from various sources (1897-1932), "Japan Oriental Economist Bank and Trust" (JPOBANKM) index from GFD (1933-1944), "Japan TOPIX Finance and Insurance" (JPFININM) index from GFD (1946-1985), "Japan TOPIX Banks" (_JBKS_D) index from GFD (1986-2016)	Individual bank stocks from various sources (1901-1957), Baron-Xiong (1958-2016)	Broad market index (JST, 1879-1914, and Nikkei 225 Stock Average (_N225D) from GFD, 1915-1944), "Japan TOPIX Machinery" (_JMCHN_D) price index from GFD (1947-2016)	Broad market index (Tokyo SE Dividend Yield (SYJPNYM) from GFD, 1886-1944, 1947-2016)
Korea	"Korea SE Financial Institutions" (_KS49D) index from GFD (1975-1978), "Korea SE Banks" (_KS49D) index from GFD (1979-2016)	Individual bank stocks from various sources (1978-1986), Datastream (1987-2016)	Broad market index (Korea KOPSI SE Stock Price Index (_KS11D) from GFD, 1962-1987), Datastream (1988-2016)	Broad market index (Korea SE Dividend Yield (SYKORYM) from GFD, 1962-1987), Datastream (1988-2016)
Luxembourg	Individual bank stocks from various sources (1871-1929), "Luxembourg SE Banks and Finance" (LUBANKM) index from GFD (1930-1967), Datastream (1992-2016)	Individual bank stocks from various sources (1871-1929, 1947-1968), Datastream (1992-2016)	"Luxembourg SE Miscellaneous" (LUMISCM) price index from GFD (1930-1967), Broad market index (Luxembourg SE LUXX Index (_LUXXD) from GFD, 1968-1991), Datastream (1992-2016)	Broad market index (Datastream: TOTMKLX, 1982-1991), Datastream (1992-2016)
Malaysia	"Malaysia KLSE Financial Index" (_KLFD) from GFD (1969-2016)	Datastream (1985-2016)	"Malaysia KLSE Industrials" (_KLIND) price index from GFD (1969-2016)	Broad market index (Datastream: TOTMKMY, 1973-2016)
Mexico	Individual bank stocks from various sources (1884-1913, 1919-1933), "Mexico Nacional Financiera Bank" (MXBANKSM) index from GFD (1937-1976), Datastream (1988-2016)	Individual bank stocks from various sources (1884-1913, 1919-1976), Datastream (1988-2016)	IMM (1908-1929), "Banco de Mexico Industrials Index" (MXXINDUM) price index from GFD (1930-1944), "Mexico Nacional Financiera Industrials Index" (MXINDUSM) price index from GFD (1945-1976), Broad market index (Mexico SE Indice de Precios y Cotizaciones (_MXXD) from GFD, 1977-1988), Datastream (1989-2016)	IMM (1908-1929), Datastream (1989-2016)
Netherlands	Individual bank stocks from various sources (1873-1929), "Netherlands ANP-CBS Banks and Insurance" (NLDBKINM) index from GFD (1928-1971), "Netherlands CBS Banks" (NLBNKPRD) index from GFD (1972-2003), Baron-Xiong (2003-2016)	Individual bank stocks from various sources (1873-1927), Baron-Xiong (1928-2016)	Broad market index (JST, 1891-1919, and Netherlands All-Share Price Index (_AAXD) from GFD, 1891-1962), "Netherlands CBS Industrials Index" (NLINDD) price index from GFD (1963-1989), Datastream (1990-2016)	Broad market index (imputed from total returns from GFD: _AAXRD, 1951-1968, and Netherlands SE Dividend Yield (SYNLDYAM) from GFD, 1950-1989), Datastream (1990-2016)
New Zealand	Individual bank stocks from various sources (1870-1965, 1980-1992), Datastream (1998-2016)	Individual bank stocks from various sources (1870-1929, 1980-1992), Datastream (1998-2016)	IMM (1881-1913), Broad market index (New Zealand SE 40 Share Index (_NZ40D) from GFD, 1927-2016)	IMM (1881-1913), Broad market index (Datastream: TOTMKNZ, 1984-2016)

Table B2: Data Sources: Annual Equity Variables (cont.)

	<u>Yearly bank stock prices</u>	<u>Yearly bank stock dividends</u>	<u>Yearly nonfinancial stock prices</u>	<u>Yearly nonfinancial stock dividends</u>
Norway	"Oslo SE Finance (Banks and Insurance) TR Index" (_FINXD) from GFD (1915-1986), Baron-Xiong (1987-2016). Note these are all total returns.	Norges Bank index (implied from differencing total returns and price returns, 1920-1935), Datastream (1986-2016)	"Oslo SE Industrials TR Index" (_NOSID) Total Return price index from GFD (1914-1981), Datastream (1982-2016)	Datastream (1982-2016)
Peru	Individual bank stocks from various sources (1870-1881, 1912-1926), "Lima SE Banks" (_LMBFIND) index from GFD (1927-1993), Datastream (1994-2016)	Individual bank stocks from various sources (1870-1881, 1912-1958), Datastream (1994-2016)	"Lima SE Industrials" (_LMINDD) price index from GFD (1938-2016)	Broad market index (1993 - 2016)
Philippines	"Manila SE Finance Index" (_PSFID) from GFD (1952-1981), Datastream (1989-2016)	Datastream (1989-2016)	"Philippine SE Industrial Index" (_PSIND) price index from GFD (1953-2012), Datastream (2013-2016)	Broad market index (Datastream: TOTMKPL, 1982-2012), Datastream (2013-2016, INDUSPL)
Portugal	Individual bank stocks from various sources (1921-1938), "Portugal Banks" (PTBANKSM) index from GFD (1939-1959) "Portugal Credit and Insurance" (PTCREDIM) index from GFD (1960-1987), Datastream (1988-2016)	Individual bank stocks from various sources (1921-1931), Datastream (1988-2016)	Broad market index (Oporto PSI-20 Index (_PSI20D) from GFD, 1930-1953, 1983-1989), "Portugal Industrials" (PTINDUSM) price index from GFD (1954-1982), Datastream (1990-2016)	GFD (1954-1982), Datastream (1990-2016)
Russia	Individual bank stocks from various sources (1870-1917), Russia AK&M Bank Index (RUAKMBD) from GFD (1993-1997), Datastream (1997-2016)	Individual bank stocks from various sources (1870-1917), Datastream (1997-2016)	"Russia St. Petersburg Yale Stock Index" (RUSPSEYM) price index from GFD (1871-1914), Russia AK&M Industrials Index (_AKMED) from GFD (1993-2013), Datastream (2013-2016)	Datastream (1995-2016)
Singapore	Individual bank stocks from various sources (1966-1969), "Singapore SES Finance" (_FIAND) Index from GFD (1970-1999), Datastream (2000-2016)	Individual bank stocks from various sources (1966-1986), Datastream (1986-2016)	"Singapore Straits-Times Industrials Index" (SGSSI1D) price index from GFD (1965-1998), Datastream (1999-2016)	Broad market index (Singapore SE Dividend Yield (SYSGPYM) from GFD, 1972-1998), Datastream (1999-2016)
South Africa	Individual bank stocks from various sources (1870-1959), "Johannesburg SE Financial" (_JFIND) index from GFD (1960-1985), Datastream (1986-2016)	Individual bank stocks from various sources (1870-1985), Datastream (1986-2016)	IMM (1888-1911), "Johannesburg SE Industrials" (_JIAID) price index from GFD (1912-2002), Datastream (2003-2016)	IMM (1888-1929), Broad market index (Johannesburg SE Dividend Yield (SYZAFYM) from GFD, 1954-2016).
Spain	Individual bank stocks from various sources (1873-1935), "Madrid SE Banking and Finance" (_IBAN_MD) from GFD (1940-2000), Baron-Xiong (2001-2016)	Individual bank stocks from various sources (1873-1935, 1946-1965), Baron-Xiong (1966-2016)	Broad market index (JST, 1870-1920, and Spain Pre-War Stock Index (ESZINDXM) from GFD, 1921-1936, and Madrid SE Index (ESMADM) from GFD, 2012-2016), "Madrid SE Metals" (_IMET_MD) price index from GFD (1941-2001)	Broad market index (Madrid SE Dividend Yield (SYESPYM) from GFD, 1900-1930, 1941-2016)
Sweden	Individual bank stocks from various sources (1890-1901), "Stockholm SX Banks Price" (_SX4010D) index from GFD (1906-2011), Datastream (2012-2016)	Individual bank stocks from various sources (1890-1901), Baron-Xiong (1926-2016)	Broad market index (JST, 1870-1906), "Stockholm SX Industrials Price Index" (_SX20PID) price index from GFD (1907-2011), Datastream (2012-2016)	Broad market index (Stockholm SE Dividend Yield (SYSWEYM) from GFD, 1870-2011), Datastream (2012-2016)
Switzerland	Individual bank stocks from various sources (1870-1929), "SWX ICB Banks Price Index (w/ GFD extension)" (_C8300PD) index from GFD (1930-2016)	Individual bank stocks from various sources (1870-1929), Baron-Xiong (1930-2016)	Broad market index (JST, 1900-1924, and Switzerland Price Index (_SPIXD) from GFD, 2006-2016), "Switzerland SPI Industrials Index" (_SINXD) price index from GFD (1924-2005)	Broad market index (Switzerland Dividend Yield (SYCHEYM) from GFD, 1918-1939, 1966-2016)
Taiwan	Datastream (1987-2016)	Datastream (1987-2016)	Broad market index (Taiwan SE Capitalization Weighted Index (_TWIID) from GFD, 1968-1987), Datastream (1988-2016)	Datastream (1988-2016)
Thailand	"Thailand SET Banks" (_SETBD) index from GFD (1975-1986), Datastream (1987-2016)	Individual bank stocks from various sources (1975-1986), Datastream (1987-2016)	Thailand SET Commerce Index (_SETCD) from GFD (1976-2016)	Broad market index (Datastream: TOTMKTH, 1976-2016)
Turkey	Individual bank stocks from various sources (1870-1939, 1965-1985), Datastream (1986-2016)	Individual bank stocks from various sources (1870-1931), Datastream (1986-2016)	Broad market index (Istanbul SE IMKB-100 Price Index (_XU100D) from GFD, 1986-2016)	Broad market index (Datastream: TOTMKTG, 1986-2016)

Table B2: Data Sources: Annual Equity Variables (cont.)

	<u>Yearly bank stock prices</u>	<u>Yearly bank stock dividends</u>	<u>Yearly nonfinancial stock prices</u>	<u>Yearly nonfinancial stock dividends</u>
United Kingdom	Individual bank stocks from various sources (1870-1887), "UK Banker's Magazine All-Banks" (GBBBANKM) from GFD (1888-1955), "UK FT-Actuaries Banks" (_LCBKD) from GFD (1956-1999), "FTSE All-Share Bank" (_FTA835D) index from GFD (2000-2016)	Individual bank stocks from various sources (1870-1922), Baron-Xiong (1923-2016)	UK L&CES Industrials (GBLINDUM) index from GFD (1870-1899), FTSE All-Share Industrials (_FTASX2000) index from GFD (1900-2016)	Individual nonfinancial stocks from IMM (1870-1922), UK FT-Actuaries Dividend Yield (_DFTASD) from GFD (1923-2016)
United States	Individual bank stocks from various sources (1870-1917), "S&P Banks: Money Center (NYC)" (SPMONYD) from GFD (1918-1940), "S&P 500 Banks Index" (_5SP4010) from GFD (1941-2016)	Individual bank stocks from various sources (1870-1928), Baron-Xiong (1929-2016)	S&P 500/Cowles Composite (_SPXD) index from GFD (1870-1885), Dow Jones Industrials (_DJI3D) index from GFD (1885-1925), S&P 500 Industrials (_5SP20) index from (1925-2016)	Broad market index (S&P 500 Monthly Dividend Yield (SYUSAYM) from GFD, 1871-1925), S&P Industrials Dividend Yield (SPYINDW) from GFD, 1926-2017)
Venezuela	"Caracas SE Financial Index" (_IBCFD) index from GFD (1946-2016)	Datastream (1994-2016)	Broad market index (Caracas SE General Index (_IBCD) Total Returns from GFD, 1938-2007), "Caracas SE Industrials Index" (_IBCID) price index from GFD (2008-2016)	Datastream (2008-2016)

Table B3: Data Sources: Monthly Variables

	<u>Monthly bank stock returns</u>	<u>Monthly nonfin stock returns</u>	<u>Monthly bank credit spreads</u>	<u>Monthly corp credit spreads</u>
Notes:	Note that Datastream is given priority for the monthly data over GFD, given that Datastream is a total returns index, whereas the GFD indexes are price indexes. In general, a total returns monthly index is given priority over a price return index, whenever possible.			
Argentina	Nakamura-Zarazaga index (1900-1935, quarterly), Datastream (1993-2016)	Nakamura-Zarazaga index (1900-1935, quarterly), Datastream (1993-2016)	Argentina BAIBAR Overnight Interbank (IMARGD) from GFD (1990-2016), relative to Argentina Reserve Bank Discount Rate (IDARGD) from GFD (1990-2002) and Argentina 3-month BCRA Treasury Auction Yield (ITARG3D) from GFD (2002-2016)	
Australia	"S&P/ASX 200 Banking Index" (_AXBAJD) from GFD (1875-2016)	"Sydney SE Industrial and Commercial" (AUINCM) price index from GFD (1883-1980), "Australia ASX All-Industrials" (_AAIID) price index from GFD (1981-2002), Datastream (2003-2016)	Australia 3-month Interbank Rate (IBAUT3D) from GFD (1987-2016), relative to Australia 3-month Treasury Bill Yield (ITAUS3D) from GFD	Australia Corporate Bond Yield (INAUSW) from GFD (1983-2016), relative to Australia 10-year Government Bond Yield (IGAUS10D) from GFD
Austria	"Austria National Bank Banks Index" (ATBBANKM) from GFD (1922-1933), "Austria 6 Bank and Insurance Stocks" (ATWBANKM) index from GFD (1969-1980), Datastream (1986-2016)	"Austria National Bank Industrials Index" (ATINDUM) price index from GFD (1921-1934), Datastream (1973-2016)	Austria 3-month VIBOR (IBAUT3D) from GFD (1990-2001), relative to Austria 3-month (ITAUT3M, 1960-1980) and 1-year (IGAUT1D, 1980-2001) Treasury Bill Rate from GFD. EURIBOR (IBEUR3D) relative to German T-Bill (IBEUR3D minus ITDEU3D), from GFD (2002-2016)	
Belgium	Monthly bank stock index data provided by Frans Buelens (1867-1873, 1922-1936), "Belgium INS Finance and Insurance" (BEFININM) index from GFD (1934-1973), Datastream (1973-2016)	Monthly nonfin stock index data provided by Frans Buelens (1867-1873, 1922-1936), Datastream (1973-2016)		Belgium Non-Financial Company Bond Yields (INBELW) from GFD (1960-2016), relative to Belgium 10-year Government Bond Yield (IGBEL10D) from GFD
Brazil	Datastream (1994-2016)	Datastream (1994-2016)	BRAZILIAN INTERBANK RATE (BRIBCDI) from Datastream (2004-2016), relative to Brazil 3-month Treasury Bill Yield (ITBRA3D) from GFD	
Canada	"Canada S&P/TSX Banks" index from GFD (1915-1972), Datastream (1973-2016)	"Canada Investor's Index Industrials" (CAIINDUM) price index from GFD (1915-1935), Datastream (1973-2016)	Canada 3-month Interbank Rate (IBCAN3D) from GFD (1990-2016), relative to Canada 3-month Treasury Bill Yield (ITCAN3D) from GFD	Canada Long-term Corporate Bond Yields (INCANLW) from GFD (1948-2016), relative to Canada 10-year Government Bond Yield (IGCAN10D) from GFD.
Chile	"Chile BEC Finance Index" (_FINANCD) price index from GFD (1927-1989), Datastream (1989-2016)	"Chile BEC Industrials Index" (_INDUSTD) price index from GFD (1927-1989), Datastream (1989-2016)	Chile Interbank Rate (IBCHLD) from GFD (1986-2016), relative to Chile Time Deposit Rate (ICCHLTD, 1976-1996) and Chile 3-month Nominal T-bill Auction Yield (ITCHL3D, 1997-2012) from GFD	
Colombia	Bogota SE Banks Index (COBBANKM) from GFD (1937-1971), "Colombia IBOMED Financial Sector" (_IBMFDC) price index from GFD (1923-1993), Datastream (1993-2016)	"Bogota SE Industrials (old)" (COBINDUM) price index from GFD (1928-1942), "Colombia IBOMED Industrials" (_IBMID) price index from GFD (1968-1998), Datastream (1998-2016)	Colombia TBS Interbank Rate (IBCOLD) from GFD (1998-2016), relative to Colombia 3-month Treasury Bill Yield (ITCOL3W, 1998-2016) from GFD	
Czech	"Czechoslovakia Banks Index" (CZBANKSM) price index from GFD (1919-1938), Datastream (1994-2016)	Czechoslovakia Industrials and Transports (CZINDTRM) from GFD (1919-1937), Datastream (1993-2016)	Czech Republic 3-month PRIBOR (IBCZE3D) from GFD (1992-2016), relative to Czech Republic 3-month Treasury Bill Yield (ITCZE3D) from GFD	



Table B3: Data Sources: Monthly Variables (cont.)

	<u>Monthly bank stock returns</u>	<u>Monthly nonfin stock returns</u>	<u>Monthly bank credit spreads</u>	<u>Monthly corp credit spreads</u>
Denmark	same as yearly	same as yearly	Denmark 3-month Interbank Rate (IBDNKDD) index (1998-2014) relative to Denmark 3-month Treasury Bill Yield (ITDNK3D) from GFD	Denmark Corporate Bond Yield (INDNKEW) from GFD (1939-2011), relative to Denmark 10-year Government Bond Yield (IGDNK10D)
Egypt	Datastream (1996-2016)	Datastream (1996-2016)	Egypt Interbank Lending Rate (IBEGYD) from GFD (2001-2016), relative to Egypt 3-month Treasury Bill Yields (ITEGY3D) from GFD	
Finland	OMX Helsinki Banks Price Index (_HX4010D) from GFD (1934-2008), Datastream (2009-2016)	"Finland Unitas Industrials Index" (FIUINDUD) price index from GFD (1933-1991), Datastream (1988-2016)	EURIBOR (IBEUR3D) relative to German T-Bill (IBEUR3D minus ITDEU3D), from GFD (2002-2016)	
France	same as yearly	same as yearly	France 3-month Interbank Rate (IBFRA3D) from GFD (1969-2001) relative to Deposit Rate (IDFRAD) from GFD. EURIBOR (IBEUR3D) relative to German T-Bill (IBEUR3D minus ITDEU3D), from GFD (2002-2016)	
Germany	same as yearly	same as yearly	Germany 3-month Interbank Rate (IBDEU3D) from GFD (1959-2001), and EURIBOR (IBEUR3D) from GFD (2002-2016), relative to German T-Bill (ITDEU3D)	Corporate bond index from "Statistisches Jahrbuch für das Deutsche Reich" (1929-1934), Germany Corporate Bond Yield (INDEUD) from GFD (1958-2016), all relative to German 10-year Government Bond (IGDEU10D)
Greece	"FTSE/Athex Banks Index" (_FTATBNK) index from GFD (1978-1990), Datastream (1990-2016)	"FTSE/Athex Industrial Goods and Services" (_FTATIND) index from GFD (1952-1988), Datastream (1988-2016)		
Hong Kong	Datastream (1973-2016)	Datastream (1973-2016)	Hong Kong 1-month HIBOR (IBHKG1D) from GFD (1982-2016), relative to Hong Kong 3-month Time Deposits (ICHKGTM, 1971-1991) and Hong Kong 3-month Treasury Bill Yield (ITHKG3D, 1991-2016) from GFD	
Hungary	Datastream (1994-2016)	Datastream (1997-2016)	Hungary 3-month BUBOR (IBHUN3D) from GFD (1991-2016), relative to Hungary 3-month Treasury Bill Yield (ITHUN3D) from GFD	
Iceland	Datastream (1999-2016)	Datastream (1993-2016)	Iceland 3-month REIBOR (IBISL3D) from GFD (1970-2016), relative to Iceland 3-month Treasury Bill Yield (ITISL3D) from GFD	
India	Datastream (1990-2016)	Datastream (1990-2016)	India 3-month MIBOR (IBIND3D) from GFD (1998-2016), relative to India 3-month Treasury Bill Yield (ITIND3D) from GFD	
Indonesia	Datastream (1990-2016)	Datastream (1993-2016)	Indonesia Overnight Interbank Rate (IMIDND) from GFD (1985-2016), relative to Indonesia Treasury Bill Yield (ITIDN3M, 2000-2008) and Indonesia 6-month Treasury Bond Yield (ITIDN6D, 2009-2016) from GFD	

Table B3: Data Sources: Monthly Variables (cont.)

	<u>Monthly bank stock returns</u>	<u>Monthly nonfin stock returns</u>	<u>Monthly bank credit spreads</u>	<u>Monthly corp credit spreads</u>
Ireland	Datastream (1973-2016)	Datastream (1973-2016)	Ireland 3-month Interbank Rate (IBIRL3D) from GFD (1978-2001), relative to Ireland 3-month Treasury Bill Yield (ITIRL3M) from GFD. EURIBOR (IBEUR3D) relative to German T-Bill (IBEUR3D minus ITDEU3D), from GFD (2002-2016)	
Israel	"Tel Aviv SE Commercial Banks" (ILTLVBD) from GFD, (1973-1993), Datastream (1993-2016)	"Tel Aviv SE Industrial and Manufacturing" (ILTLVND) from GFD (1966-1993), Datastream (1993-2016)	Israel 3-month TELBOR (IBISR3D) from GFD (1969-2016), relative to Israel 3-month Treasury Bill Yield (ITISR3D) from GFD	
Italy	Individual bank stocks from L'Economista (1884-1894) and Corriere newspaper (1884-1894, 1904-1934). Datastream (1973-2016)	Individual nonfinancial stocks from L'Economista (1884-1894) and Corriere newspaper (1884-1894, 1904-1934). Datastream (1973-2016)	Italy RIBOR 3 months (IBITA3D) from GFD (1971-2001), relative to Italy 3-month Treasury Bill Yield (ITITA3D) from GFD. EURIBOR (IBEUR3D) relative to German T-Bill (IBEUR3D minus ITDEU3D), from GFD (2002-2016)	
Japan	Individual bank stocks from various sources (1897-1931). Datastream (1973-2016)	Individual nonfinancial stocks from various sources (1897-1931). Datastream (1973-2016)	Japan 3-month TIBOR (IBJPN3D) from GFD (1979-2016), relative to Japan 3-month Treasury Bill Yield (ITJPN3D) from GFD	Japan Corporate Bond Yield (INJPNW) from GFD (1933-2016), relative to Japan 10-year Government Bond Yield (IGJPN10D) from GFD
Korea	"Korea SE Banks" (_KS51D) from GFD (1979-1987), Datastream (1987-2016)	"Korea SE Manufacturing" (_KS55D) from GFD (1980-1987), Datastream (1987-2016)		
Luxembourg	Datastream (1992-2016)	Datastream (1992-2016)	Luxembourg Interbank Offer Rate (IBLUXM) from GFD (1990-2001), relative to Luxembourg 3-month Time Deposit Rate (ICLUXTM) from GFD. EURIBOR (IBEUR3D) relative to German T-Bill (IBEUR3D minus ITDEU3D), from GFD (2002-2016)	Luxembourg Industrial Bonds (LUBINDM) from GFD (1963-2016), relative to Luxembourg Government Bonds (IGLUX10D) from GFD
Malaysia	"Malaysia KLSE Financial Index" (_KLFD) from GFD (1969-1986), Datastream (1986-2016)	"Malaysia KLSE Industrials" (_KLIND) price index from GFD (1969-1986), Datastream (1986-2016)	Malaysia 3-month KLIBOR (IBMYS3D) from GFD (1994-2016), relative to Malaysia 3-month T-bill Discount Rate (ITMYS3D) from GFD	
Mexico	Datastream (1989-2016)	Datastream (1989-2016)		
Netherlands	Individual bank stocks from various sources (1890-1934). "Netherlands ANP-CBS Banks and Insurance" (NLDBKINM) index from GFD (1928-1971), Datastream (1973-2016)	Individual nonfinancial stocks from various sources (1890-1934). "Netherlands ANP-CBS Consumer Goods" (NLDCONSM) from GFD (1931-1973), Datastream (1973-2016)		
New Zealand	Datastream (2010-2016)	Datastream (1994-2016)	New Zealand 6-month Interbank Rate (IBNZL6D) from GFD (1990-2013) and NZ INTERBANK RATE - 3 MONTH (NZINTER3) from Datastream (2013-2016), relative to New Zealand 3-month Treasury Bill Yield (ITNZL3D) from GFD	
Norway	"Oslo SE Finance (Banks and Insurance) TR Index" (_FINXD) from GFD (1915-1990), Datastream (1990-2016)	"Oslo SE Industrials TR Index" (_NOSID) Total Return price index from GFD (1914-1980), Datastream (1980-2016)	Norway 3-month OIBOR (IBNOR3D) from GFD (1978-2016), relative to Norway 3-month Treasury Bill Yield (ITNOR3D) from GFD	Norway 10-year Industrial Bond Yield (INNOR10D) from GFD (1921-2003), relative to Norway Government Bonds (IGNOR10D) from GFD
Peru	"Lima SE Banks" (_LMBFIND) index from GFD (1927-1993), Datastream (1994-2016)	"Lima SE Industrials" (_LMINDD) price index from GFD (1938-1991), Datastream (1991-2016)		

Table B3: Data Sources: Monthly Variables (cont.)

	<u>Monthly bank stock returns</u>	<u>Monthly nonfin stock returns</u>	<u>Monthly bank credit spreads</u>	<u>Monthly corp credit spreads</u>
Philippines	"Philippines Banks" (PHBANKM) from GFD (1952-1981), "Philippines Finance" (PHFINM) from GFD (1981-1989), Datastream (1989-2016)	"Philippine SE Industrial Index" (_PSIND) price index from GFD (1953-1990), Datastream (1990-2016)	Philippines Interbank Overnight Rate (IMPHLD) from GFD (1982-2016), relative to Philippines 3-month Treasury Bill Yield (ITPHL3D) from GFD	
Portugal	Datastream (1990-2016)	Datastream (1990-2016)	Portugal Overnight Interbank Rate (IMPRD, 1975-1983) and 3-month LISBOR (IBPRT3D, 1983-2001) from GFD, relative to Portugal 3-month Treasury Bill Yield (ITPRT3M, 1985-1988) and 6-month Treasury Bill Yield (ITPRT6D, 1989-2001) from GFD. EURIBOR (IBEUR3D) relative to German T-Bill (IBEUR3D minus ITDEU3D), from GFD (2002-2016)	
Russia	Russia AK&M Bank Index (RUAKMBD) from GFD (1993-1997), Datastream (1997-2016)	Russia AK&M Industrials Index (_AKMED) from GFD (1993-2013), Datastream (2013-2016)	Russia MIACR Overnight Interbank Rate (IMRUSD) from GFD (1992-2016), relative to Russia 3-month Treasury Bill Yield (ITRUS3D) from GFD	Russia Corporate Bonds Average Yield (INRUSXD) from GFD (2003-2016), relative to Russia 10-year Bond Yield (IGRUS10D) from GFD
Singapore	Datastream (1973-2016)	Datastream (1973-2016)	Singapore 3-month SIBOR (IBSGP3D) from GFD (1973-2016), relative to Singapore 3-month Treasury Yield (ITSGP3D) from GFD	
South Africa	"FTSE/JSE Africa Banks" (_JBANKD) index from GFD (1979-1985), Datastream (1986-2016)	"Johannesburg SE Industrials" (_JIAID) price index from GFD (1912-1973), Datastream (1973-2016)	South Africa 3-month JABIR (IBZAF3D) from GFD (1997-2016), relative to South Africa 3-month Treasury Bill Yield (ITZAF3D) from GFD	South Africa Eskom Corporate Bond Yield (INZAFD) from GFD (1953-2016), relative to South Africa 10-Year Bond Yield (IGZAF10D) from GFD
Spain	Individual bank stocks from various sources (1917-1934, 1974-1980). "Madrid SE Banking and Finance" (_IBAN_MD) from GFD (1940-1987), Datastream (1987-2016)	Individual nonfinancial stocks from various sources (1917-1934, 1974-1980). "Madrid SE Metals" (_IMET_MD) price index from GFD (1941-1987), Datastream (1987-2016)	Spain 3-month MIBOR (IBESP3D) from GFD (1973-2001), relative to Spain 3-month T-Bill Yield (ITESP3D) from GFD. EURIBOR (IBEUR3D) relative to German T-Bill (IBEUR3D minus ITDEU3D), from GFD (2002-2016)	
Sweden	"Stockholm SX Banks Price" (_SX4010D) index from GFD (1906-1982), Datastream (1982-2016)	"Stockholm SX Industrials Price Index" (_SX20PID) price index from GFD (1907-1982), Datastream (1982-2016)	Sweden 3-month Interbank Rate (IBSWE3D) from GFD (1980-2016), relative to Sweden 3-month Treasury Bill Yield (ITSWE3D) from GFD	
Switzerland	Individual bank stocks from various sources (1867-1873, 1907-1934). Datastream (1973-2016)	Individual nonfinancial stocks from various sources (1867-1873, 1907-1934). Datastream (1973-2016)	Switzerland 3-month Interbank Rate (IBCHE3D) from GFD (1973-2016), relative to Switzerland 3-month Treasury-Bill Yield (ITCHE3D) from GFD	Switzerland Industrial Bond Average Yield (INCHEID) and Switzerland 7-10 year AA Corporate Bond Yields (_ZDAA7YD) from GFD (1997-2016), relative to Switzerland 10-year Government Bond (IGCHE10D) from GFD
Taiwan	Datastream (1988-2016)	Datastream (1988-2016)		Taiwan 5-year Corporate Bond Yield (INTWN5M) from GFD (1985-2016), relative to Taiwan 10-year Government Bond Yield (IGTWN10D) from GFD
Thailand	Thailand SET Banks (_SETBD) index from GFD (1975-1986), Datastream (1987-2016)	Thailand SET Commerce Index (_SETCD) from GFD (1976-1993), Datastream (1993-2016)		

Table B3: Data Sources: Monthly Variables (cont.)

	<u>Monthly bank stock returns</u>	<u>Monthly nonfin stock returns</u>	<u>Monthly bank credit spreads</u>	<u>Monthly corp credit spreads</u>
Turkey	Datastream (1990-2016)	Datastream (1990-2016)	Turkey Overnight Interbank Rate (IMTURD) from GFD (1986-2016), relative to Turkey 1-month Time Deposits (ICTURTM, 1973-2008) and Turkey 1-year Government Bond Yield (IGTUR1D, 2008-2016) from GFD	
United Kingdom	same as yearly	same as yearly	United Kingdom Overnight Interest Rate (IMGBRD) from GFD (1937-1965), United Kingdom 3-month Interbank Rate (IBGBR3D) from GFD (1966-2016); all relative to Bank of England Rate (IDGBRD) from GFD (1870-1899) and 3-month Treasury Bill Yield ITGBR3D (1900-2016)	Great Britain Corporate Bond Yield (INGBRW) from GFD (1937-2016), relative to UK Long-term Government Yield (IGGBR10D) from GFD
United States	same as yearly	same as yearly	United States 3-month Interbank Rate (IBUSA3D) from GFD (1963-2016), relative to USA 3-month Tbill Yield (ITUSA3D)	Moody's AAA Corporate Yield (SPAAA15W) from GFD (1900-2016), relative to USA Long-term Government Yield (IGUSA10D)
Venezuela	"Caracas SE Financial Index" (_IBCFD) index from GFD (1946-1993), Datastream (1994-2016)	"Caracas SE Industrials Index" (_IBCID) price index from GFD (1948-1990), Datastream (1990-2016)	Venezuela Interbank Overnight Rate (IMVEND) from GFD (1998-2016), relative to Venezuela 3-month Treasury Bill Yields (ITVEN3D) from GFD	

Table B4: Data Sources: Macroeconomic Variables

	<u>Bank Credit</u>	<u>Nominal GDP</u>	<u>Inflation</u>	<u>Unemployment</u>	<u>Other macro variables (real consumption, investment to GDP, broad money supply, govt debt to GDP, mortgage loans, house prices)</u>
Notes:	<b>IMF*</b> means newly transcribed data (not available online) from IMF's International Financial Statistics (print versions), 1937-1988. <b>GFD</b> refers to Global Financial Data. <b>League of Nations</b> refers to their Memorandum on Commercial Banks (eds. 1929, 1933, 1934, 1936, and 1941) covering the period 1918-1937. <b>BIS</b> means the BIS Long Credit Series. <b>JST</b> means the Jorda, Schularick, Taylor database. Data from the <b>World Bank</b> and <b>IMF</b> accessed online on their websites. <b>Maddison</b> refers to the Maddison Project Database 2018, with occasional data from Barro and Ursua (2010) and the World Bank, when Maddison data is missing; real GDP figures are converted to Nominal GDP using the inflation data from this data set.				
Argentina	Nakamura (1901-1935), IMF* (1936-1939), BIS (1940-2016)	Maddison (1884-1991), World Bank (1992-2016)	GFD (1870-2016)	GFD (1974-2016)	
Australia	JST (1870-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1901-2016)	JST (1870-2016)
Austria	Rieder (1870-1878), League of Nations (1918-1937), BIS (1949-2016)	Maddison (1870-1937), GFD (1948-2016)	GFD (1870-2016)	GFD (1931-2016)	
Belgium	JST (1885-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1921-2016)	JST (1870-2016)
Brazil	Triner (1906-1930), League of Nations (1931-1939), BIS (1993-2016)	Maddison (1870-1960), World Bank (1961-2016)	GFD (1870-2016)	GFD (1976-2016)	
Canada	JST (1870-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1919-2016)	JST (1870-2016)
Chile	League of Nations (1920-1936), IMF* (1937-1984), BIS (1985-2016)	Maddison (1870-2016)	GFD (1870-2016)	GFD (1966-2016)	
Colombia	League of Nations (1924-1936), IMF* (1937-1959), World Bank (1960-2016)	Maddison (1924-1959), World Bank (1960-2016)	GFD (1870-2016)	GFD (1980-2016)	
Czech	League of Nations* (1919-1937), World Bank (1993-2016)	GFD (1919-1938), World Bank (1990-2016)	GFD (1921-2016)	GFD (1990-2016)	
Denmark	JST (1870-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1910-2016)	JST (1870-2016)
Egypt	IMF* (1945-1959), World Bank (1965-2016)	Maddison (1887-1959), World Bank (1960-2016)	Implied from difference between real and nominal GDP		
Finland	JST (1870-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1958-2016)	JST (1870-2016)
France	JST (1900-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1895-2016)	JST (1870-2016)
Germany	JST (1883-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1887-2016)	JST (1870-2016)
Greece	League of Nations (1918-1936), World Bank (1960-2016)	Maddison (1946-2016)	GFD (1924-2016)	GFD (1976-2016)	
Hong Kong	BIS (1978-2016)	World Bank (1960-2016)	GFD (1948-2016)	GFD (1980-2016)	
Hungary	League of Nations (1925-1936), World Bank (1991-2016)	GFD (1870-1913, 1921-1938), World Bank (1991-2016)	GFD (1870-2016)		
Iceland	IMF* (1951-1959), World Bank (1960-2016)	GFD (1901-1959), World Bank (1960-2016)	GFD (1902-2016)	GFD (1957-2016)	

Table B4: Data Sources: Macroeconomic Variables (cont.)

	<u>Bank Credit</u>	<u>Nominal GDP</u>	<u>Inflation</u>	<u>Unemploym.</u>	<u>Other macro variables (real consumption, investment to GDP, broad money supply, govt debt to GDP, mortgage loans, house prices)</u>
India	IMF* (1937-1950), BIS (1951-2016)	Maddison (1870-1959), World Bank (1960-2016)	GFD (1871-2016)	GFD (1994-2016)	
Indonesia	IMF* (1951-1987), World Bank (1988-2016)	GFD (1921-2016)	GFD (1926-2016)	GFD (1982-2016)	
Ireland	The Economist (1903-1922), League of Nations (1923-1936), IMF* (1937-1960), World Bank (1961-1994), BIS (1995-2016)	Maddison (1870-2016)	GFD (1870-2016)	GFD (1939-2016)	
Israel	IMF* (1945-1971), World Bank (1972-2016)	GFD (1950-1980), World Bank (1981-2016)	GFD (1923-2016)	GFD (1960-2016)	
Italy	JST (1870-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1947-2016)	JST (1870-2016)
Japan	JST (1875-2016)	JST (1875-2016)	JST (1870-2016)	GFD (1930-2016)	JST (1870-2016)
Korea	IMF* (1953-1961), BIS (1962-2016)	Maddison (1953-2016)	GFD (1949-2016)	GFD (1960-2016)	
Luxembourg	IMF* (1950-1959), World Bank (1960-2016)	Maddison (1950-1959), World Bank (1960-2016)	GFD (1922-2016)	GFD (1983-2016)	
Malaysia	IMF* (1952-1959), World Bank (1960-1964), BIS (1965-2016)	Maddison (1955-2016)	GFD (1949-2016)	GFD (1982-2016)	
Mexico	League of Nations (1925-1936), IMF* (1937-1959), World Bank (1960-2016)	GFD (1895-1979), World Bank (1980-2016)	GFD (1887-2016)	GFD (1975-2016)	
Netherlands	JST (1900-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1911-2016)	JST (1870-2016)
New Zealand	Statistics of the Dominion of New Zealand, 1918, vol. III (1870-1918), League of Nations (1918-1939), IMF* (1940-1959), BIS (1960-2016)	Maddison (1870-2016)	GFD (1915-2016)	GFD (1971-2016)	
Norway	JST (1870-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1904-2016)	JST (1870-2016)
Peru	League of Nations (1925-1936), IMF* (1937-1959), World Bank (1960-2016)	GFD (1926-1959), World Bank (1960-2016)	GFD (1900-2016)	GFD (1969-2016)	
Philippines	IMF* (1948-1988), World Bank (1989-2016)	GFD (1946-1959), World Bank (1960-2016)	GFD (1899-2016)	GFD (1980-2016)	
Portugal	JST (1870-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1953-2016)	JST (1870-2016)
Russia	World Bank (1993-2016)	Maddison (1870-1917), World Bank (1993-2016)	GFD (1870-1917, 1990-2016)		
Singapore	BIS (1963-2016)	Maddison (1950-1959), World Bank (1960-2016)	GFD (1949-2016)	GFD (1968-2016)	
South Africa	League of Nations (1918-1936), IMF* (1937-1964), BIS (1965-2016)	Maddison (1911-2016)	GFD (1896-2016)	GFD (1991-2016)	
Spain	JST (1900-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1964-2016)	JST (1870-2016)
Sweden	JST (1871-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1919-2016)	JST (1870-2016)
Switzerland	JST (1870-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1926-2016)	JST (1870-2016)

Table B4: Data Sources: Macroeconomic Variables (cont.)

	<u>Bank Credit</u>	<u>Nominal GDP</u>	<u>Inflation</u>	<u>Unemploym.</u>	<u>Other macro variables (real consumption, investment to GDP, broad money supply, govt debt to GDP, mortgage loans, house prices)</u>
Taiwan	IMF* (1950-1973)	GFD (1950-2016)	GFD (1896-2016)	GFD (1964-2016)	
Thailand	IMF* (1946-1956), BIS (1957-2016)	GFD (1946-2016)	GFD (1949-2016)	GFD (1980-2016)	
Turkey	League of Nations (1929-1936), IMF* (1937-1950), IMF (1951-1959), World Bank (1960-2016)	Maddison (1950-1959), World Bank (1960-2016)	GFD (1870-2016)	GFD (1985-2016)	
United Kingdom	JST (1880-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1855-2016)	JST (1870-2016)
United States	JST (1880-2016)	JST (1870-2016)	JST (1870-2016)	GFD (1890-2016)	JST (1870-2016)
Venezuela	IMF* (1937-1987), World Bank (1988-2016)	GFD (1901-2016)	GFD (1901-2016)		

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