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Investing in crises

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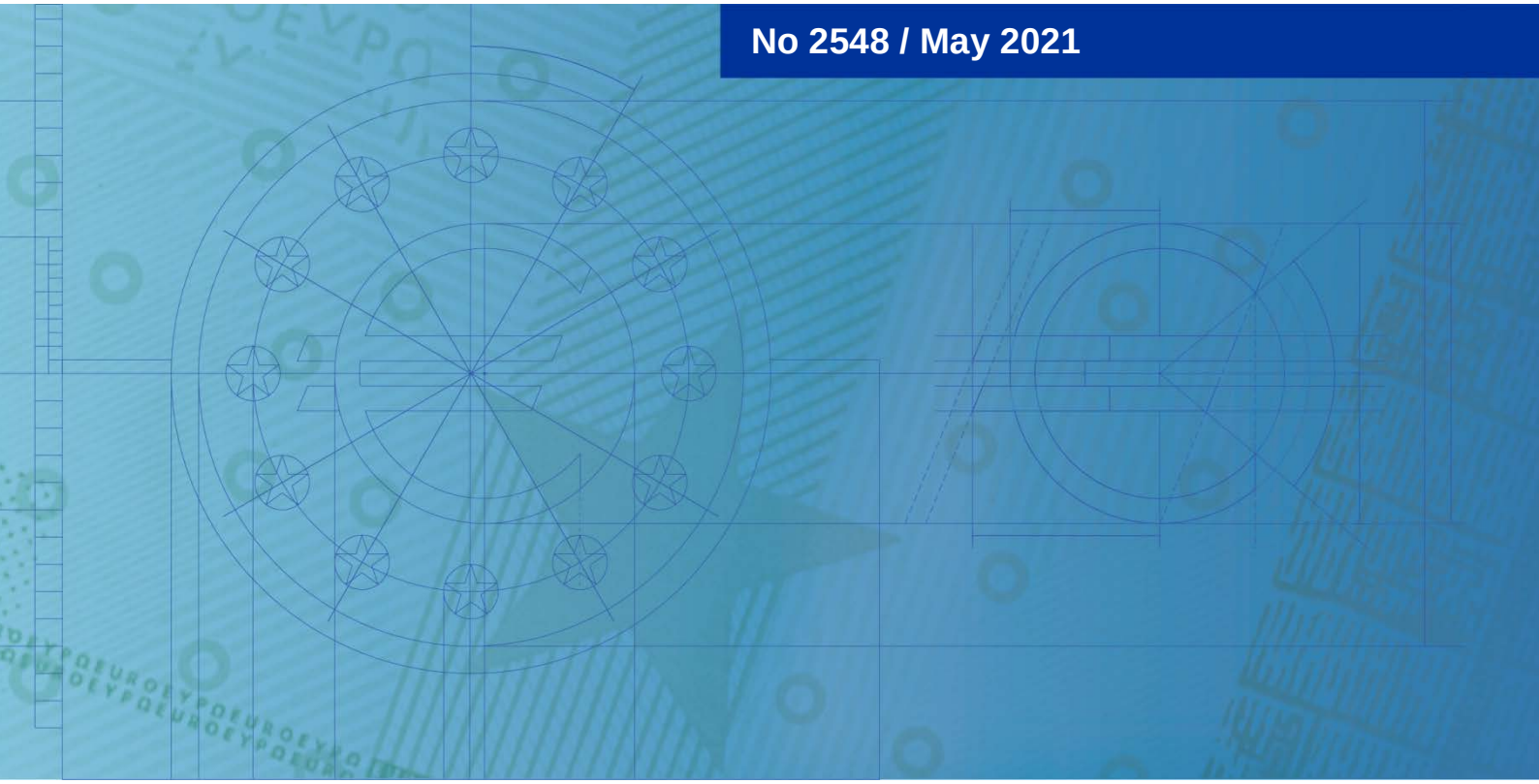

Abstract:
We investigate asset returns around banking crises in 44 advanced and emerging economies from 1960 to 2018. In contrast to the view that buying assets during banking crises is a profitable long-run strategy, we find returns of equity and other asset classes generally underperform after banking crises. While prices are depressed during crises and partially recover after acute stress ends, consistent with theories of fire sales and intermediary-based asset pricing, we argue that investors do not fully anticipate the consequences of debt overhang, which result in lower long-run dividends. Our results on bank stock underperformance suggest that government-funded bank recapitalizations can often lead to substantial taxpayer losses.

Keywords: investments, financial crises, returns, fire sales
JEL Codes: G11; G14; G15; G41

Non-Technical Summary

A common view is that financial crises are times when assets can be bought at deep discounts, yielding potentially high long-run profits. However, little is known about the longer-term asset returns after crises or the returns to investing specifically in the banking sector, which have important implications for government interventions and private restructurings of financial institutions in the aftermath of crises.

In this paper, we analyze asset returns following banking crises in an international panel of monthly returns across several asset classes, covering 44 countries over the period 1960-2018. We find that if one invests in the acute phase of banking crises, long-run equity returns of both banks and nonfinancial firms are not substantially elevated, whether measured in local currency units or U.S. dollars, in excess returns or real returns. Furthermore, we show that there is high risk to investing especially in bank stocks in crises, as indicated by the variance of investment outcomes across crises and by the frequency of double-dip crises, giving rise to large tail risks. Similar results hold for other asset classes, including real estate, currencies, and emerging market sovereign debt. However, we do not find such results for other types of crises, including currency crashes, balance-of-payment crises, and stock market crashes.

We then study trading strategies in which investors invest in risky assets when banking crises occur and in U.S. Treasury bills otherwise. Such strategies, whether for stocks or other asset classes, do not beat an international buy-and-hold strategy in absolute performance or on a risk-adjusted basis—and for bank stocks, they consistently produce negative excess return. Even if investors have particularly good timing to buy at the point where prices on average reach a trough, returns of such strategies are elevated at most a few percentage points for nonfinancial equity and still underperform for bank equity. We also show that banking crises, from a long-run perspective, can be viewed mainly as cash-flow shocks rather than discount rate shocks, in the sense that they feature a sudden contemporaneous collapse in prices

followed by a future fall in dividends, rather than higher future long-run returns. Taken together, our results imply that the conventional wisdom that it pays to take advantage of the fear or borrowing constraints of others by investing during times of severe financial distress may not be always true.

Why do the long-run returns to investing in banking crises tend not to be elevated? We find that the variation in investment outcomes across crises is best explained by variables related to the extent of debt defaults and debt overhang at the time of the crisis. The explanatory power of debt overhang-related variables suggests that the long-run underperformance, especially of bank stocks, may be due to investors not fully anticipating the long-lasting macroeconomic consequences of debt overhang, which depresses long-run dividends.

Our results on the high risk and underperformance of bank stocks have several important implications. First, our results imply that taxpayer-funded bank recapitalizations are risky and, in many cases, can lead to substantial taxpayer losses. Second, our results may help explain why deep-pocketed private investors tend to be hesitant to buy assets during banking crises, particularly when it concerns recapitalizing banks. Lastly, our results imply that markets do not seem to overreact or be systematically too pessimistic during the depths of crises. If anything, investors on average are not pessimistic enough about the long-run effects of crises on future bank and corporate earnings.

I. Introduction

Do financial crises offer profitable opportunities for long-term investors? A common view is that financial crises are times when assets can be bought at deep discounts, yielding potentially high long-run profits, as encapsulated by Warren Buffett's famous adage, "Be fearful when others are greedy, and greedy when others are fearful." Consistent with this view, intermediary asset pricing models (e.g., He and Krishnamurthy 2013 and Brunnermeier and Sannikov 2014) predict elevated risk premia when the borrowing constraints of leveraged investors become binding. Similarly, in models of fire sales, asset prices can be sharply depressed when the market is hit by large aggregate shocks and investors are liquidity constrained, allowing unconstrained investors to enjoy excess returns by providing liquidity to the market (Shleifer and Vishny 1992, 1997, Stein 1995, and Brunnermeier and Pedersen 2009). On the empirical side, Muir (2017) finds that asset prices collapse and credit spreads increase during financial crises. However, little is known about the longer-term asset returns after crises or the returns to investing specifically in the banking sector, which have important implications for government interventions and private restructurings of financial institutions in the aftermath of crises.

In this paper, we analyze asset returns following banking crises in an international panel of monthly returns across several asset classes, covering 44 countries over the period 1960-2018. We define the start of the "acute phase" of banking crises using three alternative approaches to which our results are generally invariant: the first month of 1) a systemwide "banking panics" from Baron, Verner, and Xiong (2021, hereafter "BVX"); 2) multiple major government interventions from Laeven and Valencia (2020, hereafter "LV"); and 3) a 30% drop in a country's bank equity index (a "bank equity crash"). We find that if one invests in the acute phase of banking crises, long-run equity returns of both banks and nonfinancial firms are not substantially elevated, whether measured in local currency units (LCU) or U.S. dollars

(USD), in excess returns or real returns.[1] Furthermore, we show that there is high risk to investing especially in bank stocks in crises, as indicated by the variance of investment outcomes across crises and by the frequency of double-dip crises, giving rise to large tail risks. Similar results hold for other asset classes, including real estate, currencies, and emerging market sovereign debt. However, we do not find such results for other types of crises, including currency crashes, balance-of-payment crises, and stock market crashes.

We then study trading strategies in which a U.S.-based investor invests in banking crises around the world when they occur and in U.S. T-bills otherwise. Such strategies, whether for stocks or other asset classes, do not beat an international buy-and-hold strategy in absolute performance or on a risk-adjusted basis—and for bank stocks, they consistently produce negative alpha. Even if investors have particularly good timing to buy at the point where prices on average reach a trough (six months after the start of the acute phase, which we argue is difficult for investors to consistently time in practice[2]), returns of such strategies are elevated at most a few percentage points for nonfinancial equity and still underperform for bank equity. Taken together, our results imply that the conventional wisdom that it pays to take advantage of the fear or borrowing constraints of others by investing during times of severe financial distress may not be always true.

Our results are not necessarily inconsistent with intermediary asset pricing or other theories that emphasize periods of high discount rates during crises, though we find such periods are short-lived after banking crises. Indeed, prices are often sharply depressed starting

[1] We show similar results on a longer historical sample using the Jorda-Schularick-Taylor dataset, which covers 17 advanced economies from 1870 to 2016. However, unlike our main dataset, this dataset is limited to fewer countries, is annual in frequency, and only contains the broad stock market index returns.

[2] For example, in the U.S. in 2008, the start of the acute phase of the crisis is dated by BVX to the end of September 2008, just after the failure of Lehman Brothers, but the stock market did not hit its trough until February 2009.

a few months after the crisis begins and partially recover when the acute stress is over. However, on a longer timescale of years, returns to investing in crises tend not to be elevated.

We next find that banking crises, from a long-run perspective, can be viewed mainly as cash-flow shocks rather than discount rate shocks, in the sense that they feature a sudden contemporaneous collapse in prices followed by a future fall in dividends, rather than higher future long-run returns. Consistent with Muir (2017), price-dividend ratios are temporarily low during banking crises, as prices suddenly fall at the onset of the crisis, while dividends are sticky in the short-run. However, the price-dividend ratio then adjusts not because prices rebound (a discount rate effect, as conjectured by Muir 2017), but because banking crises systematically feature a fall in future dividends.

Why do the long-run returns to investing in banking crises tend not to be elevated? One explanation is simply that long-term risk premia stay constant during banking crises and investors correctly anticipate the future fall in dividends. An alternative explanation is that long-run risk premia do increase, consistent with intermediary asset pricing models, but that investors do not fully anticipate the long-run fall in future dividends.

Consistent with this second explanation, we find that the variation in investment outcomes across crises is best explained by variables related to the extent of debt defaults and debt overhang at the time of the crisis. (In contrast, fiscal or monetary policy actions taken at the time of the crisis and macroeconomic indicators have little correlation with stock market outcomes across crises, either because policy is endogenous to the severity of the crisis or because investors correctly anticipate the consequences of these policies.) The explanatory power of debt overhang-related variables suggests that the long-run underperformance, especially of bank stocks, may be due to investors not fully anticipating the long-lasting macroeconomic consequences of debt overhang, which depresses long-run dividends. Rational

interpretations, in contrast, imply that higher levels of distress and debt overhang at the time of the crisis would predict higher subsequent returns, but we find the opposite.

Recent research has shown that banking crisis recessions tend to be unusually deep and persistent compared to noncrisis recessions, in large part due to balance sheet problems in the household and banking sectors (Mian and Sufi 2009, Reinhart and Rogoff 2009, Jorda, Schularick, and Taylor 2011). Thus, one interpretation of our results is that investors at the time of crises underappreciate the persistence of debt problems and its long shadow on corporate and bank earnings, leading them to overestimate the speed of recovery.[3,4]

Our results on the high risk and underperformance of bank stocks have several important implications. First, our results imply that taxpayer-funded bank recapitalizations are risky and, in many cases, can lead to substantial taxpayer losses. While the U.S. government's TARP investments in 2008 turned out to be profitable on an absolute return basis, this outcome is not generally true of bank equity returns in other countries, even when their governments also inject taxpayer money into banks.[5] The U.S. stock market's sharp rebound after the 2008 financial crisis is an exception to the general pattern. Many other countries, including those with taxpayer-funded bank recapitalization programs, have had different experiences after

[3] It can often take more than a decade to fully clean up bad loans in the banking sector. Even nearly 10 years after the 2008 global financial crisis and the 2010-2012 euro-area sovereign debt crisis, banks in Cyprus, Greece, Ireland, Italy, and Portugal are still dealing with problem loans (Huljak et al. 2020). In Japan, banking problems after the 1990s banking crisis persisted through 2003 when the Japanese government had to undertake a third round of restructuring and nationalizing several major banks (Hoshi and Kashyap 2004). In the U.S. in the 1980s, problems related to the savings and loans crisis took nearly a decade to fully resolve (Kane 1989). Thus, it may be difficult for investor to fully appreciate ex-ante the long horizon of such problems.

[4] Investors potentially overestimating the speed of recovery is consistent with evidence that macroeconomic forecasts have been systematically too optimistic about the speed of recovery after the 2008 banking crises (e.g., Mian, Sufi, Verner 2017; Bordalo, Gennaioli, Ma, and Shleifer 2020). We similarly show that IMF macroeconomic forecasts are generally overoptimistic in forecasting the speed of recovery after a broad range of banking crises. Of course, equity investors need not have the same expectations as IMF macroeconomic forecasts.

[5] Flanagan and Purnanandam (2020) similarly argue that the commonly-held view that the TARP was an investment success is not true. They show that TARP investment returns to U.S. taxpayers were considerably lower than those of comparable private market securities on a risk-adjusted basis.

banking crises. For instance, the five-year subsequent real total return (in LCU) of the bank stock index were: -54.7% for Japan after its 1997-8 crisis and -34.8% for Germany and -20.8% for the U.K. after the 2007-8 crisis, even though governments recapitalized banks in all of these countries. In contrast, Denmark, Norway, and Sweden saw very high stock returns after their 1990-92 banking crises, illustrating the wide variation in outcomes.

Second, our results may help explain why deep-pocketed private investors tend to be hesitant to buy assets during banking crises, particularly when it concerns recapitalizing banks (Shleifer and Vishny 1992, Blanchard 2009). Ideally, private investors might take over banks and restructure them during banking crises, obviating the need for taxpayer-funded recapitalizations. By showing that bank equity investments are highly volatile and not necessarily profitable after crises, our results provide one potential reason why private investors, especially those with experience investing in banks and thus best-positioned to understand the risks, often seem hesitant to do so.[6]

Lastly, our results imply that markets do not seem to overreact or be systematically too pessimistic during the depths of crises: if anything, investors on average are not pessimistic enough about the long-run effects of crises on future bank and corporate earnings. In theory, investors could shy away from the market after experiencing losses during a banking crisis because they are more sensitive to losses than to gains (Benartzi and Thaler 1995) or because

[6] For example, Warren Buffett turned down LTCM in 1998 and Lehman and AIG in 2008 after being approached by these firms, and instead only invested $5 billion in preferred shares in Goldman Sachs, one of the strongest investment banks during the 2008 crisis. Similarly, J.C. Flowers and Co., a prominent private equity firm specializing in bank restructurings, passed over opportunities to invest in Bear Stearns and Northern Rock in 2007-8—though later made disastrous investments in MF Global and Germany's HSH Nordbank and Hypo Real Estate.

For a vivid example of the difficulties involved in private investors trying to restructure a major bank, see Tett's (2003) account of the takeover of Japan's Long-Term Credit Bank (LTCB) in 1999 by the American private equity groups Ripplewood Holdings and J.C. Flowers and Co. Although this deal was ultimately profitable at the time the bank went public again in a 2004 IPO, its success was anything but a foregone conclusion and was due, in large part, to a large (and controversial) implicit subsidy provided by the Japanese government, as argued by Tett (2003). However, in the years following the IPO, J.C. Flowers and Co. continued to hold a large stake in the bank that resulted eventually in large losses.

they form incorrect expectations based on overweighting past returns or experiences (Malmendier and Nagel 2011, Barberis et al. 2015) during extreme market distress. These forces might lead investors to be excessively pessimistic in the depths of the crisis and underweight the probability of recovery, causing prices to fall below fundamentals and risk premia to rise. The literature has found that investors may neglect the risk of a stock market crash during the buildup of financial imbalances, prompting risk premia to vary with the financial cycle (Shleifer and Vishny 2010, Gennaioli, Shleifer, and Vishny 2012, Baron and Xiong 2017). While these theories may explain time variation in risk premia, our results do not indicate excessive investor pessimism or overreaction during the depths of crises—in fact, they suggest the opposite. Consistent with our findings, Baron and Muir (2020) show that much of the variation in risk premia over the credit cycle arises during credit booms, when risk premia are low, rather than after banking crises.

Our paper is also related to the literature on the determinants and consequences of banking crises. This literature has shown that macroeconomic imbalances are often at the root of banking crises (Kaminsky and Reinhart 1999 and Reinhart and Rogoff 2009) and that banking crises generate large economic losses (Laeven and Valencia 2008). Crises that tend to be associated with credit booms have also been shown to be associated with deeper recessions (Mian and Sufi 2009, Jorda, Schularick and Taylor 2011, and Schularick and Taylor 2012) and larger market crashes (Baron and Xiong 2017). This literature has primarily focused on the consequences of banking crises for aggregate macroeconomic indicators such as GDP and credit. We contribute to this literature by analyzing the consequences for asset returns.

II. Data and summary statistics

We construct an unbalanced country-level monthly panel, covering 44 countries over the period 1960-2018, consisting of three types of variables: asset returns, crisis starting

months, and macroeconomic variables. We discuss each type in turn below. The coverage of the entire panel consists of all country-month observations for which the bank equity total return, nonfinancial equity total return, inflation rate, short-term interest rate, and USD exchange rate are all non-missing.

Asset returns. The main two asset classes studied are bank equity and nonfinancial equity, for which we build country-level monthly total return indexes. These monthly total return indexes are constructed with data from Datastream, Global Financial Data, and Baron, Verner, and Xiong (2021) who construct indexes using newly collected individual bank and nonfinancial stock data for each country. For details, see Appendix Table C.1, which lists all data sources by country. Total returns are decomposed into price return and dividend return components, and the sources for these components are also documented by country in Appendix Table C.1. For dividend returns, sometimes the data comes only as annual series, in which case we allocate the cash value of the dividends equally over the 12 months of the year.

We also gather monthly total returns data on two other asset classes: EMBI sovereign bonds (only available for emerging market countries) and currencies (calculated as the carry trade returns from the perspective of a USD-based investor, using the USD and local short-term interest rates, along with the exchange rate, as described below). We also gather data on residential real estate price returns, though this variable is only available at the annual level. See Appendix Table C.1 for the sources for each variable by country.

For the subsequent analysis, all nominal local currency returns (LCU) are converted into four different types of returns: LCU excess returns and LCU real returns (by subtracting the local short-term interest rate or inflation rate, respectively) and USD-based excess returns and real returns (by first converting to USD-based returns using the nominal exchange rates, then subtracting the U.S. short-term interest rate or inflation rate, respectively).

Table 1 reports summary statistics for the returns of the five asset classes: bank and nonfinancial equity total returns, EMBI bond total returns, currency carry trade returns, and residential real estate price returns. Returns are reported both in LCU and in USD. The mean, standard deviation, and percentiles are calculated using monthly arithmetic returns (not annualized), except for residential real estate price returns, which are annual.

Crisis dates. We use three alternative chronologies of the start of the "acute phase" of banking crises: the first month of 1) a systemwide "banking panics" from BVX (2021); 2) multiple major government interventions from LV (2020); and 3) a "bank equity crash," defined as the first month in a 5-year window in which the bank equity monthly real total return index falls year-over-year by 30%.[7]

To facilitate trading strategies, it is important to use chronologies of banking crisis that are based on observable monthly indicators that investors can use to initiate their trading strategies in real time. BVX (2021) identify banking panics by first screening for annual observations in which the bank equity index has cumulatively dropped by 30% relative to its previous peak, then using narrative information and bank credit spreads to identify the month of the acute "panic" (i.e. widespread creditor runs) phase of the crisis.[8] In contrast, LV (2020) take a policy-based approach and define the starting month of the crisis as when at least three

[7] We follow Frankel and Rose (1996) who examine yearly data on exchange rates and define currency crashes as episodes of year-over-year depreciations of more than 30% with the year-over-year change being at least 10 percentage points lower than the previous year's change. The latter criterion is meant to capture episodes of acute distress in the relevant market rather than incidents of gradual deterioration. We likewise adopt this approach in our definitions of bank equity crashes and currency crashes.

[8] Following Calomiris and Gorton (1991) and Gorton and Huang (2004), BVX (2021) define a banking panics as a "severe and sudden withdrawals of funding by bank creditors." Specifically, they define a banking 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." BVX (2021) provide a database with systematic historical documentation for each episode regarding the presence of panics and the month in which the panic begins.

out of the six policy interventions are implemented.[9] One potential drawback, however, of starting dates such as these based on qualitative information, even if systematically recorded, is that they might inadvertently contain a hindsight bias, selecting out crises that were ex-post more severe or long-lasting, leading the subsequent returns to be potentially biased downward. Therefore, as a third definition of a banking crisis based strictly on quantitative information, we demarcate a "bank equity crash" as a 30% drop in a country's bank equity index.

Though we always present analogous results for LV crises and bank equity crashes, we tend to highlight results using the BVX crisis chronology for two reasons. First, BVX crises are a larger sample of events than LV crises (50 BVX crises, compared to 33 LV crises), which gives us additional statistical power; in contrast, LV crises are a more severe and smaller subset of BVX crises, as LV crises are defined as those involving at least three forms of major government interventions.[10] (As an example, the U.S. savings and loan crisis in the 1980s is a BVX crisis but not severe enough to qualify as a LV crisis.) Second, as BVX demarcate banking crises at their panic phase, which tends to be the most extreme phase, often near the end of crises (BVX 2021), they tend to pick up crises later and thus better capture the true acute phase of crises in our view. Indeed, we find that BVX crises give slightly more favorable average long-run returns than LV crises, yet bank stocks after BVX crises still underperform in the long-run. Nevertheless, the main results of the paper are generally similar for all three types of banking crises, as we show throughout.

In Section II, we also briefly analyze other types of crises, such as currency crises, balance-of-payment crises, and recessions (defined as either real GDP or real consumption

[9] The six policy measures are: "1) extensive liquidity support (5% of deposits and liabilities to nonresidents) 2) bank restructuring gross costs (at least 3% of GDP) 3) significant bank nationalizations 4) significant guarantees put in place 5) significant asset purchases (at least 5% of GDP) 6) deposit freezes and/or bank holidays."

[10] In contrast, bank equity crashes give an even larger set of episodes than BVX crises, at the expense of picking up additional episodes that are likely just stock market crashes and not times of true bank distress.

declines). Specifically, for currency crises, following Frankel and Rose (1996) and paralleling our definition of a "bank equity crash", we define a "currency crash" as the first month in a 5-year window with a greater than 30% nominal year-over-year decline in the value of a currency relative to the USD. As a second definition of currency crises for robustness analysis, we use Laeven and Valencia's (2020) currency crisis chronology, which is widely used in the literature and incorporates further narrative information from IMF records. Further information on these and other crisis definitions can be found in Appendix Section C. Note that these other crisis definitions are not mutually exclusive: for example, many "banking crises" in our sample are also "real GDP drops" or "currency crashes." Our terms are simply labels for marking crisis episodes based on observative characteristics and do not necessarily imply distinct underlying causes of any type of crisis.

Figure A.1 plots the frequency of various types of crises over time. As Figure A.1 shows, banking crises are spread out between the early 1970s and today, with clusters of crises occurring in the early 1980s, the early and late 1990s, 2007-8, and the early 2010s.

Macroeconomic data. We gather various types of macroeconomic data at a country-level monthly frequency. Data sources for short-term interest rates, inflation rates, USD exchange rates, real GDP, and real consumption (the last two only available at a yearly frequency) are shown in Appendix Table C.1.

III. Returns after banking crises

A. Main results

Using the panel of monthly returns, we first analyze the returns to bank equity and nonfinancial equity investors after banking crises. We present the following two results. First, long-run equity returns of both banks and nonfinancial firms are not elevated if one invests in

banking crises. Second, there is a high level of risk for bank stocks, as shown by the high variation across outcomes and risk of large subsequent drops, which are often associated with double-dip crises.

To see these results, Figure 1 plots the cumulative total returns for bank equity and nonfinancial equity around the start of BVX banking panics (in Panel A), LV banking crises (in Panel B), and bank equity crashes (in Panel C).

To generate the plots in Figure 1, cumulative abnormal returns are first computed relative to each country's unconditional mean for all banking crises (BVX, LV, or bank equity crashes) in the sample; then the mean of these abnormal returns (the solid lines) and the 25th-to-75th percentile range (shaded regions) are calculated across these crises. All abnormal returns are normalized to zero relative to the end of the starting month of the crisis, which is at t = 0. Abnormal returns are calculated for both bank (blue) and nonfinancial (orange) equity total return indexes, using underlying returns that are either in LCU (top plots) or USD terms (bottom plots), and either excess returns (left plots) or real returns (right plots). (Excess and real returns are calculated, for LCU returns, relative to each country's short-term interest rates and inflation rates and, for USD returns, relative to the U.S. T-bill rate and U.S. inflation rate.)

Several key results emerge from Figure 1, which serves as a preliminary visual analysis. Starting from the end of month 0, average crisis returns for both bank equity and nonfinancial equity do not outperform their unconditional country means for BVX crises and substantially underperform them for LV crises. Both bank and nonfinancial indexes initially trend downward after month 0, hitting a local trough in month 6, but then do not generally recover by the end of the 60-month horizon. As we will verify with trading strategies, even if investors have particularly good timing to invest right at the trough in month 6, their returns only sometimes outperform the benchmark.

Second, the typical range of crisis returns (the shaded regions, representing the 25th and 75th percentile range) generally falls below the mean crisis return, suggesting that the mean is pulled upwards by positive outliers, while many crises see cumulative returns that substantially underperform the unconditional benchmark (which is especially true for bank stocks). The width of the interquartile range also suggests there is substantial risk across crises, as an investor in a single crisis does not know ex-ante which of these returns will be realized.

Third, the figure shows high and rising prices before the crisis, followed by a large fall in prices just before the start of the crisis in month 0 (consistent with Baron and Xiong, 2017). If anything, the best trading strategies may try to "ride the bubble" during the credit booms that precede banking crises, helping to amplify the financial exuberance before the crash.

Lastly, Figure 1 shows that it does not matter substantially whether LCU or USD returns are used, or real or excess returns, as the plots for each are similar.[11] In the rest of the paper, we mainly analyze USD excess returns, these being most relevant to an international investor trading across multiple countries.

Table 2 quantifies the risk and return characteristics across crises visualized in Figure 1 and tests differences against the unconditional benchmarks.

Table 2 reports returns for the entire sample (which we refer to as the "unconditional benchmark") in Panel A, for BVX panics in Panel B, for LV banking crises in Panel C, and bank equity crashes in Panel D. Arithmetic annualized returns over a 0 to 60 month horizon are first computed for all banking crises of each type in the sample; then, means and standard deviations of these cumulative 60-month returns are computed across crises—along with the

[11] For LCU returns only, which are not the main focus of our analysis, we remove extreme observations, defined as crises with 0-60-month cumulative returns above 400%. In practice, this rule excludes only two episodes, Russia in 1998 and Venezuela in 2009. The extremely high nominal results are largely due to hyperinflation (not offset by equally high short-term interest rates). As the 25th to 75th percentile ranges are invariant to outlier observations, the LCU plots in Figure 1 make it clear that these outlier observations do not substantially affect the results.

percent of the observations with cumulative returns less than -50% and the average return conditional on being less than -50%. Differences in quantities relative to the unconditional benchmark in Panel A are reported (columns 5-7 in panels B-D), along with *t*-statistics. Returns are calculated for both bank and nonfinancial equity total return indexes in both LCU and USD terms; as results are similar, we mainly highlight those in USD terms.

Panel A reports statistics for the unconditional benchmarks (i.e., the 60-month-ahead returns for all country-month observations in the sample). The mean annualized returns in USD terms are 14.0% for bank equity and 12.2% for nonfinancial equity. Panel B reports similar quantities conditional on BVX banking crises. The mean annualized returns in USD terms are 7.3% for bank equity and 12.7% for nonfinancial equity (column 1). Comparing to the benchmark (column 5), the mean is 6.6 percentage points lower for bank equity and 0.3 higher for nonfinancial equity, though both are not significantly different from the benchmark. The annualized standard deviations across BVX crises are 71% and 40% (column 2) for bank and nonfinancial equity, respectively. As a measure of the skewness of these 60-month returns, we compute the percentage of crises which feature a cumulative return less than -50%, which we find to be 28.6% for banks (column 3), significantly higher by 17.9 percentage points (column 7) relative to the benchmark. We also compute the average cumulative drop conditional on drops less than -50% (column 4), which we find to be -76% and -79% for banks and nonfinancial equity, respectively. These large drops less than -50% often correspond to double-dip crises: for example, Japan's 1997-98 banking crisis was followed by a second crisis in 2001-03, and the Eurozone's 2007-8 banking crises were followed by the Eurozone crises in 2010-12. All the results above are similar (or sometimes slightly stronger) when analyzing returns in LCU.

Panel C shows results conditional on LV banking crises, which show substantially lower returns than for BVX crises. For LV crises, mean returns are -3.3% for bank equity and

5.9% for nonfinancial equity (column 1), lower than the benchmark by -17.3 and -6.5 percentage points with the differences statistically significant at the 1% and 5% levels, respectively. Although the standard deviation of outcomes across LV crises is not higher than in the benchmark, there is a greater frequency and magnitude of -50% declines (column 7), compared to the benchmark.

For bank equity crashes in Panel D, returns are also not significantly greater than the benchmark: they are lower by -1.7 percentage points for bank equity and -1.3 for nonfinancial equity (column 5), both differences not statistically significant. As noted earlier, the BVX and LV definitions might inadvertently contain a hindsight bias, selecting out crises that were (ex-post) severe or long-lasting; the results of Panel D show that the mean returns, while not as low as in Panels B and C, are not significantly different from zero and, if anything, are consistently negative.

B. Predictability regressions

The above results can be viewed another way by estimating predictability regressions. We estimate a monthly panel regression with country fixed effects, with the dependent variable being USD-based bank or nonfinancial equity excess log-returns at k = 1, 3, … 60-month horizons, regressed on an indicator variable that takes the value of 1 if the country-month observation is the start of a BVX banking panic, LV banking crisis, or bank equity crash. Table 3 reports the results and finds that the coefficients on the LV or BVX banking crisis indicator variables are significantly negative at most horizons—suggesting that crises are not followed by higher excess returns, in line with the results from Table 2.

This table, by allowing us to examine various horizons, shows that our results are not inconsistent with intermediary asset pricing or other theories that emphasize periods of high discount rates during crises, though we find such periods to be short-lived. Indeed, nonfinancial

equity returns decline up to six months after the crisis begins and partially bounce back by 12 months. However, on a longer timescale of years, the returns to investing in crises tend not to be elevated. Results in the form of predictability regressions will be useful later when we decompose long-run returns into cash-flow versus discount rate changes.

C. Other asset classes

Figure 2 plots cumulative excess USD returns on other asset classes around BVX banking panics, similarly to Figure 1 Panel A. In Figure 2, Panel A corresponds to EMBI sovereign bond total returns, panel B corresponds to currency carry trade returns, and panel C corresponds to residential real estate price returns. Returns for emerging market sovereign bonds, currency carry trades, and real estate are generally not elevated after banking crises relative to the unconditional benchmark, and in particular, the returns for residential real estate seem to be especially low. Detailed statistics on the risk and return of these other asset classes, analogous to those in Table 2, are presented in Appendix Table A.5.

D. Other types of crises

We now show that we do not find similar results for other types of crises. Those other types of crises are currency crises, balance-of-payment crises, nonfinancial equity crashes, and recessions. Recessions are defined by two indicator variables, *real GDP drops* and *consumption drops*, which take the value of 1 the January after the year in which real GDP or real consumption, respectively, contracts by more than 1%).

Figure 3 is similar to Figure 1 but for various other types of crises defined in the appendix. Appendix Table A.3 reports mean returns, volatility, and skewness measures, analogously to Table 2, across these other types of crises, and Table A.6 reports trading

strategies (discussed in Section III) around these other types of crises. These results show that for currency crises and balance-of-payment crises, equity returns are very high (relative to the unconditional mean), on average above 50% over a cumulative sixty-month horizon from the start of the crisis.[12,13]

Why do other types of crises, such as currency crises and balance-of-payment crises, see high returns? Banking crisis recessions tend to be unusually deep and persistent compared to noncrisis recessions and other types of crises, in large part due to balance sheet problems in the household and banking sectors, which can take many years to resolve. In Section V, we argue that the long-run underperformance of bank returns, in particular, may be due to investors not fully anticipating the long-lasting macroeconomic consequences of debt overhang, which depresses long-run dividends. For these other types of crises featuring much less severe and less persistent balance sheet concerns, investors may better price in the losses at the moment of the crisis, resulting in larger immediate fall in prices and higher subsequent returns in the long run.

E. Robustness to subsamples and historical crises

[12] These high returns for other crises are unlikely to be explained by outlier observations, as returns are very high even after excluding observations with nominal 0-60-horizon returns greater than 400% (which, in practice, excludes two positive outliers, Russia in 1998 and Venezuela in 2009). In addition, Figure 3 plots returns of the 25th to 75th percentile range, which is robust to outliers.

[13] Another potential concern is that illiquidity during currency crises and similar types of emerging market crises might make it difficult to achieve such high returns in practice (echoing the concerns of Burnside, Eichenbaum and Rebelo 2007, who show that bid-ask spreads are high in emerging market currencies). However, we show that elevated returns are also present when restricting the sample to advanced economy crises, where foreign exchange markets are more liquid. Furthermore, we study five-year strategies, so liquidity is less of a concern over this longer horizon, as investors can be patient over a period of months in building or selling off their positions. Finally, these strategies involve investing into crisis countries during times of capital outflows (thus, one is providing liquidity to the market, as other traders are exiting), making it likely that the liquidity provision may be one of the factors helping to explain the high returns.

Appendix Figure B.1 and Appendix Table B.2 show that similar results also hold when restricting the analysis to the 1960-2006 sample, demonstrating our main results are not simply driven by the banking crises of 2007-8 or 2011. Similarly, Appendix Figure B.2 and Appendix Tables B.4 and B.5 show similar results when restricting the analysis to either advanced or developing countries.

As a further robustness analysis, we also show that similar predictability results hold on a longer historical sample. Appendix Table B.1, along with Figure 5, which we will further analyze in Section IV, performs analysis on the Jordà-Schularick-Taylor dataset, which covers 17 advanced economies over the period 1870-2016. The downsides of the Jordà-Schularick-Taylor dataset are that it is limited to fewer countries, is annual in frequency, and only contains the broad stock market index returns. Nevertheless, this evidence suggests that similar results hold on this longer historical sample and also specifically over the subperiod 1870-1945 (columns 4-6 in Appendix Table B.1) not covered by our dataset.

IV. Trading strategies

The returns presented in the previous section do not necessarily reflect investor returns based on crisis trading strategies. For example, the risk measures in Table 2 do not account for the fact that investors may diversify across multiple crises in ways that may reduce the total risk of a crisis-investing strategy. We thus evaluate trading strategies based around investing in crises and find that they do not often beat an international buy-and-hold strategy in absolute performance or on a risk-adjusted basis—and for bank stocks, they consistently produce negative alpha. Even if investors have particularly good timing to buy at the point where prices on average reach a trough (six months after the start of the acute phase, which we argue is difficult for investors to consistently time in practice), returns of such strategies are elevated at most a few percentage points for nonfinancial equity and still underperform for bank equity.

Results from trading strategies are reported in Table 4. The benchmark, reported in the first two rows in each of the panels of Table 4, is the baseline buy-and-hold strategy in which an investor unconditionally buys either the bank or nonfinancial equity index. This buy-and-hold benchmark is reported in excess USD returns for a strategy that is equal-weighted across all countries and for the entire sample unconditional on crises. Subsequent rows in Table 4 report trading strategies that invest conditionally on BVX panics (rows 2-5), LV crises (rows 6-9), or bank equity crashes (rows 10-13). For each banking crisis type, we compare the "0-60 month" strategy (i.e., buying at the end of month 0 and selling at the end of month 60) to the buy-and-hold benchmark. The assets invested in are either bank or nonfinancial equity total return indexes, both converted to USD-based excess returns (using the USD exchange rate and the U.S. short-term interest rate). The strategies are constructed based on a USD-based investor who invests 100% of his or her wealth over the specified horizon in countries with a crisis (dividing the wealth equally, if more than one country is in crisis at a given time) and in U.S. T-bills otherwise.

Table 4 reports statistics on the excess USD returns earned from various trading strategies, specifically the annualized mean, volatility, Sharpe ratio, and factor alphas and betas based on the monthly time-series of each strategy's performance. Factor alphas are calculated after controlling for the standard monthly U.S. factors (either just the standard CAPM U.S. market factor or the Fama-French U.S. market, value, and size factors) and the international equity market factor (the EAFE World Equity Index expressed in USD excess returns). The "Fama-French + International" alpha is our preferred measure of alpha, as it controls for broad movements in international equity and the USD exchange rate, in addition to the standard U.S. risk factors. Below each of the statistics, we test the difference relative to the appropriate buy-and-hold ("b&h") benchmark.

The 0-60-month strategies based on BVX crises generate mean excess returns relative to the buy-and-hold benchmark (row 3) of -4.6% and 2.5% for the bank and nonfinancial equity index, respectively (both not significant); Sharpe ratios relative to the benchmark of -0.363 and -0.011 (the former statistically significant at the 10% level); "US CAPM + International" alphas relative to the benchmark of -5.5% and 3.7% (both not significant); and "Fama-French + International" alphas relative to the benchmark of -7.0% and 2.7% (the former significant at the 10% level). Thus, neither nonfinancial nor bank equity outperforms the buy-and-hold benchmark, though only bank equity significantly underperforms it in some cases.

For LV crises (rows 6-9) and bank equity crashes (rows 10-13), returns are considerably worse both for bank and nonfinancial equity strategies. The 0-60-month strategies generate mean excess returns, Sharpe ratios, "US CAPM + International" alphas, and "Fama-French + International" alphas all several percentage points below the buy-and-hold benchmark, with differences being significantly negative and large in many cases.

We also analyze the "6-60 month" strategy (i.e., buying at the end of month 6 after the crisis and selling at the end of month 60). We show that even if investors have particularly good timing to buy at the six-month point after the crisis where prices on average reach a trough (as shown in Figure 1), returns of such strategies are elevated at most a few percentage points for nonfinancial equity and still underperform for bank equity. We thus consider the results from the 6-60-month strategy to be an "upper bound" on realistic investor performance, given the difficulty of consistently timing the trough in practice. However, even these 6-60 "upper bound" strategies do not often beat the benchmarks, both in terms of absolute and risk-adjusted returns.

Table 4 shows that, for the 6-60-month strategies and BVX crises (rows 4-5), results are similar to the 0-60 horizon though slightly higher: mean returns are lower than the buy-and-hold benchmark by 2.3% (compared to 4.6% for the 0-60 horizon) for bank stocks and

higher by 4.0% (compared to 2.5% for the 0-60 horizon) for nonfinancial stocks. Thus, while nonfinancials may outperform the buy-and-hold strategies at this "upper bound" 6-60 horizon, bank stocks still do not. Furthermore, for the LV crises, even the 6-60-month strategies (rows 8-9) underperform the benchmark consistently for both banks and nonfinancials, yielding mean returns relative to the buy-and-hold benchmark of -3.6% and -3.2%, lower Sharpe ratios by 0.274 and 0.183, lower "CAPM + International" alphas by -1.2% and -0.5%, and lower "Fama-French + International" alphas by -2.1% and -1.0% for the bank and nonfinancial equity index, respectively. In addition, the results for "bank equity crashes" at the 6-60 horizon (rows 12-13) are also not generally different from those at the 0-60 horizon. Thus, we conclude that even these "upper bound" strategies do not often beat the benchmarks, either in absolute or risk-adjusted terms.[14]

Appendix Table B.3 shows that similar results to those above hold even when restricting to the 1960-2006 sample, demonstrating the results are not simply driven by the banking crises of 2007-8 and 2011. Similarly, Appendix Tables B.6 and B.7 shows similar results when restricting the analysis to either advanced or developing economies.

Appendix Table A.7 shows trading strategy results for the other asset classes (EMBI sovereign debt, currency carry trades, and residential real estate). Returns for EMBI sovereign debt and currency carry trades are not significantly elevated at any horizon and are approximately the same as the buy-and-hold benchmark. Real estate price returns relative to the buy-and-hold benchmark are consistently negative by around three to five percentage points (annualized), depending on the return measure used.

[14] Note that we do not account for transaction costs in our analysis but doing so would likely make the returns of crisis strategies slightly worse, strengthening our conclusions. In any case, transaction costs would likely be small, given that these crisis trading strategies involve holding periods of five years with no rebalancing or dynamic trading.

V. Decomposing returns into cash flow versus discount rate changes

We next decompose returns after crises into cash flow versus discount rate changes following Campbell and Shiller (1988a, 1988b). As we have shown in Section II, while there is a brief period after banking crises when equity returns are temporarily depressed and partially bounce back, our analysis that follows suggests that banking crises are best viewed at longer horizons as essentially cash flow shocks, given that crises are followed by lower long-run future dividends rather than higher long-run expected returns.

We start by reconciling our results with those of Muir (2017), who shows that dividend-price ratios are elevated in the aftermath of banking crises. Muir (2017) follows the usual assumption in asset pricing that dividend-price ratios are good proxies for risk premia and concludes that equity risk premia increase during banking crises. While we confirm that dividend-price ratios are elevated during banking crises because stock prices fall substantially at the start of crises, we do not find that total returns are higher after. Dividend-price ratios are temporarily high during banking crises, as prices suddenly fall at the onset of the crisis, while dividends are sticky in the short-run. However, the dividend-price ratio then adjusts not because prices rebound (a discount rate effect, as conjectured by Muir 2017), but because banking crises systematically feature a fall in future dividends.

Figure 4 analyzes this issue by plotting the coefficients in the following regression:

$$x_{i,t} = \mu_i + \sum_{j \in -60:12:60} \beta_{-j} BVXpanic + u_{i,t} \quad (1)$$

where $x_{i,t}$ stands for the cumulative log excess return (top plots), the log price-dividend ratio (middle plots), or log dividends (bottom plots). Log excess returns are the cumulated values relative to t = -60, and the log price-dividend ratio and log dividends are the levels relative to t = -60. Panels A and B report results for bank equity and nonfinancial equity,

respectively. The regression also contains country fixed effects (μ_i), so that estimates plotted in Figure 4 are relative to each country's long-run average.

The top plots for cumulative log excess returns show that returns fall sharply before month t = 0 for both bank and nonfinancial stocks. After t = 0, consistent with the results from Section II, we do not observe higher-than-average returns after banking crises, and for bank stocks they are considerably lower.

The middle plots show that the log price-dividend ratio falls around month 0 but then rises again (as dividends continue to fall and as prices partially rebound by t = 12), converging to baseline levels in the long-run. The bottom plots show this pattern for the price-dividend ratio is driven in large part by falling dividends, as the dividend level is strongly negative for bank stocks relative to both t = -60 and t = 0, and even for nonfinancial stocks it is considerably lower than its pre-crisis peak at t = 0.

Figure 5 performs this same analysis on the Jordà-Schularick-Taylor dataset, which covers 17 advanced economies over the period 1870-2016. As mentioned before, this dataset is limited to fewer countries, is annual in frequency, and only contains the broad stock market index returns, but this evidence nevertheless suggests that similar results hold on this longer historical sample.

Thus, we conclude that stock prices fall substantially at the occurrence of banking crises, but long-run total returns are not elevated relative to the country unconditional average. Instead, dividends deteriorate until the dividend-price ratio returns to baseline levels, suggesting that, from a long-run perspective, crises are best viewed as mainly cash flow shocks.

VI. Potential explanations

Why do the long-run returns to investing in crises tend not to be elevated? One possibility is that long-term risk premia do not increase during financial crises. In this section, we entertain the other possibility that risk premia initially increase, but that investors do not fully anticipate the subsequent long-run decline in dividends. We find that the variation in investment outcomes across crises is best explained by variables related to the extent of debt defaults and debt overhang at the time of the crisis. In contrast, fiscal or monetary policy actions taken at the time of the crisis and macroeconomic indicators have little correlation with stock market outcomes across crises.

Specifically, we regress future returns conditional on BVX banking crises on various explanatory variables, which allows us to gauge which varibles help explain the variation in investment outcomes across crises. The explanatory variables fall into three broad categories:

1. Debt overhang variables: lagged past three-year change in household debt-to-GDP (as a measure of the pre-crisis credit boom), lagged bank capitalization, and the future three-year change in nonperforming loans (NPLs).

2. Policy variables: measures of changes in monetary and fiscal policy, specifically the change in policy interest rates from the average two years before to the average one year after the crisis, and the same for the primary fiscal balance.

3. Macroeconomic variables: lagged past three-year average of GDP growth (as a measure of pre-crisis economic growth) and lagged government debt levels (as a measure of the government's pre-crisis fiscal position).

Figure 6 reports β estimates at various horizons h from the regression:

$$\log Total\ Returns_{i,t+h} = \alpha_{i,t} + \beta X_{i,t} + \gamma Z_{i,t} + \varepsilon_{i,t} \quad (2)$$

where i and t denote countries and time, $X_{i,t}$ is the variable of interest, and $Z_{i,t}$ denotes the control variables (past three-year real GDP growth and an indicator for 2007-08 crises). The

variables of interest in Panel A are the debt overhang variables listed above, while the variables of interest in Panels B and C are the policy and macroeconomic variables. Table 5 reports the same results at various future horizons (h = 12, 36, 60) in table form. All the variables of interest are standardized; thus, estimates correspond to the average change in subsequent returns associated with a one-standard-deviation increase in one of the regressors.

Figure 6 shows that a one-standard-deviation increase in all the debt overhang-related variables in Panel A is associated with lower returns over the subsequent 60 months. The results are strongest and more often statistically significant for bank equity. Except for NPLs, the debt overhang variables are known at the time of the crisis, so investors have access to this information when forming expectations of future returns. The reason why NPLs include future information is that NPLs at the time of the crisis are not informative, often still near pre-crisis levels. Empirically, NPLs increase after crises with a lag of several years, perhaps due to slow recognition of problem loans. While future NPLs is not part of the information that investors could use to price equity at the time of the crisis, we still use future NPLs as ex-post verification of our proposed mechanism: that poor returns in the banking sector are in large part due to the long persistence of problematic loans in the banking sector.

We further show a similar result replacing the dependent variable in equation 2 with dividends. The analogous results are displayed in Figure 7 and Table 6, which show that increase in all the debt overhang-related variables are associated with lower future dividends. Thus, according to our interpretation, investors may not fully anticipate that the long-lasting consequences of debt overhang may lower future dividends.

In contrast, the policy and macroeconomic variables in Panels B and C are not associated with differential outcomes in terms of future returns, either because policy may be endogenous to the severity of the crisis or because investors correctly anticipate the consequences of these policies. The null results in Panel B are robust to a variety of other ways

to measure changes in monetary policy rates and fiscal policy (not reported). Similar results also hold for dividends.

The explanatory power of debt overhang-related variables in Panel A suggests that the long-run underperformance, especially of bank stocks, may be due to investors not fully anticipating the long-lasting macroeconomic consequences of debt overhang, which depresses long-run dividends. In a rational framework, in contrast, higher levels of distress and debt overhang at the time of the crisis would predict higher subsequent returns, but we find the opposite. Thus, one interpretation of our results is that investors at the time of crises may underappreciate the persistence of debt problems and the long shadow of its impact on corporate and bank earnings, or they may overestimate the speed of recovery.

VII. Conclusions

In contrast to the widely held view that investors can buy assets at deep discounts during banking crises, we find that buy-and-hold returns tend not to be elevated in the aftermath of banking crises. Equity prices fall and partially bounce back during the most acute phase of a crisis, but price-dividend ratios mostly return to normal when dividends ultimately fall. We offer two candidate explanations for these findings. A textbook interpretation is simply that risk premia do not increase during banking crises–that at least some investors are unconstrained and that these investors correctly anticipate that dividends will eventually fall. However, this interpretation seems at odds with the evidence that excessive optimism tends to fuel credit booms, which tend to cause banking crises and depress future returns. We thus entertain another interpretation that investors do not fully anticipate the consequences of banking crises. We find that variables related to debt overhang have explanatory power for the variation in investment outcome. This result suggests that investors do not fully understand the effect of debt overhang, which depresses long-term dividends. Among the menu of assets we consider,

bank equities exhibit the worst performance. This finding can explain why sophisticated investors are reluctant to buy risky assets during banking crises, particularly when it concerns bank stocks. Overall, our results suggest that the outperformance of risky assets in the U.S. following the 2007-8 financial crisis is the exception rather than the rule, which stresses the importance of using historical data when studying rare events.

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Appendix

A. Additional results

This appendix section reports additional results related to other types of crises, other asset classes, local currency units, and macroeconomic forecasts. See Figure A.1 and Tables A.1 through A.9.

B. Robustness analysis

This appendix section reports additional results using the Jorda-Schularick-Taylor dataset, on the 1960-2006 subsample, and splitting the sample into advanced versus developing countries. See Figures B.1 and B.2 and Tables B.1 through B.7.

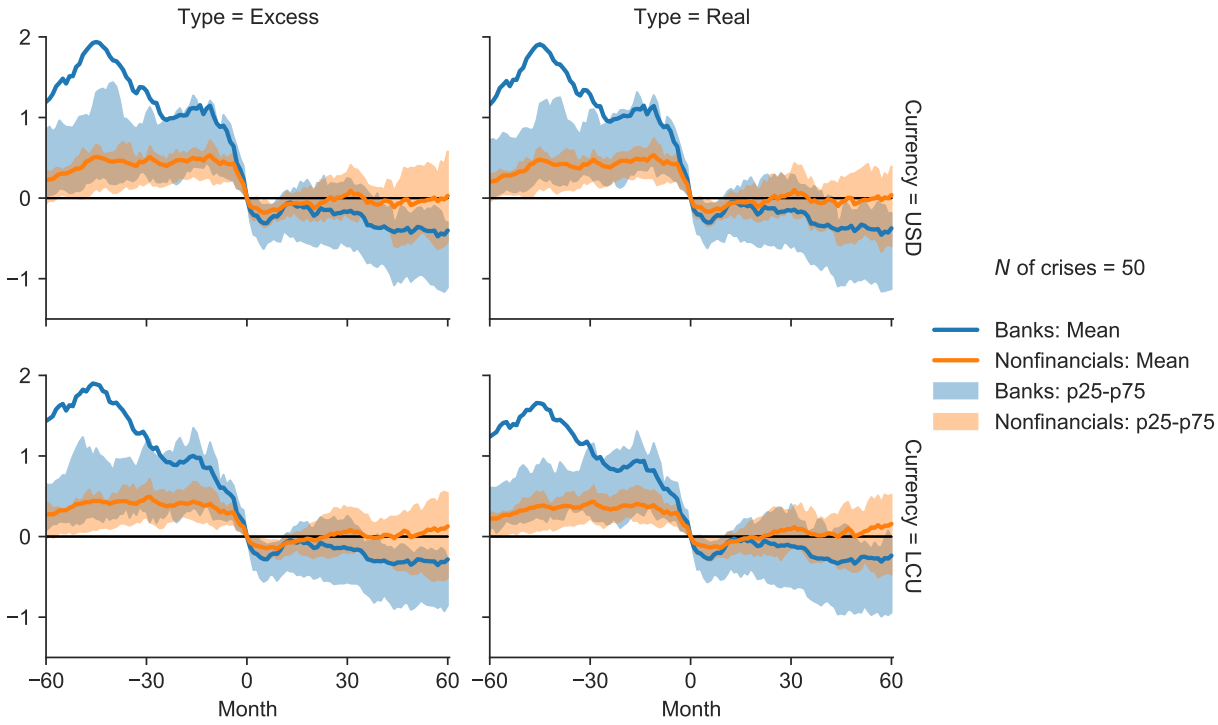
C. Defining other types of crises

- We define balance-of-payment crises following the chronology of Kaminsky and Reinhart (1999).
- We define a “nonfinancial equity crash” analogously to a “bank equity crash” but using the nonfinancial equity index.

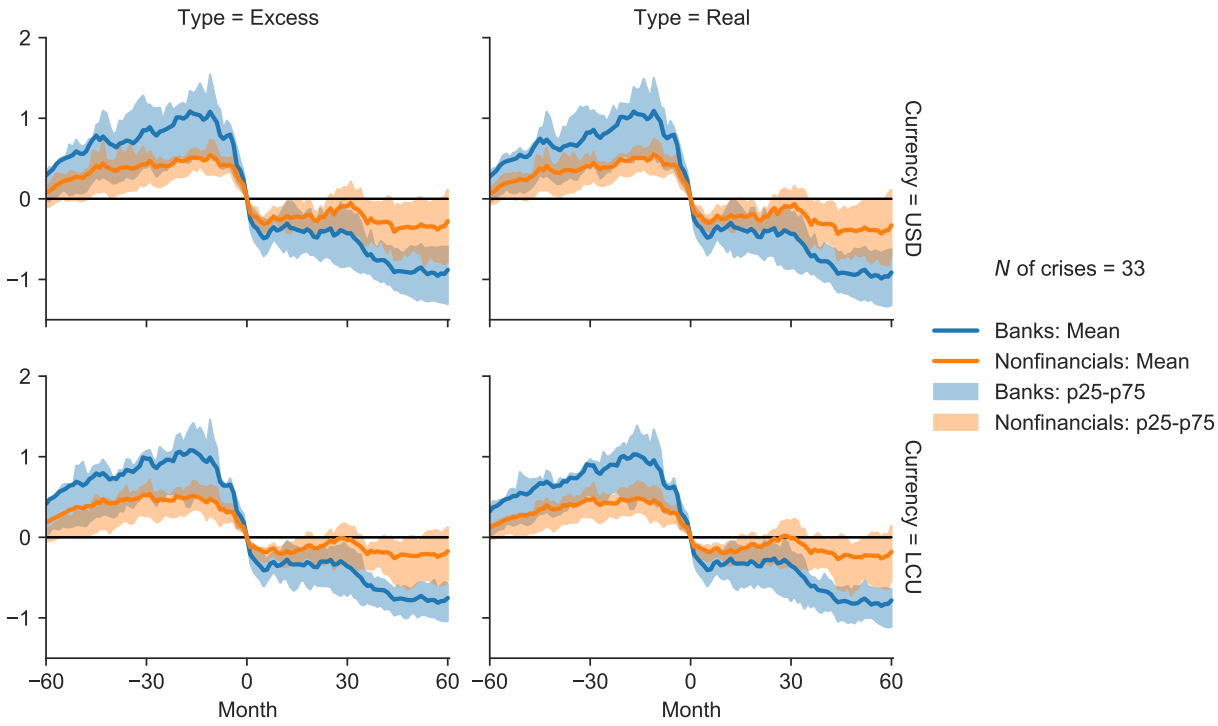
Figure 1: Cumulative equity returns around banking crises

Panel A plots cumulative abnormal total returns around Baron, Verner, and Xiong (2021, hereafter "BVX") banking crises. Panel B plots the same but for Laeven and Valencia (2020, hereafter "LV") banking crises. Arithmetic cumulative returns are computed for all banking crises of each type in the sample, after subtracting out each country's unconditional average returns; then, the mean (solid lines) and the 25th-to-75th percentile range (shaded regions) are calculated across banking crises. All cumulative returns are relative to the end of month 0, the starting month of the crisis. Returns are calculated for both bank (blue) and nonfinancial (orange) equity total return indexes, both in US dollars (top plots) and in local currency units (bottom plots), and for both excess returns (left plots) and real returns (right plots). Since returns have been calculated by first subtracting out each country's unconditional average returns, the x-axis represents the unconditional average. Excess and real returns are calculated relative to the country-specific short-term interest rate and inflation rate for LCU returns, and relative to the U.S. T-bill rate and U.S. inflation rate for USD returns.

(A) BVX banking panics



(B) LV banking crises



(C) Bank equity crashes

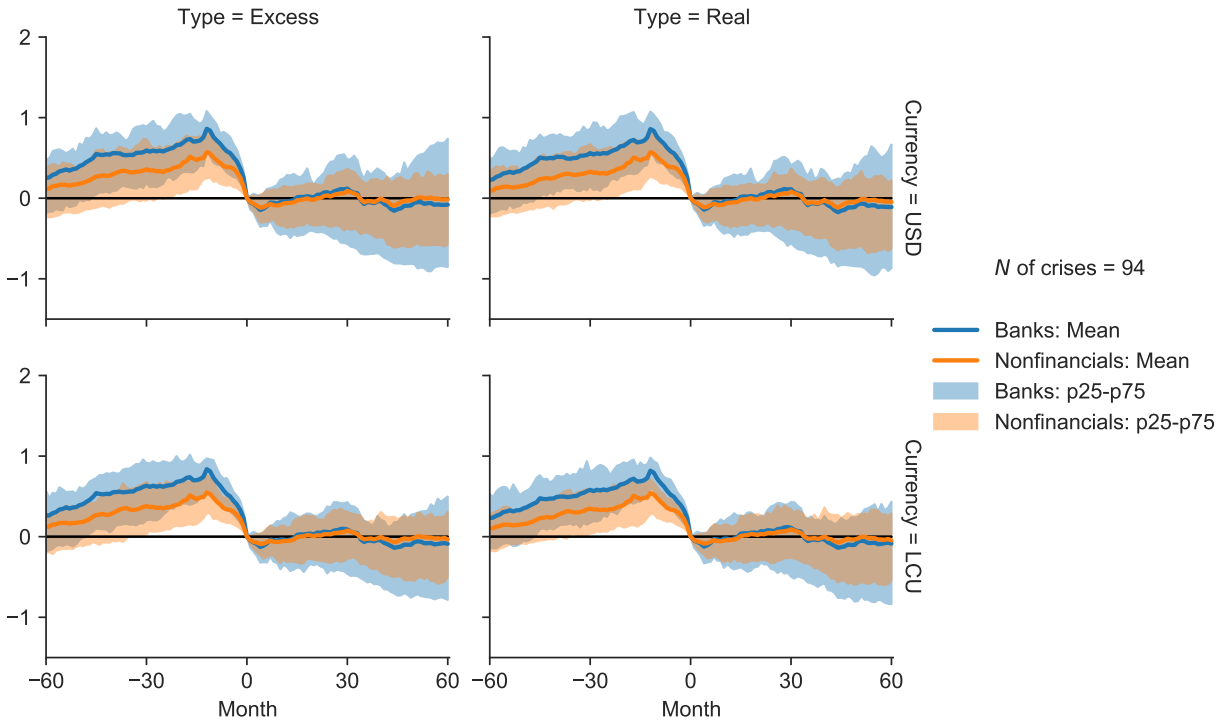
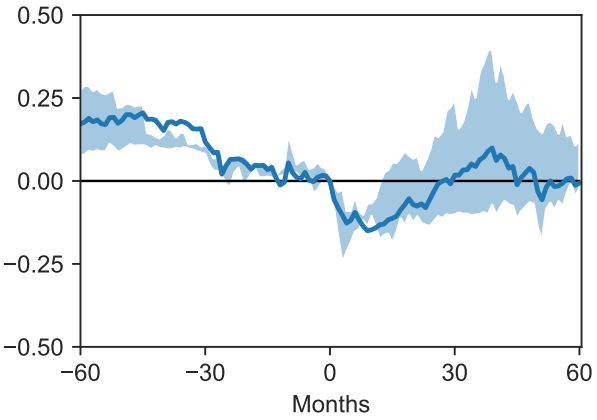


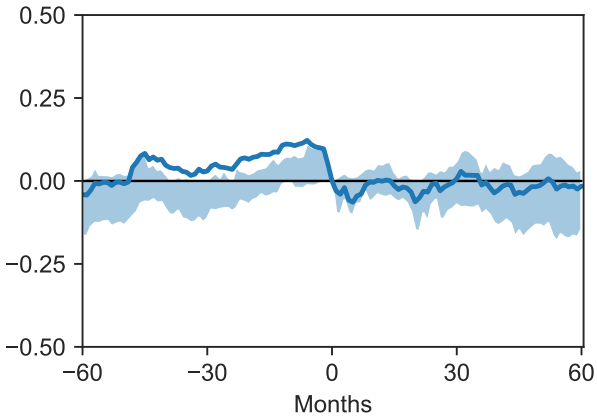
Figure 2: Cumulative returns on other asset classes

This figure is the same as Figure 1 Panel A but for three other asset classes. Cumulative excess USD returns are plotted around BVX banking crises. Panel A shows EMBI sovereign bond total returns, Panel B shows currency carry trade returns, and Panel C shows residential real estate price returns.

(A) EMBI sovereign bonds



(B) Currency carry-trades



(C) Residential real estate

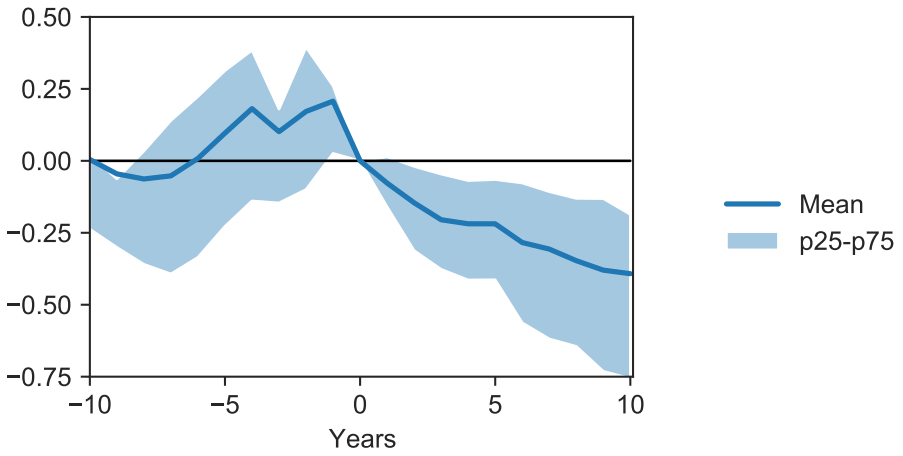


Figure 3: Cumulative equity returns around other types of crises

This figure is the same as Figure 1 but for the various other types of crises defined in Section II and in the Appendix.

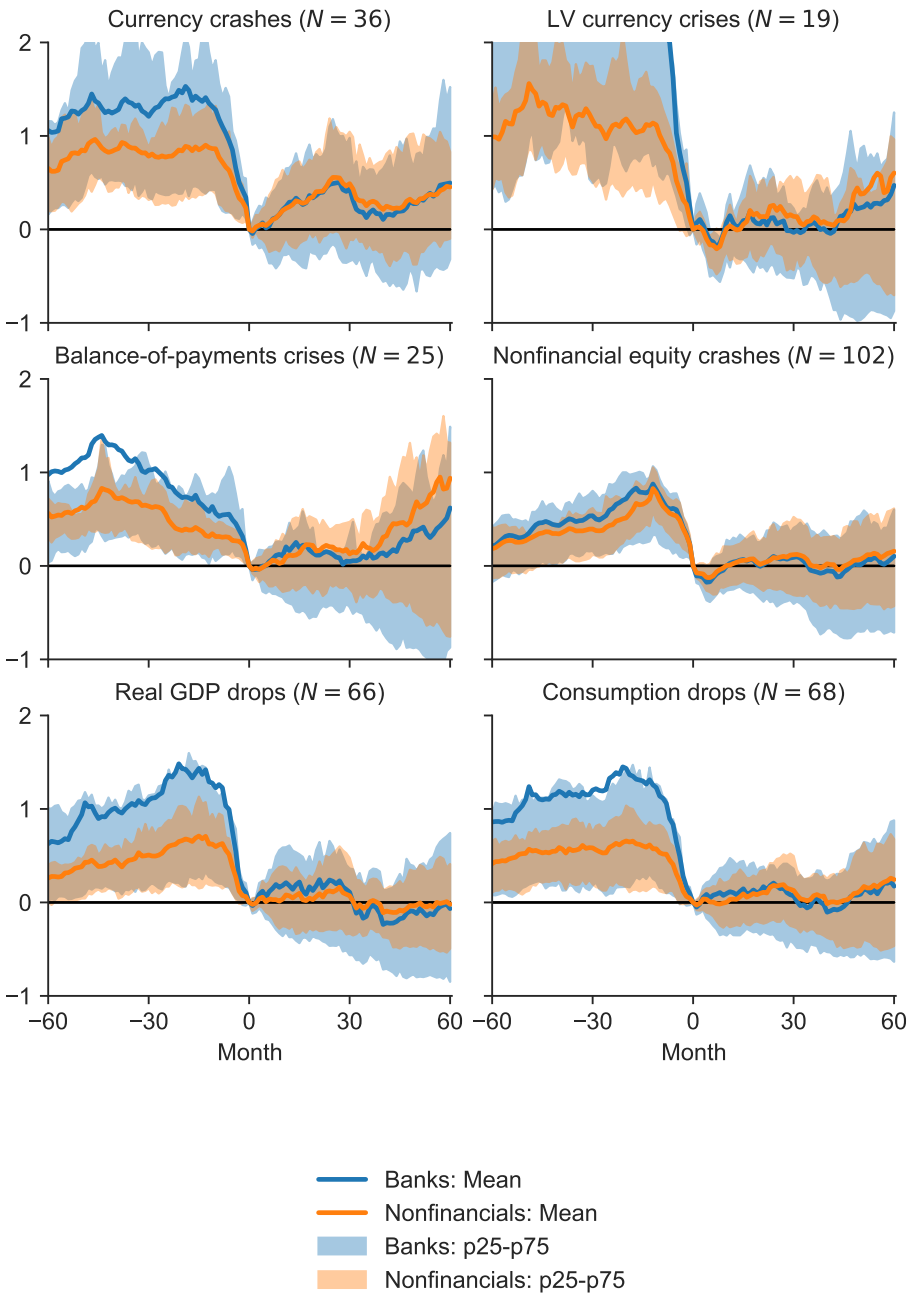


Figure 4: Excess returns, prices, and dividends around banking crises

This figure plots the coefficients from the following regression:

$$x_{i,t} = \mu_i + \sum_{j \in -60:12:60} \beta_{-j} BVXpanic + u_t,$$

where $x_{i,t}$ stands for the cumulative log excess return (top plots), the log price-dividend ratio (middle plots), or log dividends (bottom panels). Log excess returns are cumulated values relative to $t = -60$, and the log price-dividend ratio and log dividends are the levels relative to $t = -60$. Panel A presents results for bank equity, and panel B shows results for nonfinancial equity.

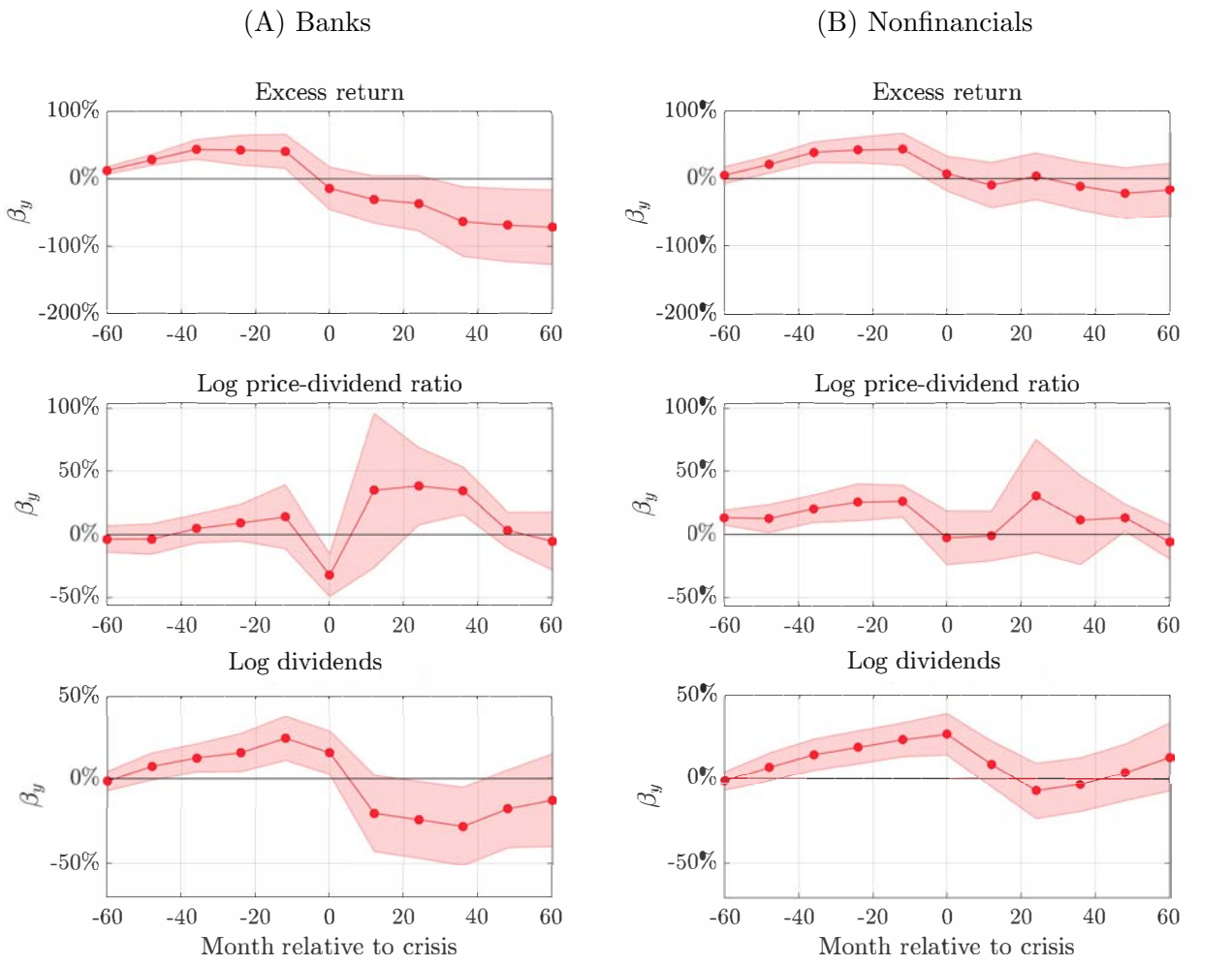


Figure 5: Excess returns, prices, and dividends using the Jordà-Schularick-Taylor dataset

This figure is similar to Figure 4 but estimated on the Jordà-Schularick-Taylor dataset, which covers 17 advanced economies over the period 1870-2016. Excess total returns and dividends are given in LCU in this dataset and correspond to the broad market equity index for each country. The data is annual, and the first year of banking crises given by this dataset are from Schularick and Taylor (2012).

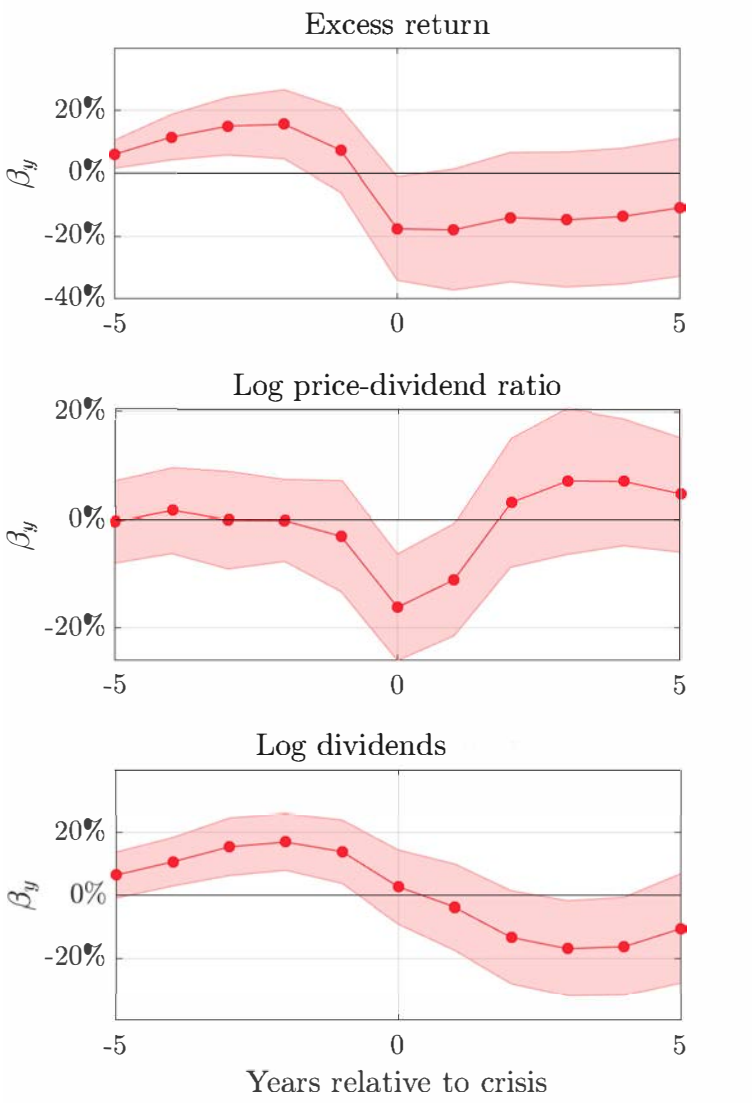
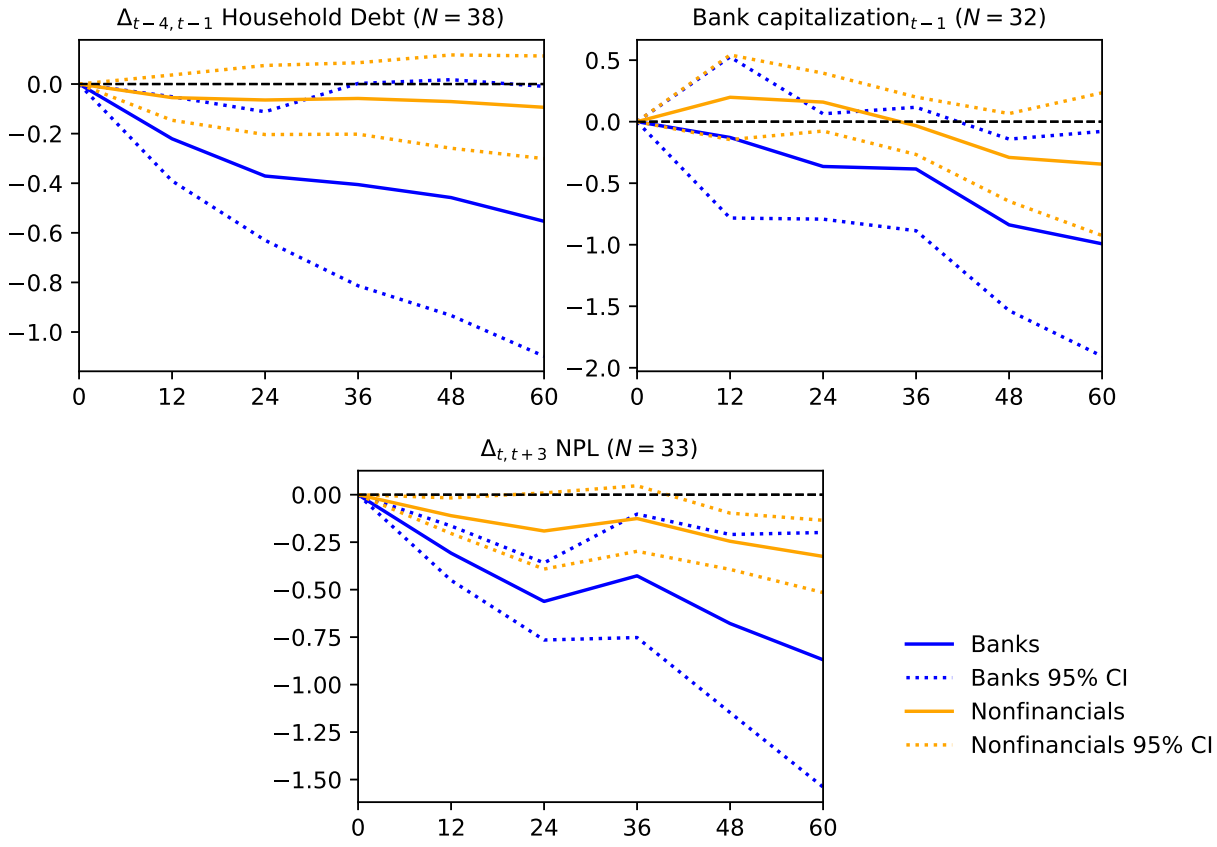


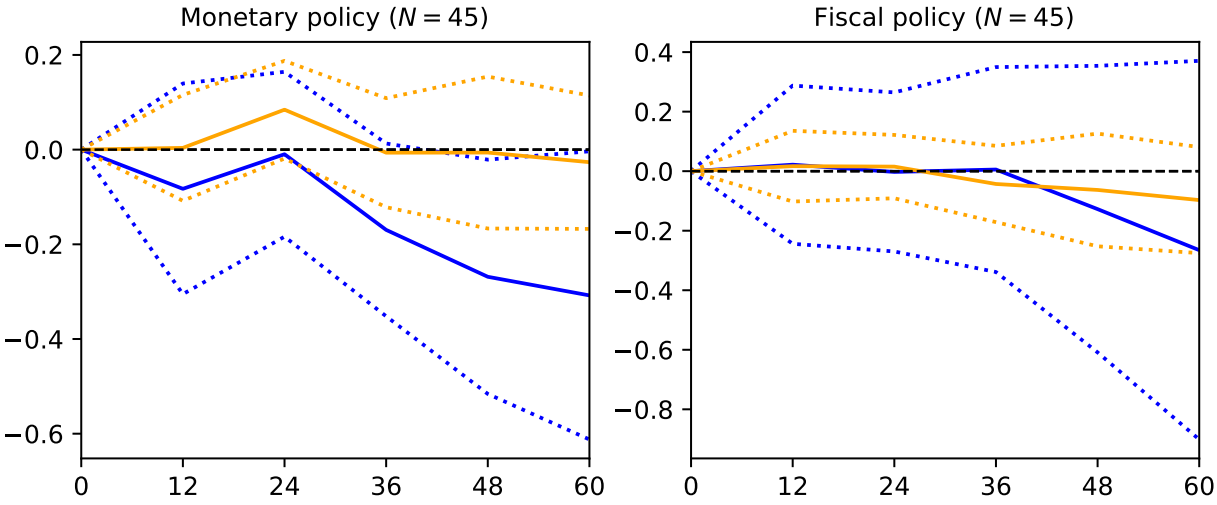
Figure 6: What explains the low returns after banking crises?

This figure reports estimated parameters β at various horizons h from the equation $\Delta_{t,t+h} \log \text{Total Returns}_{it} = \alpha_i + \beta X_{it} + \gamma Z_{it} + \varepsilon_{it}$ where X_{it} is one of the variables of interest and Z_{it} denotes the controls. The regression is estimated across BVX banking crises. This figure corresponds to Table 5. All variables of interest are standardized; thus, the estimates in the figure show the average change in subsequent returns associated with a one-standard-deviation increase in one of the regressors. The 95% confidence intervals (dashed lines) are computed using heteroskedasticity-robust standard errors.

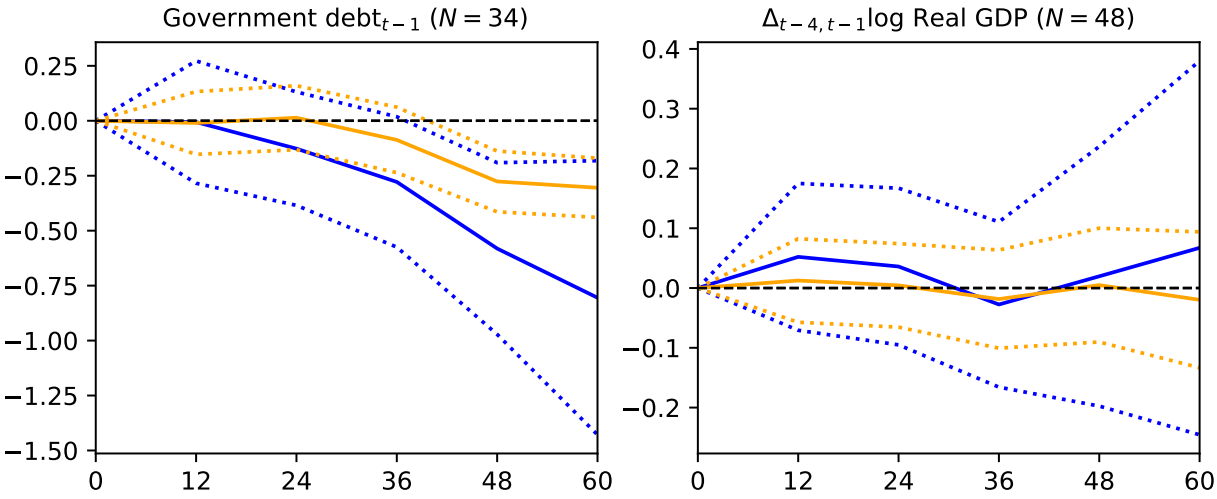
(A) Debt overhang variables



(B) Policy variables



(C) Macro variables



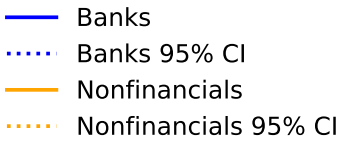
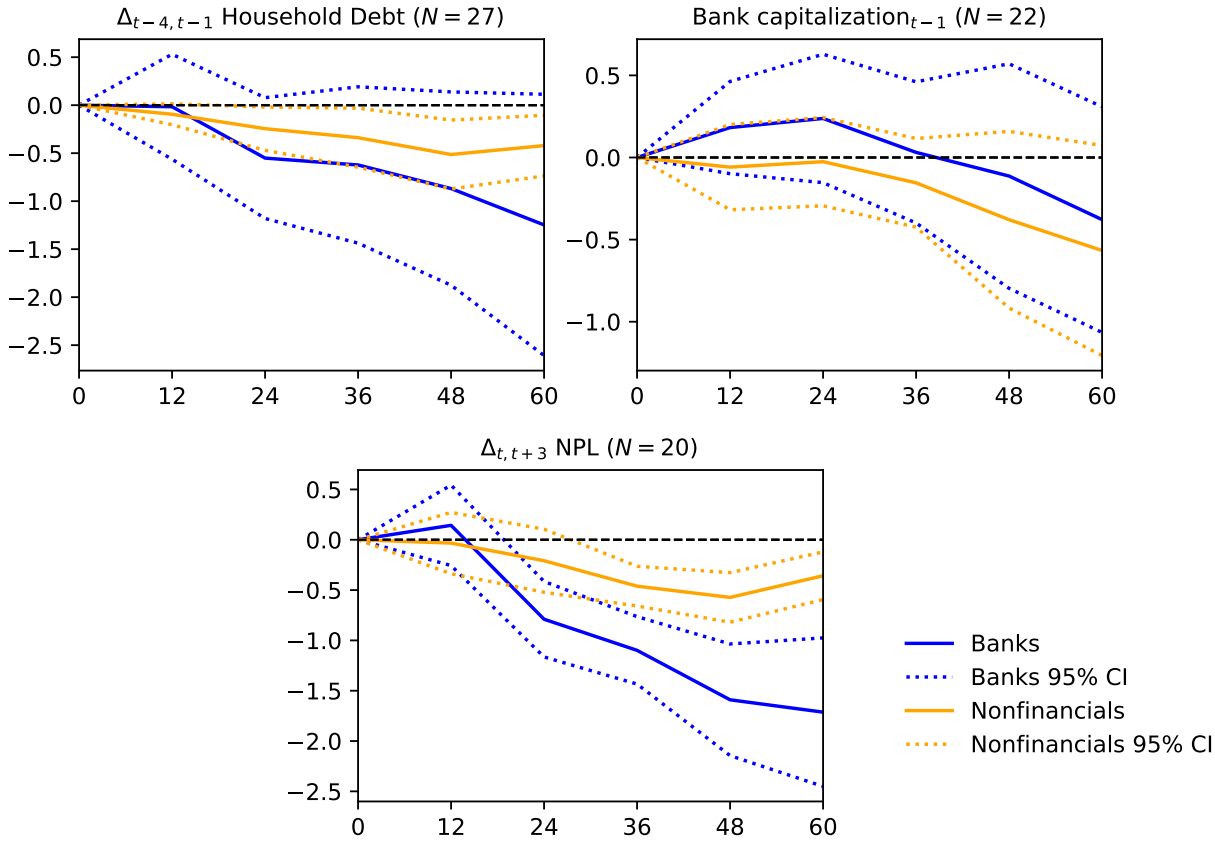


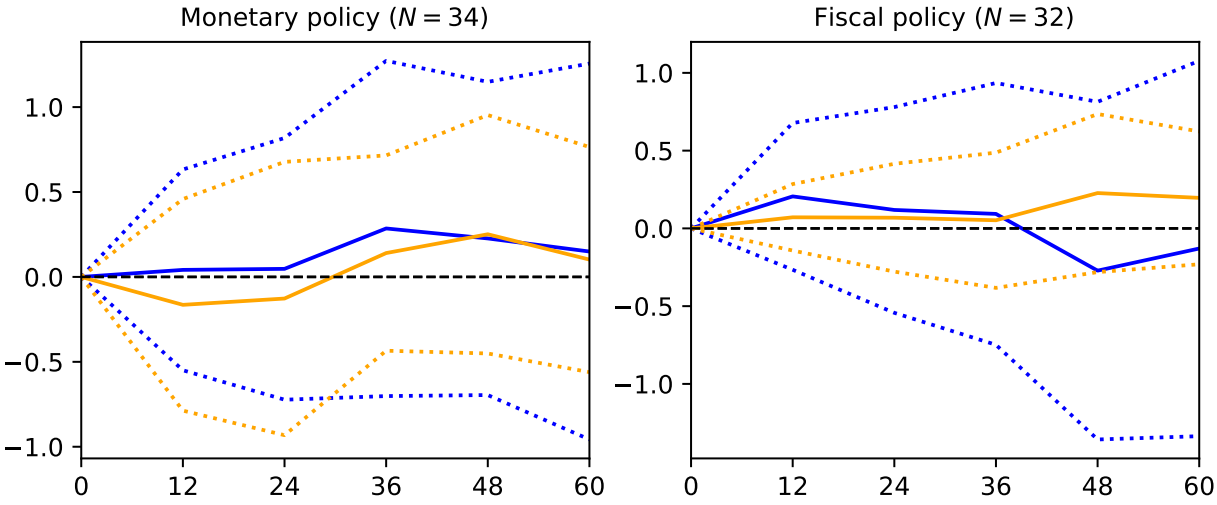
Figure 7: Dividend growth after banking crises

This figure is the same as Figure 6 but with $\Delta_{t,t+h} \log \text{Dividends}_{it}$ as the dependent variable. These estimates are also reported in Table 6

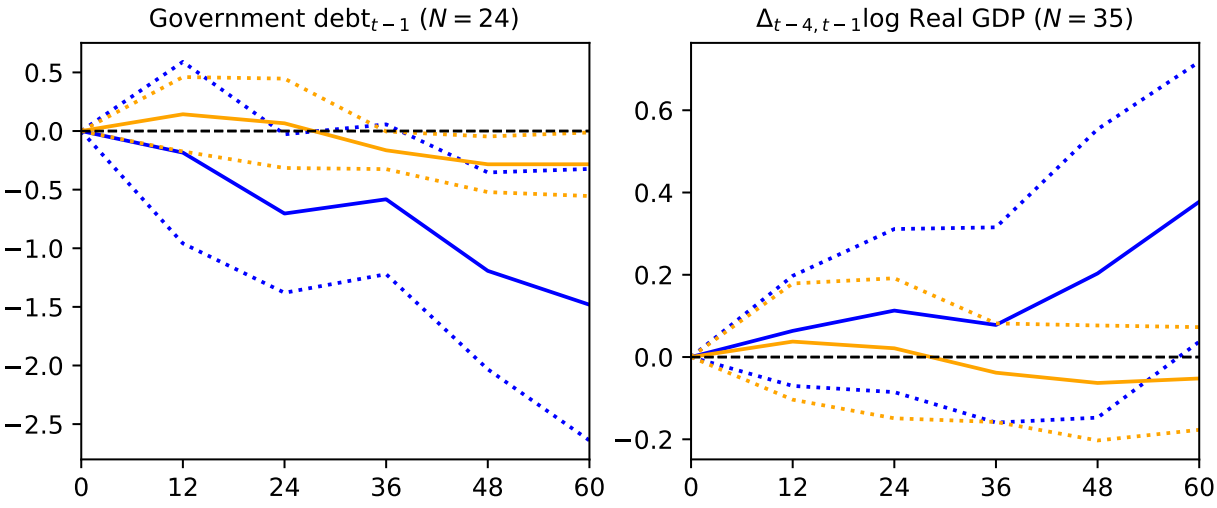
(A) Debt overhang variables



(B) Policy variables



(C) Macro variables



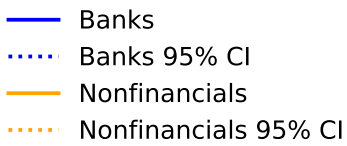


Table 1: Summary statistics

Summary statistics are reported for the returns of five asset classes: bank and nonfinancial equity total returns, EMBI sovereign bond total returns, currency carry trade returns (from a USD-investor's perspective), and residential real estate price returns. Returns are reported both in USD terms and in local currency units (LCU) when appropriate. The mean, standard deviation, and percentiles are calculated using monthly arithmetic returns (quantities are not annualized in the table), except for residential real estate price returns, which are annual.

Asset	Currency	Mean	Std. dev.	p5	p25	p50	p75	p95	*N*	Frequency
Bank stocks	USD	0.009	0.099	-0.139	-0.040	0.007	0.054	0.157	17455	Monthly
	LCU	0.008	0.090	-0.124	-0.035	0.006	0.048	0.140	17455	Monthly
Nonfin. stocks	USD	0.008	0.078	-0.114	-0.034	0.008	0.049	0.126	17455	Monthly
	LCU	0.007	0.069	-0.100	-0.028	0.008	0.043	0.112	17455	Monthly
EMBI bonds	USD	0.006	0.042	-0.054	-0.009	0.007	0.023	0.065	3541	Monthly
Carry-trades	USD	0.002	0.034	-0.047	-0.012	0.002	0.016	0.051	16891	Monthly
Residential real estate	USD	0.028	0.147	-0.180	-0.066	0.012	0.118	0.277	1142	Annual
	LCU	0.022	0.078	-0.095	-0.021	0.020	0.060	0.147	1142	Annual

Table 2: Equity returns after banking crises

This table reports cumulative excess returns at select horizons for the entire sample (panel A), for Baron, Verner, and Xiong (2021, hereafter "BVX") banking crises (panel B), for Laeven and Valencia (2020, hereafter "LV") banking crises (panel C) and for bank equity crashes (panel D). Arithmetic annualized cumulative returns over a 0 to 60 month horizon are first computed for all banking crises of each type in the sample; then, means and standard deviations of these cumulative 60-month returns are computed across crises, along with the percent of these observations with cumulative returns less than -50% and the average return conditional on being less than -50%. Returns are calculated for both bank and nonfinancial equity total return indexes and in both local currency units (LCU) and US dollars (USD). Quantities are tested relative to the unconditional returns in panel A consisting of all the 0-60-month cumulative returns in the sample. The brackets contain t-statistics based on standard errors clustered on country and month. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Unconditional returns

Asset	Currency	Mean (annual.)	Std. dev. (annual.)	% cum. drops < -0.5	Avg. cum. drop < -0.5
Banks	USD	0.140	0.60	10.7	-0.71
	LCU	0.106	0.48	10.1	-0.71
Nonfinancials	USD	0.124	0.53	4.3	-0.64
	LCU	0.094	0.42	3.8	-0.62

Panel B: BVX panics

Asset	Currency	Mean (annual.)	Std. dev. (annual.)	% cum. drops < -0.5	Avg. cum. drop < -0.5	Diff. in means	Diff. in std. dev.	Diff. in % cum. drops < -0.5
Banks	USD	0.073	0.71	28.6	-0.76	-0.066 [-1.12]	0.11	17.9*** [4.12]
	LCU	0.060	0.75	26.5	-0.78	-0.046 [-0.78]	0.27	16.5*** [3.60]
Nonfin.	USD	0.127	0.40	2.0	-0.79	0.003 [0.16]	-0.13	-2.2 [-1.04]
	LCU	0.121	0.42	4.1	-0.68	0.027 [1.27]	-0.00	0.3 [0.11]

Panel C: LV crises

Asset	Currency	Mean (annual.)	Std. dev. (annual.)	% cum. drops < -0.5	Avg. cum. drop < -0.5	Diff. in means	Diff. in std. dev.	Diff. in % cum. drops < -0.5
Banks	USD	-0.033	0.34	39.4	-0.75	-0.173*** [-5.97]	-0.26	28.7*** [4.59]
	LCU	-0.045	0.30	42.4	-0.71	-0.151*** [-5.99]	-0.19	32.4*** [5.38]
Nonfin.	USD	0.059	0.27	9.1	-0.62	-0.065** [-1.96]	-0.26	4.8 [0.68]
	LCU	0.052	0.29	6.1	-0.62	-0.041 [-1.40]	-0.13	2.3 [0.51]

Panel D: Bank equity crashes

Asset	Currency	Mean (annual.)	Std. dev. (annual.)	% cum. drops < -0.5	Avg. cum. drop < -0.5	Diff. in means	Diff. in std. dev.	Diff. in % cum. drops < -0.5
Banks	USD	0.123	0.54	13.8	-0.77	-0.017 [-0.54]	-0.06	3.1 [0.68]
	LCU	0.086	0.50	13.8	-0.76	-0.020 [-0.78]	0.02	3.7 [0.83]
Nonfin.	USD	0.111	0.40	5.3	-0.69	-0.013 [-0.46]	-0.13	1.1 [0.55]
	LCU	0.079	0.32	7.4	-0.61	-0.015 [-0.70]	-0.09	3.7* [1.74]

Table 3: Long-horizon predictability after banking crises

This table reports coefficients from regressions, in which cumulative USD excess total log returns are regressed on crises indicators and at various horizons ranging from 1 to 60 months after the crisis. $H = 60$, for example, corresponds to total returns from investing at the end of month 0 (the month of the crisis) to the end of month 60 . *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Bank equity

H	1	3	6	12	24	36	60
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	-0.21*	-0.34***	-0.48***	-0.19*	-0.25**	-0.42**	-0.49**
$s.e.$	(0.12)	(0.13)	(0.16)	(0.11)	(0.11)	(0.20)	(0.20)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.013	0.010	0.009	0.001	0.001	0.001	0.001
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BankCrisisLV}_{i,t} + u_{i,t+H}$				
b	-0.34***	-0.54***	-0.79***	-0.46	-0.44***	-0.90***	-0.75***
$s.e.$	(0.10)	(0.07)	(0.08)	(0.29)	(0.08)	(0.09)	(0.17)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.021	0.016	0.015	0.002	0.001	0.004	0.002
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BankEqCrash}_{i,t} + u_{i,t+H}$				
b	-0.02*	-0.06***	-0.09***	-0.22***	-0.16***	-0.17***	-0.14*
$s.e.$	(0.01)	(0.02)	(0.03)	(0.07)	(0.06)	(0.06)	(0.08)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.001	0.001	0.003	0.001	0.001	0.000

Panel B: Nonfinancial equity

H	1	3	6	12	24	36	60
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	-0.13*	-0.17***	-0.25***	-0.10	-0.00	-0.03	0.05
$s.e.$	(0.07)	(0.05)	(0.07)	(0.07)	(0.07)	(0.08)	(0.06)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.008	0.004	0.004	0.000	-0.000	-0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BankCrisisLV}_{i,t} + u_{i,t+H}$				
b	-0.20***	-0.27***	-0.38***	-0.23	-0.11	-0.26***	-0.10
$s.e.$	(0.06)	(0.04)	(0.05)	(0.17)	(0.09)	(0.09)	(0.14)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.013	0.007	0.006	0.001	0.000	0.001	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BankEqCrash}_{i,t} + u_{i,t+H}$				
b	-0.01	-0.05***	-0.07***	-0.16***	-0.07*	-0.08*	-0.03
$s.e.$	(0.01)	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)	(0.05)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.002	0.001	0.003	0.000	0.000	-0.000

Table 4: Equity trading strategies around banking crises

This table reports statistics on the excess USD returns earned from various trading strategies. The first two rows correspond to the benchmark buy-and-hold (b&h) strategies, in which an investor invests over the entire sample without regard to banking crises. The next sets of four rows correspond to trading strategies around BVX crises, around LV crises, and around bank equity crashes. The assets are either bank or nonfinancial equity total return indexes, converted to USD excess returns. The strategies are constructed based on a USD investor who invests 100% of his or her wealth over the specified horizon in countries with a crisis (dividing the wealth equally, if more than one country is in crisis at a given time) and in U.S. T-bills otherwise. The following annualized quantities are reported based on the monthly time-series of this investor's performance: mean, volatility, Sharpe ratio, and factor alphas and betas, with "US CAPM + Intl" and "Fama-French + Intl" referring to the alpha after controlling for the standard monthly U.S. factors (S&P 500 excess returns and three Fama-French factors, respectively) and the EAFE World Equity Index excess USD return. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Bank equity

Crisis	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Buy and hold	0.099	0.185	0.533	-0.001	-0.016
					[-0.035]	[-1.020]
BVX panics	0-60 months	0.053	0.313	0.170	-0.055	-0.086*
					[-1.215]	[-1.872]
	Diff. w/ b&h	-0.046	0.128***	-0.363*	-0.055	-0.070*
		[-1.30]	[23.52]	[0.08]	[-1.38]	[-1.71]
	6-60 months	0.076	0.295	0.257	-0.022	-0.041
					[-0.453]	[-0.778]
	Diff. w/ b&h	-0.023	0.110***	-0.276	-0.022	-0.025
		[-0.63]	[11.83]	[0.18]	[-0.47]	[-0.49]
LV crises	0-60 months	0.045	0.250	0.178	-0.040	-0.063
					[-0.991]	[-1.584]
	Diff. w/ b&h	-0.054*	0.065	-0.355*	-0.039	-0.047
		[-1.67]	[0.22]	[0.08]	[-1.17]	[-1.39]
	6-60 months	0.063	0.243	0.260	-0.012	-0.037
					[-0.308]	[-0.939]
	Diff. w/ b&h	-0.036	0.058	-0.274	-0.012	-0.021
		[-1.10]	[1.19]	[0.18]	[-0.34]	[-0.60]
Bank equity crashes	0-60 months	0.045	0.252	0.179	-0.059	-0.079**
					[-1.559]	[-2.086]
	Diff. w/ b&h	-0.054*	0.066***	-0.354*	-0.059*	-0.063*
		[-1.85]	[7.46]	[0.10]	[-1.82]	[-1.92]
	6-60 months	0.062	0.238	0.260	-0.041	-0.061
					[-1.088]	[-1.600]
	Diff. w/ b&h	-0.037	0.052	-0.273	-0.041	-0.045
		[-1.25]	[2.05]	[0.22]	[-1.26]	[-1.34]

Panel B: Nonfinancial equity

Crisis	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Buy and hold	0.085	0.167	0.506	0.002	-0.002
					[0.141]	[-0.120]
BVX panics	0-60 months	0.110	0.222	0.495	0.039	0.026
					[1.417]	[0.960]
	Diff. w/ b&h	0.025	0.054**	-0.011	0.037	0.027
		[1.04]	[4.68]	[0.95]	[1.49]	[1.14]
	6-60 months	0.125	0.213	0.585	0.060*	0.052*
					[1.937]	[1.651]
	Diff. w/ b&h	0.040	0.045	0.080	0.058**	0.053*
		[1.57]	[0.95]	[0.74]	[1.99]	[1.80]
LV crises	0-60 months	0.039	0.166	0.236	-0.022	-0.029
					[-0.910]	[-1.198]
	Diff. w/ b&h	-0.045*	-0.001***	-0.269	-0.024	-0.027
		[-1.94]	[20.84]	[0.21]	[-1.10]	[-1.24]
	6-60 months	0.052	0.162	0.323	-0.003	-0.011
					[-0.128]	[-0.489]
	Diff. w/ b&h	-0.032	-0.005***	-0.183	-0.005	-0.010
		[-1.37]	[27.06]	[0.37]	[-0.23]	[-0.44]
Bank equity crashes	0-60 months	0.090	0.201	0.446	0.007	0.003
					[0.283]	[0.108]
	Diff. w/ b&h	0.005	0.034*	-0.060	0.005	0.004
		[0.28]	[3.21]	[0.79]	[0.26]	[0.22]
	6-60 months	0.104	0.190	0.550	0.020	0.016
					[0.813]	[0.658]
	Diff. w/ b&h	0.020	0.022	0.044	0.018	0.018
		[1.00]	[0.41]	[0.85]	[0.88]	[0.87]

Table 5: What explains the low returns after banking crises?

This table reports estimated parameters β at various horizons h from the equation $\Delta_{t,t+h} \log \text{Total Returns}_{it} = \alpha_i + \beta X_{it} + \gamma Z_{it} + \varepsilon_{ist}$, where X_{it} is the variable of interest and Z_{it} denotes the control variables. The variables of interest in Panel A are, alternately: lagged 3-year change in household debt to GDP, lagged bank capitalization, and 3-year lead change in NPL ratio. The variables of interest in Panel B are the policy and macro variables described in the main text. All the variables of interest are standardized; thus, estimates correspond to the average change in subsequent returns associated with one-standard-deviation increase in one of the regressors. t-statistics calculated from heteroskedasticity-robust standard errors are reported in square brackets. *, **, *** indicate significance at 0.1, 0.05 and 0.01 level respectively.

Panel A: Debt overhang variables

	Bank equity			Nonfinancial equity		
Horizon:	12	36	60	12	36	60
$\Delta_{t-4,t-1}$ Household Debt	-0.221**	-0.406*	-0.553**	-0.055	-0.058	-0.094
	[-2.551]	[-1.949]	[-1.994]	[-1.177]	[-0.792]	[-0.889]
Adj. R^2	0.06	0.36	0.19	-0.01	0.11	-0.00
N	38	38	38	38	38	38
Bank capitalization$_{t-1}$	-0.129	-0.385	-0.993**	0.198	-0.033	-0.345
	[-0.385]	[-1.502]	[-2.130]	[1.130]	[-0.280]	[-1.167]
Adj. R^2	-0.01	0.27	0.23	0.09	0.10	0.07
N	32	32	32	32	32	32
$\Delta_{t,t+3}$ NPL	-0.308***	-0.427***	-0.869**	-0.111**	-0.126	-0.325***
	[-4.219]	[-2.576]	[-2.542]	[-2.314]	[-1.426]	[-3.347]
Adj. R^2	0.23	0.27	0.28	0.48	0.07	0.34
N	33	33	33	33	33	33

Panel B: Policy and macro variables

	Bank equity			Nonfinancial equity		
Horizon:	12	36	60	12	36	60
Monetary policy	-0.083	-0.170*	-0.308**	0.004	-0.006	-0.027
	[-0.729]	[-1.821]	[-1.983]	[0.065]	[-0.110]	[-0.369]
Adj. R^2	-0.03	0.20	0.09	-0.03	-0.00	-0.04
N	45	45	45	45	45	45
Fiscal policy	0.022	0.005	-0.265	0.017	-0.043	-0.097
	[0.161]	[0.031]	[-0.818]	[0.277]	[-0.659]	[-1.069]
Adj. R^2	-0.06	0.16	0.09	-0.03	0.08	0.03
N	45	45	45	45	45	45
Government debt$_{t-1}$	-0.006	-0.278*	-0.805**	-0.010	-0.087	-0.305***
	[-0.042]	[-1.839]	[-2.531]	[-0.136]	[-1.146]	[-4.430]
Adj. R^2	-0.04	0.21	0.31	0.03	0.08	0.26
N	34	34	34	34	34	34
$\Delta_{t-4,t-1} \log$ Real GDP	0.052	-0.028	0.067	0.013	-0.018	-0.020
	[0.832]	[-0.391]	[0.421]	[0.352]	[-0.441]	[-0.340]
Adj. R^2	-0.02	0.18	0.07	0.00	-0.00	-0.03
N	48	48	48	48	48	48

Table 6: Low returns after banking crises are driven by the cash-flow effect

This table is similar to Table 5 but focuses on after-crisis dynamics of cash flows. In particular, we replace the dependent variable with $\Delta_{t,t+h} \log \text{Dividends}_{it}$ and run same regressions as in Table 5. t-statistics calculated from heteroskedasticity-robust standard errors are reported in square brackets. *, **, *** indicate significance at 0.1, 0.05 and 0.01 level respectively.

Panel A: Debt overhang variables

	Bank equity			Nonfinancial equity		
Horizon:	12	36	60	12	36	60
$\Delta_{t-4,t-1}$ Household Debt	-0.016	-0.623	-1.247*	-0.094*	-0.339**	-0.421***
	[-0.058]	[-1.499]	[-1.796]	[-1.698]	[-2.158]	[-2.614]
Adj. R^2	0.23	0.30	0.43	0.10	0.12	0.20
N	27	27	27	27	27	27
Bank capitalization$_{t-1}$	0.182	0.031	-0.378	-0.059	-0.154	-0.566*
	[1.272]	[0.142]	[-1.079]	[-0.443]	[-1.121]	[-1.735]
Adj. R^2	0.17	0.46	0.42	0.11	0.29	0.12
N	22	22	22	22	22	22
$\Delta_{t,t+3}$ NPL	0.143	-1.099***	-1.713***	-0.033	-0.461***	-0.358***
	[0.703]	[-6.430]	[-4.551]	[-0.212]	[-4.573]	[-2.961]
Adj. R^2	0.01	0.49	0.53	-0.16	0.39	0.26
N	20	20	20	20	20	20

Panel B: Policy and macro variables

	Bank equity			Nonfinancial equity		
Horizon:	12	36	60	12	36	60
Monetary policy	0.041	0.285	0.150	-0.164	0.140	0.102
	[0.137]	[0.567]	[0.265]	[-0.517]	[0.479]	[0.302]
Adj. R^2	0.29	0.19	0.26	0.00	0.04	0.13
N	34	34	34	34	34	34
Fiscal policy	0.206	0.093	-0.129	0.071	0.052	0.196
	[0.855]	[0.217]	[-0.210]	[0.654]	[0.235]	[0.901]
Adj. R^2	0.30	0.17	0.22	0.08	0.00	0.14
N	32	32	32	32	32	32
Government debt$_{t-1}$	-0.184	-0.582*	-1.482**	0.143	-0.164**	-0.283**
	[-0.466]	[-1.786]	[-2.508]	[0.884]	[-2.006]	[-2.048]
Adj. R^2	0.16	0.39	0.57	0.16	0.30	0.27
N	24	24	24	24	24	24
$\Delta_{t-4,t-1} \log$ Real GDP	0.064	0.078	0.378**	0.038	-0.038	-0.052
	[0.932]	[0.644]	[2.175]	[0.521]	[-0.622]	[-0.819]
Adj. R^2	0.33	0.21	0.28	0.01	0.06	0.16
N	35	35	35	35	35	35

Appendix A. Additional results

Figure A.1: Frequency of various crises over time

This figure plots the frequency of various types of crises over time. These crises are defined in Section II.

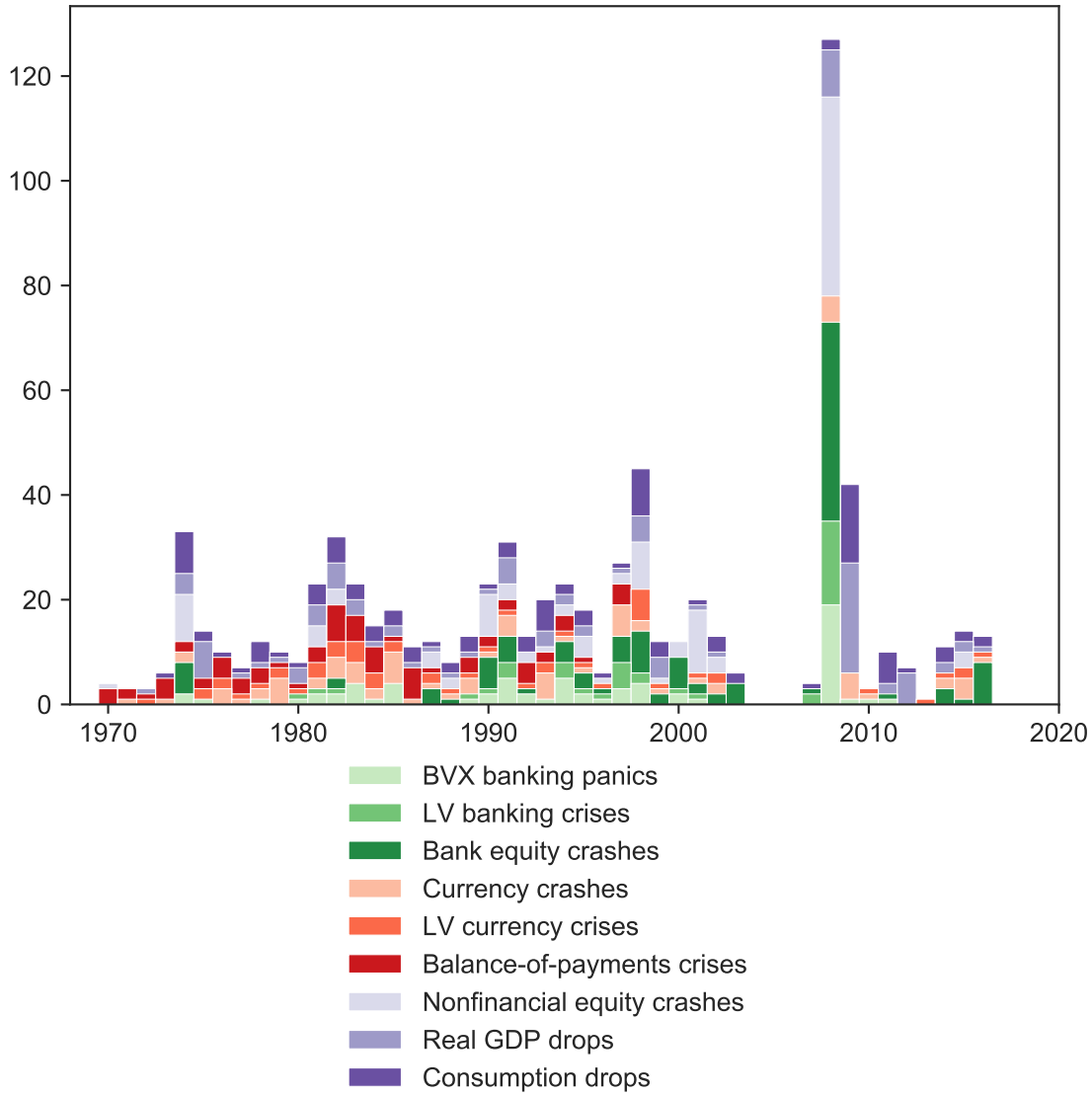


Table A.1: Long-horizon predictability after banking crises: in LCU

This table is similar to Table 3 and reports coefficients from regressing cumulative log total returns in local currency units (LCU) on select crises indicators and at various horizons ranging from 1 to 60 months after the crisis. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Bank equity

H	1	3	6	12	24	36	60
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BankCrisisLV}_{i,t} + u_{i,t+H}$				
b	-0.27***	-0.44***	-0.60***	-0.39*	-0.36***	-0.83***	-0.70***
	(0.08)	(0.11)	(0.10)	(0.23)	(0.07)	(0.09)	(0.17)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.016	0.013	0.011	0.002	0.001	0.004	0.002
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	-0.17*	-0.31**	-0.41***	-0.16*	-0.21**	-0.38*	-0.40*
	(0.09)	(0.13)	(0.15)	(0.09)	(0.10)	(0.21)	(0.22)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.010	0.009	0.008	0.000	0.000	0.001	0.001
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BankEqCrash}_{i,t} + u_{i,t+H}$				
b	-0.02**	-0.05***	-0.07***	-0.19***	-0.17***	-0.18***	-0.14*
	(0.01)	(0.01)	(0.02)	(0.06)	(0.05)	(0.06)	(0.07)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.001	0.001	0.001	0.003	0.001	0.001	0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrash}_{i,t} + u_{i,t+H}$				
b	-0.03*	-0.01	0.03	0.01	0.16	0.15	0.51***
	(0.02)	(0.04)	(0.06)	(0.09)	(0.10)	(0.11)	(0.12)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.002
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrisisLV}_{i,t} + u_{i,t+H}$				
b	-0.05	-0.08*	-0.28***	-0.02	0.28	0.13	0.19
	(0.05)	(0.04)	(0.09)	(0.07)	(0.23)	(0.40)	(0.32)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.000	0.001	-0.000	0.000	-0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BoPaymentCrisis}_{i,t} + u_{i,t+H}$				
b	-0.03	-0.09	-0.04	-0.13	0.07	-0.02	0.13
	(0.05)	(0.13)	(0.12)	(0.27)	(0.13)	(0.17)	(0.26)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{NonfinEqCrash}_{i,t} + u_{i,t+H}$				
b	-0.04**	-0.08***	-0.12**	-0.04	-0.05	-0.07	-0.00
	(0.02)	(0.03)	(0.05)	(0.04)	(0.06)	(0.04)	(0.06)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.002	0.003	0.002	0.000	0.000	0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{RealGDPDrop}_{i,t} + u_{i,t+H}$				
b	-0.01	0.07	0.04	-0.02	0.06	-0.08	-0.03
	(0.03)	(0.05)	(0.12)	(0.20)	(0.18)	(0.13)	(0.24)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.001	0.000	-0.000	-0.000	0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{RealConsDrop}_{i,t} + u_{i,t+H}$				
b	-0.04	0.03	-0.00	-0.02	0.00	-0.10	0.09
	(0.04)	(0.03)	(0.10)	(0.12)	(0.10)	(0.06)	(0.11)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.001	0.000	-0.000	-0.000	-0.000	0.000	-0.000

Panel B: Nonfinancial equity

H	1	3	6	12	24	36	60
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BankCrisisLV}_{i,t} + u_{i,t+H}$				
b	-0.13***	-0.17***	-0.19***	-0.16	-0.03	-0.19**	-0.04
	(0.04)	(0.06)	(0.06)	(0.11)	(0.07)	(0.08)	(0.12)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.007	0.003	0.002	0.001	-0.000	0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	-0.09*	-0.14***	-0.18***	-0.07	0.04	0.01	0.14**
	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.07)	(0.07)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.005	0.003	0.003	0.000	-0.000	-0.000	0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BankEqCrash}_{i,t} + u_{i,t+H}$				
b	-0.01	-0.05***	-0.06***	-0.13***	-0.07*	-0.08**	-0.03
	(0.01)	(0.01)	(0.02)	(0.03)	(0.04)	(0.04)	(0.04)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.002	0.001	0.003	0.000	0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrash}_{i,t} + u_{i,t+H}$				
b	-0.00	-0.01	0.01	-0.00	0.15**	0.18**	0.40***
	(0.01)	(0.02)	(0.03)	(0.05)	(0.06)	(0.08)	(0.08)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	-0.000	-0.000	-0.000	-0.000	0.001	0.001	0.002
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrisisLV}_{i,t} + u_{i,t+H}$				
b	0.01	-0.04	-0.12***	0.02	0.35*	0.21	0.27
	(0.07)	(0.05)	(0.04)	(0.11)	(0.20)	(0.23)	(0.22)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BoPaymentCrisis}_{i,t} + u_{i,t+H}$				
b	0.01	0.01	0.11*	0.02	0.23**	0.14	0.25
	(0.05)	(0.07)	(0.06)	(0.16)	(0.10)	(0.13)	(0.19)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{NonfinEqCrash}_{i,t} + u_{i,t+H}$				
b	-0.03	-0.05**	-0.08***	-0.04	-0.03	-0.06*	0.04
	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.002	0.002	0.002	0.000	0.000	0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{RealGDPDrop}_{i,t} + u_{i,t+H}$				
b	-0.01	0.02	0.00	0.01	0.08	0.05	0.10
	(0.02)	(0.02)	(0.06)	(0.11)	(0.10)	(0.07)	(0.10)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	-0.000	0.000	-0.000	-0.000	0.000	0.000	0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{RealConsDrop}_{i,t} + u_{i,t+H}$				
b	-0.01	0.01	-0.02	-0.01	0.08	0.03	0.15
	(0.02)	(0.02)	(0.05)	(0.07)	(0.06)	(0.05)	(0.11)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000

Table A.3: Equity returns after other types of crises

This table is similar to Table 2 but reports returns around various other types of crises defined in Section II.

Crisis	Asset	Mean (annual.)	Std. dev. (annual.)	% cum. drops < -0.5	Avg. cum. drop < -0.5	Diff. in means	Diff. in std. dev.	Diff. in % cum. drops < -0.5
Currency crashes	Banks	0.262	0.60	5.6	-0.82	0.123** [2.18]	0.00	-5.2 [-1.34]
	Nonfin.	0.207	0.44	8.3	-0.68	0.084** [2.16]	-0.09	4.1 [1.01]
LV currency crises	Banks	0.276	1.03	11.1	-0.67	0.136 [1.15]	0.44	0.4 [0.04]
	Nonfin.	0.266	1.09	11.1	-0.67	0.143 [1.12]	0.56	6.9 [1.32]
Balance-of-payments crises	Banks	0.295	1.00	12.5	-0.84	0.155 [1.45]	0.41	1.8 [0.22]
	Nonfin.	0.361	1.25	8.3	-0.70	0.238** [2.15]	0.72	4.1 [0.76]
Nonfinancial equity crashes	Banks	0.164	0.60	9.8	-0.73	0.025 [0.72]	0.00	-0.9 [-0.41]
	Nonfin.	0.141	0.42	3.9	-0.67	0.017 [0.78]	-0.11	-0.3 [-0.16]
Real GDP drops	Banks	0.122	0.47	13.6	-0.76	-0.018 [-0.32]	-0.13	2.9 [0.52]
	Nonfin.	0.107	0.28	4.5	-0.65	-0.017 [-0.54]	-0.25	0.3 [0.22]
Consumption drops	Banks	0.163	0.63	12.1	-0.75	0.023 [0.56]	0.03	1.4 [0.34]
	Nonfin.	0.158	0.62	4.5	-0.67	0.034 [0.80]	0.09	0.3 [0.25]

Table A.4: Long-horizon predictability after other types of crises

This table is similar to Table 3 and reports coefficients from regressing cumulative log total USD returns on select crises indicators and at various horizons ranging from 1 to 60 months after the crisis. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Bank equity

H	1	3	6	12	24	36	60
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrash}_{i,t} + u_{i,t+H}$				
b	-0.04*	-0.03	0.02	0.02	0.22**	0.14	0.52***
$s.e.$	(0.02)	(0.06)	(0.08)	(0.12)	(0.11)	(0.09)	(0.11)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.001	0.000	-0.000	-0.000	0.001	0.000	0.001
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrisisLV}_{i,t} + u_{i,t+H}$				
b	-0.01	-0.03	-0.28**	0.19**	0.54***	0.26	0.55**
$s.e.$	(0.07)	(0.11)	(0.12)	(0.09)	(0.17)	(0.25)	(0.27)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BoPaymentCrisis}_{i,t} + u_{i,t+H}$				
b	-0.05	-0.17	-0.19	-0.27	0.00	-0.06	0.11
$s.e.$	(0.06)	(0.15)	(0.19)	(0.32)	(0.14)	(0.19)	(0.27)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.001	0.000	0.000	-0.000	-0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{NonfinEqCrash}_{i,t} + u_{i,t+H}$				
b	-0.05*	-0.11***	-0.15***	-0.06	-0.06	-0.08*	-0.01
$s.e.$	(0.03)	(0.03)	(0.06)	(0.05)	(0.07)	(0.05)	(0.07)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.002	0.003	0.003	0.000	0.000	0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{RealGDPDrop}_{i,t} + u_{i,t+H}$				
b	-0.02	0.09*	0.05	-0.03	0.06	-0.11	-0.06
$s.e.$	(0.04)	(0.05)	(0.15)	(0.24)	(0.21)	(0.15)	(0.23)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.001	0.000	-0.000	-0.000	0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{RealConsDrop}_{i,t} + u_{i,t+H}$				
b	-0.05	0.07**	0.02	-0.01	0.03	-0.09	0.10
$s.e.$	(0.04)	(0.03)	(0.12)	(0.14)	(0.12)	(0.08)	(0.11)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.001	0.001	-0.000	-0.000	-0.000	0.000	0.000

Panel B: Nonfinancial equity

H	1	3	6	12	24	36	60
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrash}_{i,t} + u_{i,t+H}$				
b	-0.01	-0.04	-0.01	0.01	0.21**	0.16**	0.40***
$s.e.$	(0.01)	(0.03)	(0.05)	(0.08)	(0.09)	(0.08)	(0.07)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.000	-0.000	-0.000	0.001	0.000	0.002
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrisisLV}_{i,t} + u_{i,t+H}$				
b	0.04	0.01	-0.12	0.23*	0.61***	0.33***	0.63***
$s.e.$	(0.08)	(0.11)	(0.11)	(0.13)	(0.19)	(0.10)	(0.17)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	-0.000	0.000	0.000	0.001	0.000	0.001
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BoPaymentCrisis}_{i,t} + u_{i,t+H}$				
b	-0.01	-0.07	-0.04	-0.13	0.16	0.10	0.24
$s.e.$	(0.05)	(0.10)	(0.13)	(0.21)	(0.11)	(0.16)	(0.21)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	-0.000	0.000	-0.000	0.000	0.000	-0.000	0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{NonfinEqCrash}_{i,t} + u_{i,t+H}$				
b	-0.03	-0.07***	-0.11***	-0.05	-0.04	-0.07*	0.03
$s.e.$	(0.02)	(0.03)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.002	0.003	0.003	0.000	0.000	0.000	-0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{RealGDPDrop}_{i,t} + u_{i,t+H}$				
b	-0.01	0.04*	0.01	-0.00	0.08	0.03	0.07
$s.e.$	(0.02)	(0.03)	(0.09)	(0.14)	(0.13)	(0.09)	(0.08)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000
			$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{RealConsDrop}_{i,t} + u_{i,t+H}$				
b	-0.02	0.05**	-0.00	-0.01	0.10	0.05	0.16*
$s.e.$	(0.02)	(0.02)	(0.07)	(0.08)	(0.08)	(0.06)	(0.09)
N	14,822	14,822	14,822	14,822	14,822	14,822	14,822
R^2	0.000	0.001	-0.000	-0.000	0.000	-0.000	0.000

Table A.5: Returns on other asset classes after various types of crises

This table is similar to Table 2 but reports returns around crises of select other asset classes defined in Section II.

Asset	Crisis	Mean (annual.)	Std. dev. (annual.)	% cum. drops < -0.5	Avg. cum. drop < -0.5	Diff. in means	Diff. in std. dev.	Diff. in % cum. drops < -0.5
EMBI sovereign bonds	BVX banking panics	0.080	0.18	11.1	-0.51	-0.012	0.01	9.0
						[-0.63]		[1.12]
	Currency crashes	0.140	0.16	0.0		0.048***	-0.01	-2.1
						[3.17]		[-1.02]
	Balance-of-payments crises	0.097	0.16	0.0		0.005	-0.00	-2.1
						[0.15]		[-1.02]
	Real GDP drops	0.168	0.31	5.9	-0.62	0.077***	0.14	3.8
						[43.74]		[1.33]
Currency carry-trades	BVX banking panics	0.010	0.17	2.0	-0.97	-0.010	0.03	1.0
						[-1.21]		[0.55]
	Currency crashes	0.046	0.22	2.8	-0.96	0.026	0.07	1.8
						[1.59]		[0.77]
	Balance-of-payments crises	0.008	0.14	0.0		-0.012	-0.00	-1.0**
						[-0.83]		[-2.11]
	Real GDP drops	0.014	0.16	1.5	-0.95	-0.006	0.02	0.5
						[-0.73]		[1.52]
Residential real estate	BVX banking panics	-0.267	0.47	8.6	-0.56	-0.704***	-0.32	3.6
						[-3.10]		[0.58]
	Currency crashes	0.413	0.59	0.0		0.003	-0.20	-5.2***
						[0.01]		[-3.31]
	Balance-of-payments crises	0.043	0.86	11.8	-0.62	-0.374	0.07	6.8
						[-1.23]		[0.96]
	Real GDP drops	-0.133	0.51	1.9	-0.57	-0.575***	-0.28	-3.4
						[-3.35]		[-1.51]

Table A.6: Equity trading strategies around other types of crises

This table is similar to Table 4 but reports results for trading strategies around various other types of crises defined in Section II.

Crisis	Asset	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Banks	Buy and hold	0.099	0.185	0.533	-0.001 [-0.035]	-0.016 [-1.020]
	Nonfinancials	Buy and hold	0.085	0.167	0.506	0.002 [0.141]	-0.002 [-0.120]
Currency crashes	Banks	6-60 months	0.168	0.258	0.651	0.110*** [2.610]	0.099** [2.421]
		Diff. w/ b&h	0.069* [1.88]	0.073 [1.16]	0.118 [0.56]	0.110*** [2.75]	0.116*** [2.93]
	Nonfinancials	6-60 months	0.139	0.240	0.577	0.087** [2.397]	0.086** [2.400]
		Diff. w/ b&h	0.054* [1.77]	0.073 [1.70]	0.071 [0.72]	0.085** [2.54]	0.087*** [2.66]
LV currency crises	Banks	6-60 months	0.153	0.298	0.514	0.108** [2.129]	0.113** [2.268]
		Diff. w/ b&h	0.054 [1.12]	0.113** [6.30]	-0.020 [0.92]	0.109** [2.11]	0.130*** [2.58]
	Nonfinancials	6-60 months	0.131	0.262	0.503	0.091** [2.170]	0.098** [2.372]
		Diff. w/ b&h	0.047 [1.23]	0.094** [6.23]	-0.003 [0.99]	0.089** [2.25]	0.100** [2.55]
Balance-of-payments crises	Banks	6-60 months	0.071	0.198	0.358	0.025 [0.771]	0.033 [1.022]
		Diff. w/ b&h	-0.028 [-0.78]	0.012*** [13.00]	-0.175 [0.38]	0.025 [0.72]	0.049 [1.44]
	Nonfinancials	6-60 months	0.083	0.161	0.519	0.044 [1.624]	0.050* [1.899]
		Diff. w/ b&h	-0.001 [-0.05]	-0.007*** [20.52]	0.013 [0.96]	0.042 [1.61]	0.052** [2.01]
Nonfinancial equity crashes	Banks	6-60 months	0.127	0.208	0.612	0.030 [1.088]	0.021 [0.738]
		Diff. w/ b&h	0.028 [1.33]	0.022 [0.25]	0.078 [0.72]	0.031 [1.24]	0.037 [1.46]
	Nonfinancials	6-60 months	0.128	0.190	0.671	0.041 [1.466]	0.038 [1.317]

Table A.6 – cont.

Crisis	Asset	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
		Diff. w/ b&h	0.043**	0.023	0.165	0.039	0.040
			[2.33]	[0.73]	[0.44]	[1.62]	[1.59]
Real GDP drops	Banks	6-60 months	0.104	0.246	0.421	0.004	-0.012
						[0.121]	[-0.374]
		Diff. w/ b&h	0.005	0.060**	-0.112	0.004	0.005
			[0.20]	[6.08]	[0.58]	[0.18]	[0.19]
	Nonfinancials	6-60 months	0.090	0.197	0.457	0.008	0.004
						[0.336]	[0.179]
		Diff. w/ b&h	0.006	0.030	-0.048	0.006	0.006
			[0.29]	[0.13]	[0.83]	[0.28]	[0.29]
Consumption drops	Banks	6-60 months	0.120	0.226	0.532	0.015	0.001
						[0.604]	[0.035]
		Diff. w/ b&h	0.021	0.040***	-0.002	0.016	0.017
			[1.09]	[9.40]	[1.00]	[0.83]	[0.89]
	Nonfinancials	6-60 months	0.125	0.190	0.655	0.036*	0.032
						[1.781]	[1.585]
		Diff. w/ b&h	0.040**	0.023**	0.149	0.034**	0.034**
			[2.50]	[4.33]	[0.49]	[2.22]	[2.16]

Table A.7: Trading other asset classes around various types of crises

This table is similar to Table 4 but reports results for trading strategies around select crises for various other asset classes as defined in Section II (EMBI sovereign bonds in panel A, currency carry trades in panel B, and residential real estate in panel C).

Panel A: EMBI sovereign bonds

Crisis	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Buy and hold	0.034	0.080	0.429	0.036**	0.033**
					[2.525]	[2.151]
BVX banking panics	6-60 months	0.040	0.088	0.457	0.046***	0.043***
					[3.093]	[2.804]
	Diff. w/ b&h	0.006	0.007	0.028	0.011	0.010
		[0.54]	[0.06]	[0.90]	[0.87]	[0.78]
Currency crashes	6-60 months	0.042	0.082	0.517	0.046***	0.042**
					[2.680]	[2.462]
	Diff. w/ b&h	0.008	0.001	0.088	0.010	0.010
		[0.63]	[0.20]	[0.71]	[0.66]	[0.62]
Balance-of-payments crises	6-60 months	0.023	0.058	0.406	0.025**	0.024**
					[2.356]	[2.133]
	Diff. w/ b&h	-0.011	-0.023***	-0.024	-0.010	-0.009
		[-1.06]	[32.47]	[0.92]	[-0.82]	[-0.66]
Real GDP drops	6-60 months	0.035	0.067	0.527	0.040***	0.038***
					[3.802]	[3.507]
	Diff. w/ b&h	0.001	-0.013**	0.098	0.005	0.006
		[0.10]	[5.03]	[0.69]	[0.42]	[0.47]

Panel B: Currency carry-trades

Crisis	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Buy and hold	0.014	0.068	0.206	-0.014	-0.012
					[-1.267]	[-1.097]
BVX banking panics	6-60 months	0.002	0.070	0.032	-0.015	-0.016
					[-1.143]	[-1.161]
	Diff. w/ b&h	-0.012	0.002***	-0.173	-0.001	-0.004
		[-1.10]	[10.23]	[0.41]	[-0.06]	[-0.28]
Currency crashes	6-60 months	0.011	0.103	0.103	-0.011	-0.011
					[-0.536]	[-0.520]
	Diff. w/ b&h	-0.003	0.034	-0.102	0.003	0.001
		[-0.23]	[0.74]	[0.65]	[0.17]	[0.05]
Balance-of-payments crises	6-60 months	0.010	0.065	0.146	-0.000	0.005
					[-0.005]	[0.460]
	Diff. w/ b&h	-0.005	-0.003***	-0.060	0.014	0.018*
		[-0.45]	[28.76]	[0.79]	[1.31]	[1.66]
Real GDP drops	6-60 months	0.010	0.077	0.128	-0.016	-0.014
					[-1.263]	[-1.101]
	Diff. w/ b&h	-0.004	0.008	-0.078	-0.002	-0.002
		[-0.52]	[0.02]	[0.71]	[-0.20]	[-0.17]

Panel C: Residential real estate

Crisis	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Buy and hold	0.026	0.103	0.253	-0.046 [-0.184]	0.124 [0.567]
BVX banking panics	0-5 years	-0.027	0.091	-0.296	-0.439** [-2.479]	-0.226 [-1.251]
	Diff. w/ b&h	-0.053*** [-2.96]	-0.012 [2.70]	-0.550** [0.01]	-0.033 [-1.45]	-0.029 [-1.19]
Currency crashes	0-5 years	0.024	0.131	0.185	-0.005 [-0.020]	0.159 [0.711]
	Diff. w/ b&h	-0.002 [-0.12]	0.028 [0.30]	-0.068 [0.73]	0.003 [0.28]	0.003 [0.23]
Balance-of-payments crises	0-5 years	-0.014	0.126	-0.110	-0.393 [-1.183]	-0.061 [-0.228]
	Diff. w/ b&h	-0.040*** [-2.62]	0.023 [0.69]	-0.363* [0.08]	-0.029* [-1.66]	-0.015 [-1.06]
Real GDP drops	0-5 years	-0.014	0.118	-0.121	-0.471 [-1.567]	-0.286 [-1.322]
	Diff. w/ b&h	-0.040*** [-2.75]	0.015 [0.16]	-0.375* [0.07]	-0.035** [-2.34]	-0.034** [-2.38]

Table A.8: Excess returns, prices, and dividends around banking crises

This table reports coefficient estimates corresponding to those plotted in Figure 4.

Panel A: Banks

H	12	24	36	60	120
	Cumulative excess total returns				
	$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	-0.13	-0.16	-0.41**	-0.44**	0.21*
	(0.10)	(0.10)	(0.18)	(0.21)	(0.12)
N	12,265	12,265	12,265	12,265	12,265
R^2	0.000	0.000	0.001	0.001	0.000
	Price-dividend ratio				
	$\text{Price-dividend ratio}_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	0.22	0.36**	0.40***	0.21	0.03
	(0.32)	(0.18)	(0.13)	(0.16)	(0.08)
N	16,972	16,972	16,972	16,972	16,972
R^2	0.000	0.001	0.001	0.000	0.000
	Dividends				
	$\sum_{h=1}^{H} \Delta d_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	-0.36***	-0.39***	-0.38***	-0.36**	0.03
	(0.10)	(0.08)	(0.10)	(0.15)	(0.10)
N	10,929	10,929	10,929	10,929	10,929
R^2	0.006	0.003	0.003	0.001	0.000

Panel B: Nonfinancials

H	12	24	36	60	120
	Cumulative excess total returns				
	$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	-0.06	0.07	0.00	0.14*	0.18
	(0.05)	(0.06)	(0.08)	(0.08)	(0.12)
N	12,294	12,294	12,294	12,294	12,294
R^2	0.000	0.000	0.000	0.000	0.000
	Price-dividend ratio				
	$\text{Price-dividend ratio}_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	0.07	0.22*	0.14	0.04	-0.01
	(0.10)	(0.12)	(0.15)	(0.06)	(0.06)
N	17,527	17,527	17,527	17,527	17,527
R^2	0.000	0.001	0.000	0.000	0.000
	Dividends				
	$\sum_{h=1}^{H} \Delta d_{i,t+h} = a_i + b\text{BVXpanics}_{i,t} + u_{i,t+H}$				
b	-0.13***	-0.20***	-0.18***	-0.15**	0.12
	(0.04)	(0.04)	(0.03)	(0.06)	(0.09)
N	12,265	12,265	12,265	12,265	12,265
R^2	0.002	0.002	0.001	0.001	0.000

Panel C: JST data

H	1	3	5	7	10
	Cumulative excess total returns				
	$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{FinCrisis}_{i,t} + u_{i,t+H}$				
b	-0.00	0.01	0.09	0.13	0.09
	(0.05)	(0.05)	(0.07)	(0.08)	(0.08)
N	2,031	2,031	2,007	1,959	1,887
R^2	0.000	0.000	0.001	0.002	0.000
	Price-dividend ratio				
	$\text{Price-dividend ratio}_{i,t+h} = a_i + b\text{FinCrisis}_{i,t} + u_{i,t+H}$				
b	-0.20***	-0.06	-0.08	-0.07	-0.01
	(0.05)	(0.07)	(0.05)	(0.07)	(0.09)
N	2,004	1,960	1,922	1,888	1,843
R^2	0.006	0.000	0.000	0.000	-0.001
	Dividends				
	$\sum_{h=1}^{H} \Delta d_{i,t+h} = a_i + b\text{FinCrisis}_{i,t} + u_{i,t+H}$				
b	-0.08	-0.21***	-0.15**	-0.14*	-0.25***
	(0.06)	(0.04)	(0.06)	(0.07)	(0.06)
N	1,885	1,885	1,885	1,829	1,745
R^2	0.003	0.012	0.003	0.002	0.006

Table A.9: Real GDP forecasts in the wake of crises: Are they systematically overoptimistic?

This table shows how much the IMF WEO real GDP projections deviate from the realized real GDP growth in 100 × log-points. The regression $\Delta_h^{realized} y_{it} - \Delta_h^{forecast} y_{it} = \alpha_i + \beta \text{Crisis}_{it} + u_{it}$. is estimated. More negative values indicate excessive optimism. The t-statistics reported in square brackets are computed from standard errors clustered on country and year. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	Horizon				
	1	2	3	4	5
BVX panics	-4.030***	-3.777***	-3.815***	-4.648**	-4.905*
	[-5.965]	[-3.830]	[-2.873]	[-2.226]	[-1.959]
N	1043	1043	1043	1043	1043
Adj. R^2	0.07	0.04	0.06	0.08	0.10
LV crises	-5.811***	-5.951***	-5.903***	-7.544***	-8.251***
	[-5.690]	[-4.348]	[-4.151]	[-4.384]	[-4.189]
N	1043	1043	1043	1043	1043
Adj. R^2	0.11	0.06	0.07	0.10	0.12
Bank equity crashes	-3.674***	-3.231***	-3.546***	-4.361***	-4.568***
	[-4.450]	[-4.298]	[-5.119]	[-4.811]	[-3.903]
N	1043	1043	1043	1043	1043
Adj. R^2	0.11	0.04	0.06	0.09	0.11
Currency crashes	-2.151	-0.960	-0.642	-0.536	0.363
	[-0.865]	[-0.344]	[-0.244]	[-0.179]	[0.112]
N	1043	1043	1043	1043	1043
Adj. R^2	0.00	0.01	0.04	0.07	0.09
LV currency crises	4.133***	6.639***	6.162**	8.105***	9.315***
	[3.882]	[3.593]	[2.347]	[3.175]	[3.198]
N	1043	1043	1043	1043	1043
Adj. R^2	0.02	0.03	0.05	0.08	0.10
Balance-of-payments crises	-4.770	-4.280	-3.139	-3.785	-4.065
	[-1.574]	[-1.123]	[-0.757]	[-0.790]	[-0.844]
N	1043	1043	1043	1043	1043
Adj. R^2	0.02	0.02	0.04	0.07	0.10
Nonfinancial equity crashes	-3.408***	-2.607***	-2.779***	-3.410***	-3.234**
	[-4.174]	[-4.012]	[-3.286]	[-3.030]	[-2.135]
N	1043	1043	1043	1043	1043
Adj. R^2	0.09	0.03	0.05	0.08	0.10
Real GDP drops	0.277	1.017	0.112	-0.555	-0.646
	[0.197]	[0.544]	[0.056]	[-0.249]	[-0.279]
N	1043	1043	1043	1043	1043
Adj. R^2	-0.01	0.01	0.04	0.07	0.09
Consumption drops	0.791	1.505	0.843	1.068	1.367
	[1.008]	[1.345]	[0.744]	[0.976]	[1.399]
N	1043	1043	1043	1043	1043
Adj. R^2	-0.01	0.02	0.04	0.07	0.09

Appendix B. Robustness

Figure B.1: Cumulative equity returns around various types of crises: 1960-2006 sample

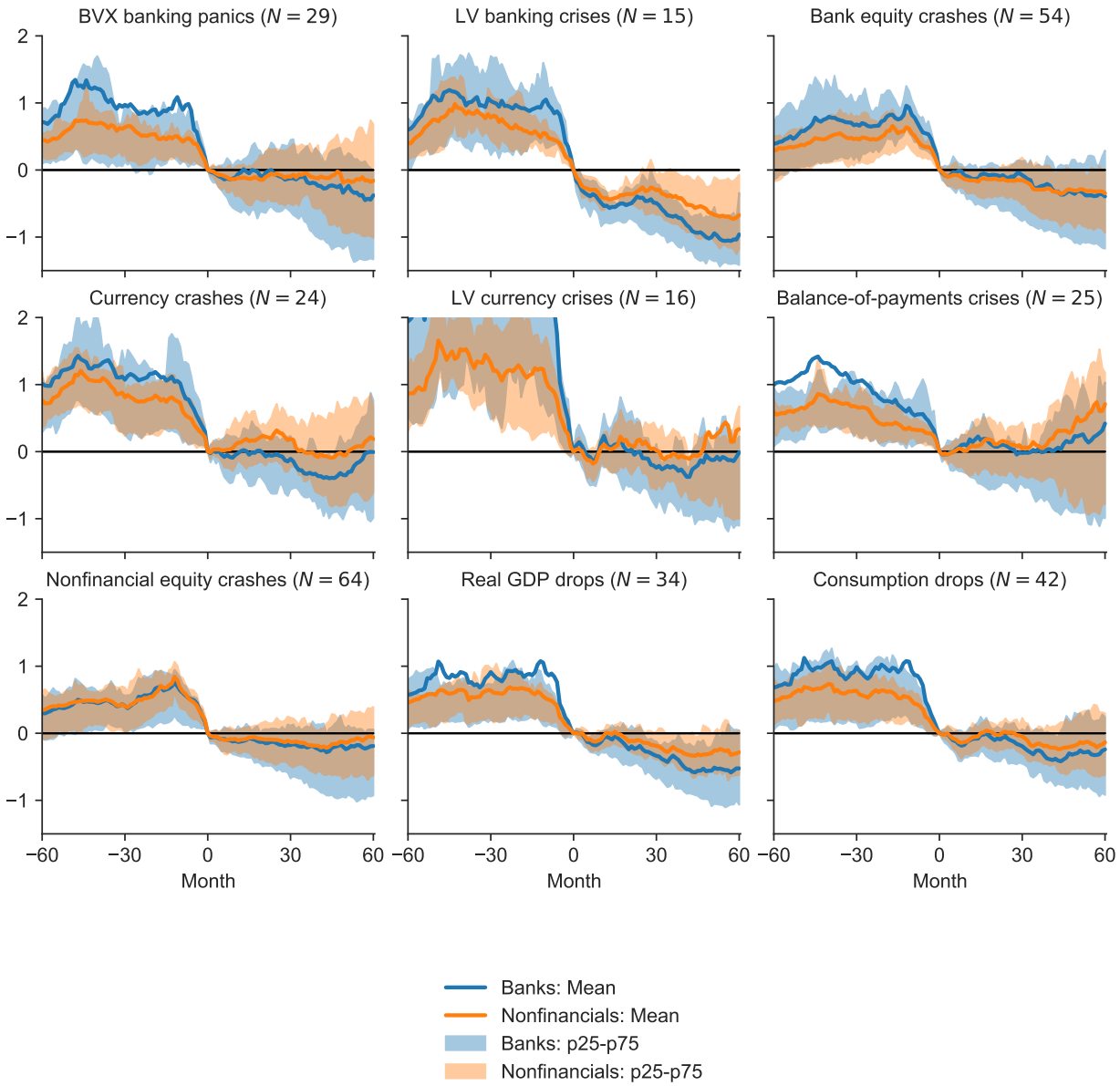


Figure B.2: Cumulative equity returns around various types of crises: Advanced vs developing economies

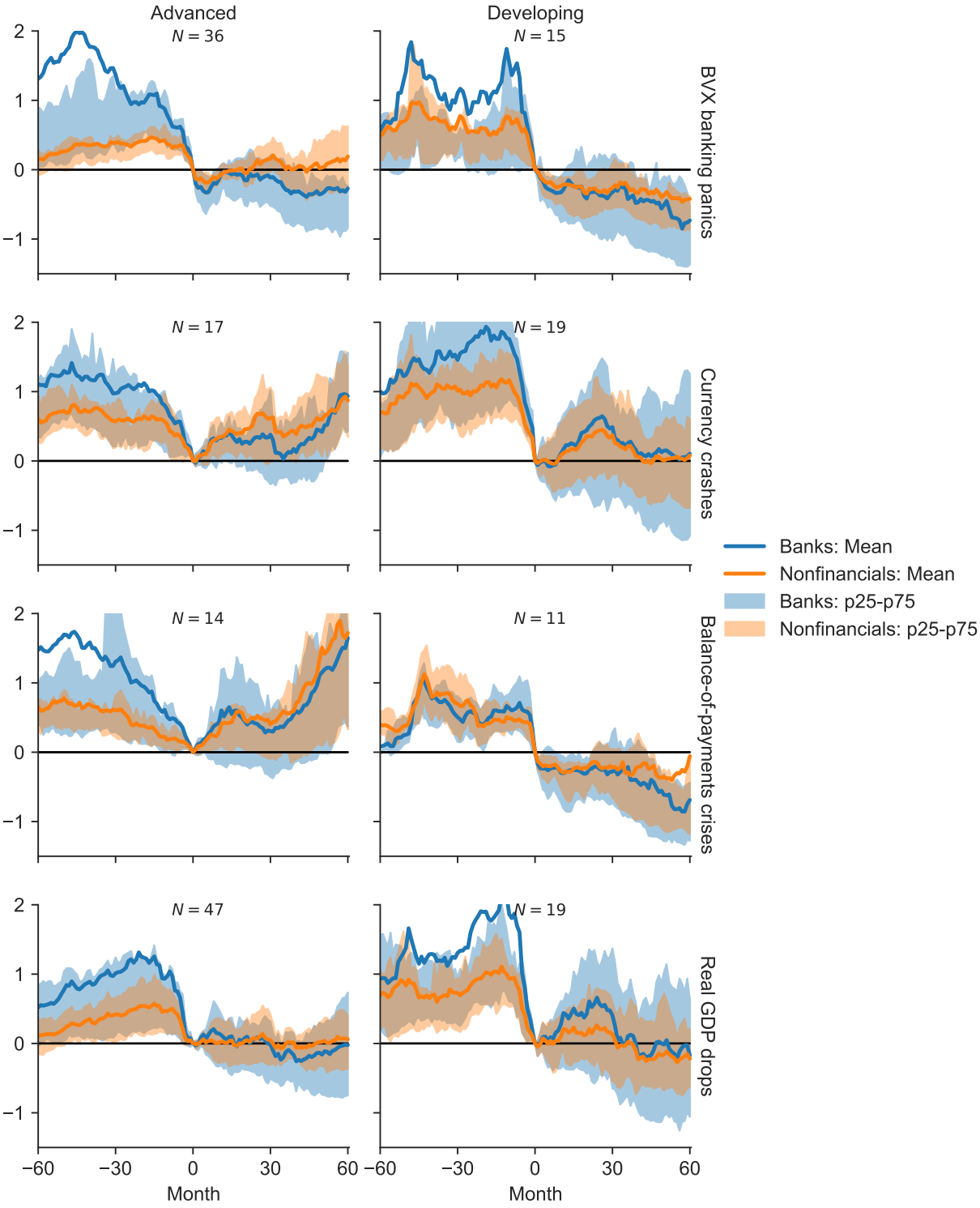


Table B.1: Long-horizon predictability around financial crises: Jorda-Schularick-Taylor (JST) data

Panel A: USD excess returns

	Full sample (1876-2015)			Prewar (1876-1945)			Postwar (1945-2015)		
H	1	3	5	1	3	5	1	3	5
	$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{FinCrisis}_{i,t} + u_{i,t+H}$								
b	-0.03	0.03	0.13	-0.05	0.09	0.18*	0.05	-0.01	0.16
	(0.06)	(0.06)	(0.09)	(0.05)	(0.08)	(0.10)	(0.12)	(0.07)	(0.15)
N	2,104	2,055	2,007	995	952	910	1,109	1,103	1,097
R^2	-0.000	-0.000	0.002	0.002	0.002	0.007	-0.000	-0.001	0.001
	$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrash}_{i,t} + u_{i,t+H}$								
b	-0.03	-0.04	0.09	-0.14***	-0.14	-0.01	0.07	0.04	0.16*
	(0.04)	(0.06)	(0.08)	(0.04)	(0.10)	(0.10)	(0.05)	(0.06)	(0.09)
N	2,104	2,055	2,007	995	952	910	1,109	1,103	1,097
R^2	0.001	0.000	0.001	0.028	0.009	-0.001	0.004	-0.000	0.005

Panel B: LCU excess returns

	Full sample (1876-2015)			Prewar (1876-1945)			Postwar (1945-2015)		
H	1	3	5	1	3	5	1	3	5
	$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{FinCrisis}_{i,t} + u_{i,t+H}$								
b	-0.00	0.00	0.09	-0.03	0.00	0.07	0.07	0.04	0.17
	(0.05)	(0.05)	(0.07)	(0.04)	(0.05)	(0.06)	(0.09)	(0.08)	(0.12)
N	2,104	2,055	2,007	995	952	910	1,109	1,103	1,097
R^2	-0.000	-0.000	0.001	0.001	-0.001	0.001	0.001	-0.001	0.002
	$\sum_{h=1}^{H} r_{i,t+h} - r^f_{i,t+h} = a_i + b\text{CurrCrash}_{i,t} + u_{i,t+H}$								
b	0.06	0.06	0.14*	0.06	0.14	0.11	0.06	0.01	0.17**
	(0.04)	(0.05)	(0.07)	(0.06)	(0.10)	(0.12)	(0.04)	(0.07)	(0.09)
N	2,104	2,055	2,007	995	952	910	1,109	1,103	1,097
R^2	0.005	0.002	0.007	0.006	0.010	0.004	0.004	-0.001	0.010

Table B.2: Cumulative equity returns after select crises: 1960-2006 sample

Crisis	Asset	Mean (annul.)	Std. dev. (annul.)	% cum. drops < -0.5	Avg. cum. drop < -0.5	Diff. in means	Diff. in std. dev.	Diff. in % cum. drops < -0.5
BVX banking panics	Banks	0.162	0.86	25.0	-0.72	0.016 [0.26]	0.28	16.2*** [2.65]
	Nonfin.	0.139	0.49	3.6	-0.79	0.031 [1.31]	-0.01	-1.7 [-0.51]
LV banking crises	Banks	0.005	0.43	40.0	-0.74	-0.141*** [-2.59]	-0.15	31.2** [2.33]
	Nonfin.	0.023	0.32	20.0	-0.62	-0.084* [-1.71]	-0.17	14.7 [1.34]
Bank equity crashes	Banks	0.121	0.56	14.8	-0.68	-0.025 [-0.81]	-0.02	6.0 [1.29]
	Nonfin.	0.080	0.37	9.3	-0.69	-0.027 [-1.15]	-0.13	4.0 [1.33]
Currency crashes	Banks	0.196	0.58	8.3	-0.82	0.050 [0.80]	0.00	-0.6 [-0.10]
	Nonfin.	0.202	0.49	8.3	-0.65	0.094* [1.77]	-0.00	3.0 [0.60]
LV currency crises	Banks	0.269	1.12	13.3	-0.67	0.123 [0.88]	0.54	4.4 [0.48]
	Nonfin.	0.293	1.17	6.7	-0.61	0.186 [1.20]	0.67	1.4 [0.31]
Balance-of-payments crises	Banks	0.295	1.00	12.5	-0.84	0.149 [1.41]	0.42	3.6 [0.46]
	Nonfin.	0.361	1.25	8.3	-0.70	0.254** [2.38]	0.75	3.0 [0.59]
Nonfinancial equity crashes	Banks	0.176	0.69	9.4	-0.72	0.030 [0.74]	0.10	0.5 [0.20]
	Nonfin.	0.131	0.46	4.7	-0.68	0.024 [0.89]	-0.03	-0.6 [-0.25]
Real GDP drops	Banks	0.093	0.34	11.8	-0.75	-0.054* [-1.94]	-0.24	2.9 [0.54]
	Nonfin.	0.088	0.29	2.9	-0.64	-0.019 [-0.62]	-0.21	-2.4 [-0.81]
Consumption drops	Banks	0.131	0.38	12.5	-0.77	-0.015 [-0.55]	-0.20	3.6 [0.64]
	Nonfin.	0.111	0.33	5.0	-0.60	0.003 [0.09]	-0.17	-0.3 [-0.12]

Table B.3: Equity trading strategies around select crises: 1960-2006 sample

Crisis	Asset	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Banks	Buy and hold	0.118	0.161	0.730	0.023	0.005
						[1.254]	[0.250]
	Nonfinancials	Buy and hold	0.094	0.160	0.587	0.007	-0.003
						[0.395]	[-0.187]
BVX banking panics	Banks	6-60 months	0.114	0.240	0.476	0.028	-0.004
						[0.758]	[-0.091]
		Diff. w/ b&h	-0.004	0.079**	-0.255	0.005	-0.008
			[-0.11]	[4.90]	[0.26]	[0.18]	[-0.25]
	Nonfinancials	6-60 months	0.130	0.220	0.593	0.056	0.035
						[1.642]	[0.949]
		Diff. w/ b&h	0.036	0.060	0.006	0.049*	0.038
			[1.29]	[2.06]	[0.98]	[1.71]	[1.24]
LV banking crises	Banks	6-60 months	0.086	0.225	0.385	0.030	0.014
						[0.698]	[0.304]
		Diff. w/ b&h	-0.031	0.063	-0.346	0.008	0.009
			[-0.81]	[1.55]	[0.12]	[0.20]	[0.23]
	Nonfinancials	6-60 months	0.059	0.157	0.379	0.015	0.008
						[0.558]	[0.292]
		Diff. w/ b&h	-0.035	-0.003***	-0.208	0.008	0.011
			[-1.21]	[23.24]	[0.39]	[0.32]	[0.43]
Bank equity crashes	Banks	6-60 months	0.109	0.202	0.542	0.015	-0.007
						[0.439]	[-0.193]
		Diff. w/ b&h	-0.008	0.041	-0.189	-0.008	-0.011
			[-0.34]	[1.41]	[0.44]	[-0.30]	[-0.42]
	Nonfinancials	6-60 months	0.127	0.186	0.682	0.040	0.029
						[1.263]	[0.857]
		Diff. w/ b&h	0.033	0.026	0.095	0.033	0.032
			[1.41]	[0.22]	[0.71]	[1.29]	[1.17]
Currency crashes	Banks	6-60 months	0.187	0.269	0.698	0.122**	0.111**
						[2.480]	[2.484]
		Diff. w/ b&h	0.070	0.107***	-0.033	0.099**	0.106***
			[1.64]	[7.40]	[0.87]	[2.26]	[2.67]
	Nonfinancials	6-60 months	0.153	0.254	0.603	0.092**	0.094**
						[2.143]	[2.160]
		Diff. w/ b&h	0.059*	0.093**	0.015	0.085**	0.098**
			[1.69]	[4.47]	[0.94]	[2.26]	[2.53]
LV currency crises	Banks	6-60 months	0.160	0.294	0.545	0.084	0.083*
						[1.579]	[1.671]

Table B.3 – cont.

Crisis	Asset	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
		Diff. w/ b&h	0.043 [0.90]	0.133*** [15.46]	-0.185 [0.38]	0.061 [1.25]	0.078* [1.72]
	Nonfinancials	6-60 months	0.173	0.276	0.626	0.108** [2.422]	0.111** [2.452]
		Diff. w/ b&h	0.078** [2.06]	0.115*** [11.68]	0.039 [0.88]	0.101** [2.54]	0.114*** [2.82]
Balance-of-payments crises	Banks	6-60 months	0.090	0.223	0.404	0.013 [0.334]	0.016 [0.414]
		Diff. w/ b&h	-0.028 [-0.76]	0.061 [0.80]	-0.326 [0.15]	-0.010 [-0.26]	0.012 [0.31]
	Nonfinancials	6-60 months	0.106	0.180	0.586	0.042 [1.290]	0.043 [1.344]
		Diff. w/ b&h	0.012 [0.37]	0.020 [0.34]	-0.001 [1.00]	0.035 [1.22]	0.047 [1.62]
Nonfin. equity crashes	Banks	6-60 months	0.139	0.210	0.663	0.026 [0.803]	0.012 [0.354]
		Diff. w/ b&h	0.022 [0.90]	0.049*** [6.75]	-0.067 [0.75]	0.004 [0.15]	0.008 [0.29]
	Nonfinancials	6-60 months	0.127	0.200	0.636	0.017 [0.528]	0.007 [0.194]
		Diff. w/ b&h	0.033* [1.69]	0.040** [5.80]	0.049 [0.83]	0.010 [0.43]	0.010 [0.39]
Real GDP drops	Banks	6-60 months	0.141	0.237	0.593	0.048 [1.292]	0.033 [0.865]
		Diff. w/ b&h	0.023 [0.77]	0.076*** [9.40]	-0.137 [0.55]	0.025 [0.80]	0.028 [0.90]
	Nonfinancials	6-60 months	0.112	0.202	0.554	0.023 [0.787]	0.013 [0.419]
		Diff. w/ b&h	0.018 [0.79]	0.042 [0.81]	-0.033 [0.89]	0.016 [0.65]	0.016 [0.62]
Cons. drops	Banks	6-60 months	0.167	0.221	0.754	0.067** [2.034]	0.052 [1.560]
		Diff. w/ b&h	0.049* [1.85]	0.060*** [17.10]	0.023 [0.92]	0.044* [1.74]	0.048* [1.88]
	Nonfinancials	6-60 months	0.148	0.200	0.740	0.051* [1.875]	0.038 [1.344]
		Diff. w/ b&h	0.054*** [2.64]	0.040*** [8.45]	0.153 [0.52]	0.044** [2.21]	0.042* [1.90]

Table B.4: Cumulative equity returns after select crises: Advanced economies

Crisis	Asset	Mean (annul.)	Std. dev. (annul.)	% cum. drops < -0.5	Avg. cum. drop < -0.5	Diff. in means	Diff. in std. dev.	Diff. in % cum. drops < -0.5
BVX banking panics	Banks	0.074	0.73	27.8	-0.77	-0.046 [-0.60]	0.21	18.3*** [3.15]
	Nonfin.	0.143	0.33	0.0		0.031 [1.17]	-0.11	-1.6*** [-2.99]
LV banking crises	Banks	-0.052	0.27	40.9	-0.72	-0.172*** [-7.08]	-0.25	31.4*** [6.98]
	Nonfin.	0.095	0.26	0.0		-0.018 [-0.77]	-0.19	-1.6*** [-2.99]
Bank equity crashes	Banks	0.122	0.53	12.5	-0.81	0.003 [0.08]	0.01	2.9 [0.52]
	Nonfin.	0.136	0.40	0.0		0.023 [0.86]	-0.04	-1.6*** [-2.99]
Currency crashes	Banks	0.320	0.53	0.0		0.200** [2.52]	0.01	-9.6*** [-5.71]
	Nonfin.	0.289	0.43	0.0		0.176*** [3.74]	-0.01	-1.6*** [-2.99]
LV currency crises	Banks	0.557	1.61	0.0		0.438 [1.52]	1.09	-9.6*** [-5.71]
	Nonfin.	0.709	1.69	0.0		0.597** [1.97]	1.25	-1.6*** [-2.99]
Balance-of-payments crises	Banks	0.486	1.06	0.0		0.367*** [3.81]	0.54	-9.6*** [-5.72]
	Nonfin.	0.507	1.16	0.0		0.395*** [2.83]	0.72	-1.6*** [-2.99]
Nonfinancial equity crashes	Banks	0.151	0.56	7.2	-0.71	0.032 [0.78]	0.04	-2.3 [-0.63]
	Nonfin.	0.162	0.43	0.0		0.050** [2.02]	-0.01	-1.6*** [-2.99]
Real GDP drops	Banks	0.104	0.46	14.9	-0.73	-0.015 [-0.27]	-0.06	5.3 [0.90]
	Nonfin.	0.119	0.28	2.1	-0.51	0.007 [0.20]	-0.17	0.5 [0.31]
Consumption drops	Banks	0.134	0.43	11.1	-0.70	0.015 [0.46]	-0.09	1.5 [0.53]
	Nonfin.	0.155	0.33	0.0		0.043 [1.26]	-0.11	-1.6*** [-2.99]

Table B.5: Cumulative equity returns after select crises: Developing economies

Crisis	Asset	Mean (annul.)	Std. dev. (annul.)	% cum. drops < -0.5	Avg. cum. drop < -0.5	Diff. in means	Diff. in std. dev.	Diff. in % cum. drops < -0.5
BVX banking panics	Banks	0.074	0.73	27.8	-0.77	-0.046 [-0.60]	0.21	18.3*** [3.15]
	Nonfin.	0.143	0.33	0.0		0.031 [1.17]	-0.11	-1.6*** [-2.99]
LV banking crises	Banks	-0.052	0.27	40.9	-0.72	-0.172*** [-7.08]	-0.25	31.4*** [6.98]
	Nonfin.	0.095	0.26	0.0		-0.018 [-0.77]	-0.19	-1.6*** [-2.99]
Bank equity crashes	Banks	0.122	0.53	12.5	-0.81	0.003 [0.08]	0.01	2.9 [0.52]
	Nonfin.	0.136	0.40	0.0		0.023 [0.86]	-0.04	-1.6*** [-2.99]
Currency crashes	Banks	0.320	0.53	0.0		0.200** [2.52]	0.01	-9.6*** [-5.71]
	Nonfin.	0.289	0.43	0.0		0.176*** [3.74]	-0.01	-1.6*** [-2.99]
LV currency crises	Banks	0.557	1.61	0.0		0.438 [1.52]	1.09	-9.6*** [-5.71]
	Nonfin.	0.709	1.69	0.0		0.597** [1.97]	1.25	-1.6*** [-2.99]
Balance-of-payments crises	Banks	0.486	1.06	0.0		0.367*** [3.81]	0.54	-9.6*** [-5.72]
	Nonfin.	0.507	1.16	0.0		0.395*** [2.83]	0.72	-1.6*** [-2.99]
Nonfinancial equity crashes	Banks	0.151	0.56	7.2	-0.71	0.032 [0.78]	0.04	-2.3 [-0.63]
	Nonfin.	0.162	0.43	0.0		0.050** [2.02]	-0.01	-1.6*** [-2.99]
Real GDP drops	Banks	0.104	0.46	14.9	-0.73	-0.015 [-0.27]	-0.06	5.3 [0.90]
	Nonfin.	0.119	0.28	2.1	-0.51	0.007 [0.20]	-0.17	0.5 [0.31]
Consumption drops	Banks	0.134	0.43	11.1	-0.70	0.015 [0.46]	-0.09	1.5 [0.53]
	Nonfin.	0.155	0.33	0.0		0.043 [1.26]	-0.11	-1.6*** [-2.99]

Table B.6: Equity trading strategies around select crises: Advanced countries

Crisis	Asset	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Banks	Buy and hold	0.088	0.196	0.451	-0.019 [-0.974]	-0.039** [-2.294]
	Nonfinancials	Buy and hold	0.080	0.167	0.481	-0.006 [-0.494]	-0.009 [-0.786]
BVX banking panics	Banks	6-60 months	0.062	0.286	0.217	-0.031 [-0.654]	-0.052 [-1.023]
		Diff. w/ b&h	-0.026 [-0.73]	0.090** [5.71]	-0.234 [0.28]	-0.013 [-0.27]	-0.013 [-0.27]
	Nonfinancials	6-60 months	0.124	0.207	0.598	0.058* [1.913]	0.053* [1.751]
		Diff. w/ b&h	0.043* [1.65]	0.040 [0.17]	0.117 [0.57]	0.064** [2.16]	0.062** [2.10]
LV banking crises	Banks	6-60 months	-0.006	0.221	-0.028	-0.065* [-1.651]	-0.091** [-2.292]
		Diff. w/ b&h	-0.095*** [-2.68]	0.025*** [12.52]	-0.478** [0.02]	-0.047 [-1.32]	-0.052 [-1.45]
	Nonfinancials	6-60 months	0.014	0.132	0.105	-0.033 [-1.513]	-0.037* [-1.675]
		Diff. w/ b&h	-0.066*** [-2.76]	-0.035*** [79.02]	-0.376* [0.07]	-0.027 [-1.29]	-0.028 [-1.29]
Bank equity crashes	Banks	6-60 months	0.059	0.243	0.242	-0.047 [-1.246]	-0.070* [-1.875]
		Diff. w/ b&h	-0.029 [-1.00]	0.047 [2.17]	-0.208 [0.35]	-0.029 [-0.89]	-0.031 [-0.95]
	Nonfinancials	6-60 months	0.107	0.191	0.562	0.020 [0.866]	0.019 [0.788]
		Diff. w/ b&h	0.027 [1.39]	0.024 [0.85]	0.080 [0.72]	0.026 [1.28]	0.028 [1.35]
Currency crashes	Banks	6-60 months	0.112	0.205	0.548	0.053 [1.632]	0.048 [1.458]
		Diff. w/ b&h	0.024 [0.75]	0.009*** [11.98]	0.097 [0.64]	0.072** [2.16]	0.087** [2.54]
	Nonfinancials	6-60 months	0.085	0.165	0.513	0.028 [1.099]	0.037 [1.508]
		Diff. w/ b&h	0.004 [0.18]	-0.002*** [19.56]	0.032 [0.87]	0.034 [1.34]	0.046* [1.90]
LV currency crises	Banks	6-60 months	0.081	0.258	0.313	0.030 [0.810]	0.046 [1.160]

Table B.6 – cont.

Crisis	Asset	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
		Diff. w/ b&h	-0.008 [-0.17]	0.061*** [11.51]	-0.138 [0.50]	0.049 [1.19]	0.085** [2.03]
	Nonfinancials	6-60 months	0.106	0.214	0.496	0.059* [1.822]	0.082** [2.549]
		Diff. w/ b&h	0.026 [0.72]	0.047*** [10.34]	0.015 [0.94]	0.065** [1.97]	0.091*** [2.74]
Balance-of-payments crises	Banks	6-60 months	0.075	0.168	0.445	0.041 [1.508]	0.047* [1.716]
		Diff. w/ b&h	-0.014 [-0.37]	-0.028*** [46.43]	-0.006 [0.98]	0.059* [1.77]	0.085*** [2.63]
	Nonfinancials	6-60 months	0.075	0.132	0.572	0.042** [1.968]	0.048** [2.174]
		Diff. w/ b&h	-0.005 [-0.18]	-0.035*** [64.99]	0.091 [0.66]	0.048** [2.06]	0.057** [2.39]
Nonfin. equity crashes	Banks	6-60 months	0.130	0.211	0.618	0.036 [1.287]	0.021 [0.758]
		Diff. w/ b&h	0.042* [1.84]	0.015 [0.03]	0.167 [0.44]	0.054* [1.92]	0.060** [2.06]
	Nonfinancials	6-60 months	0.123	0.191	0.643	0.035 [1.280]	0.033 [1.206]
		Diff. w/ b&h	0.042** [2.24]	0.024 [0.87]	0.161 [0.49]	0.041 [1.64]	0.043* [1.68]
Real GDP drops	Banks	6-60 months	0.054	0.217	0.249	-0.037 [-1.328]	-0.052* [-1.884]
		Diff. w/ b&h	-0.034 [-1.55]	0.021 [1.13]	-0.202 [0.33]	-0.018 [-0.81]	-0.013 [-0.57]
	Nonfinancials	6-60 months	0.062	0.175	0.355	-0.015 [-0.741]	-0.013 [-0.619]
		Diff. w/ b&h	-0.018 [-0.91]	0.008** [5.30]	-0.126 [0.57]	-0.010 [-0.49]	-0.004 [-0.18]
Cons. drops	Banks	6-60 months	0.113	0.224	0.506	0.012 [0.470]	-0.002 [-0.071]
		Diff. w/ b&h	0.025 [1.24]	0.028** [4.32]	0.055 [0.81]	0.031 [1.55]	0.037* [1.82]
	Nonfinancials	6-60 months	0.127	0.186	0.680	0.041** [2.115]	0.042** [2.126]
		Diff. w/ b&h	0.046*** [2.80]	0.020* [3.58]	0.199 [0.35]	0.047*** [2.91]	0.051*** [3.08]

Table B.7: Equity trading strategies around select crises: Developing countries

Crisis	Asset	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
N/A	Banks	Buy and hold	0.104	0.204	0.512	0.037	0.034
						[1.102]	[1.021]
	Nonfinancials	Buy and hold	0.112	0.212	0.526	0.045	0.045
						[1.141]	[1.140]
BVX banking panics	Banks	6-60 months	0.107	0.302	0.354	0.053	0.045
						[1.044]	[0.885]
		Diff. w/ b&h	0.003	0.099	-0.158	0.016	0.011
			[0.07]	[0.58]	[0.45]	[0.36]	[0.24]
	Nonfinancials	6-60 months	0.086	0.263	0.327	0.042	0.034
						[1.007]	[0.817]
		Diff. w/ b&h	-0.026	0.051	-0.200	-0.004	-0.010
			[-0.62]	[0.30]	[0.32]	[-0.08]	[-0.21]
LV banking crises	Banks	6-60 months	0.095	0.233	0.408	0.041	0.037
						[1.138]	[0.990]
		Diff. w/ b&h	-0.009	0.030***	-0.104	0.004	0.003
			[-0.27]	[18.76]	[0.57]	[0.11]	[0.07]
	Nonfinancials	6-60 months	0.054	0.172	0.313	0.010	0.005
						[0.383]	[0.173]
		Diff. w/ b&h	-0.058	-0.040***	-0.213	-0.036	-0.040
			[-1.53]	[45.83]	[0.29]	[-0.81]	[-0.89]
Bank equity crashes	Banks	6-60 months	0.099	0.202	0.490	0.047	0.042
						[1.330]	[1.177]
		Diff. w/ b&h	-0.005	-0.002***	-0.022	0.010	0.007
			[-0.19]	[18.57]	[0.90]	[0.32]	[0.23]
	Nonfinancials	6-60 months	0.059	0.161	0.366	0.015	0.011
						[0.536]	[0.415]
		Diff. w/ b&h	-0.053	-0.051***	-0.161	-0.031	-0.033
			[-1.52]	[36.47]	[0.43]	[-0.80]	[-0.87]
Currency crashes	Banks	6-60 months	0.133	0.302	0.439	0.088*	0.084*
						[1.729]	[1.654]
		Diff. w/ b&h	0.028	0.098	-0.073	0.052	0.049
			[0.66]	[1.09]	[0.73]	[1.09]	[1.05]
	Nonfinancials	6-60 months	0.118	0.276	0.428	0.078*	0.076*
						[1.718]	[1.682]
		Diff. w/ b&h	0.007	0.064	-0.099	0.032	0.032
			[0.15]	[0.08]	[0.62]	[0.64]	[0.63]
LV currency crises	Banks	6-60 months	0.145	0.321	0.452	0.116**	0.119**
						[2.117]	[2.215]

Table B.7 – cont.

Crisis	Asset	Holding period	Mean	Volatility	Sharpe ratio	US + Intl CAPM α	Fama-French + Intl α
		Diff. w/ b&h	0.041 [0.83]	0.117* [2.78]	-0.061 [0.76]	0.079 [1.48]	0.085 [1.61]
	Nonfinancials	6-60 months	0.103	0.281	0.367	0.074 [1.551]	0.078* [1.662]
		Diff. w/ b&h	-0.008 [-0.18]	0.069 [0.25]	-0.159 [0.43]	0.028 [0.54]	0.034 [0.65]
Balance-of-payments crises	Banks	6-60 months	0.039	0.180	0.219	0.014 [0.465]	0.018 [0.600]
		Diff. w/ b&h	-0.065* [-1.85]	-0.024*** [55.15]	-0.293 [0.17]	-0.023 [-0.66]	-0.016 [-0.48]
	Nonfinancials	6-60 months	0.073	0.181	0.402	0.052 [1.590]	0.055* [1.696]
		Diff. w/ b&h	-0.039 [-0.97]	-0.031*** [40.36]	-0.124 [0.56]	0.007 [0.17]	0.011 [0.26]
Nonfin. equity crashes	Banks	6-60 months	0.115	0.243	0.473	0.059 [1.500]	0.060 [1.505]
		Diff. w/ b&h	0.011 [0.42]	0.039 [0.59]	-0.039 [0.84]	0.022 [0.74]	0.026 [0.83]
	Nonfinancials	6-60 months	0.098	0.204	0.481	0.047 [1.427]	0.048 [1.472]
		Diff. w/ b&h	-0.014 [-0.40]	-0.008*** [6.67]	-0.045 [0.84]	0.001 [0.03]	0.004 [0.09]
Real GDP drops	Banks	6-60 months	0.087	0.201	0.433	0.049 [1.468]	0.052 [1.550]
		Diff. w/ b&h	-0.017 [-0.50]	-0.002*** [32.80]	-0.079 [0.71]	0.012 [0.32]	0.018 [0.47]
	Nonfinancials	6-60 months	0.057	0.160	0.354	0.023 [0.937]	0.026 [1.040]
		Diff. w/ b&h	-0.055 [-1.40]	-0.052*** [58.74]	-0.172 [0.37]	-0.022 [-0.52]	-0.019 [-0.44]
Cons. drops	Banks	6-60 months	0.108	0.219	0.493	0.052 [1.495]	0.057 [1.589]
		Diff. w/ b&h	0.003 [0.12]	0.015** [4.59]	-0.019 [0.93]	0.015 [0.44]	0.022 [0.63]
	Nonfinancials	6-60 months	0.097	0.187	0.518	0.045 [1.475]	0.048 [1.533]
		Diff. w/ b&h	-0.015 [-0.42]	-0.025*** [13.98]	-0.008 [0.97]	-0.000 [-0.01]	0.003 [0.08]

Table C.1: Data sources

Panel A: Bank equity returns

Country	Total coverage	Total returns	Price returns	Dividend returns
Argentina	1993/9-2016/12	Datastream (BANKSAR)		Datastream (BANKSAR)
Australia	1960/4-1973/1		"S&P/ASX 200 Banking Index" (_AXBAJD) from GFD	Baron-Xiong
	1973/2-2016/12	Datastream (BANKSAU)		Datastream (BANKSAU)
Austria	1986/8-2016/12	Datastream (BANKSOE)		Datastream (BANKSOE)
Belgium	1973/2-2016/12	Datastream (BANKSBG)		Datastream (BANKSBG)
Brazil	1994/8-2016/12	Datastream (BANKSBR)		Datastream (BANKSBR)
Canada	1973/2-2015/12	Datastream (BANKSCN)		Datastream (BANKSCN)
Chile	1989/8-2016/12	Datastream (BANKSCL)		Datastream (BANKSCL)
Colombia	1993/1-2016/12	Datastream (BANKSCB)		Datastream (BANKSCB)
Czech	1994/4-2016/12	Datastream (BANKSCZ)		Datastream (BANKSCZ)
Denmark	1976/1-2016/12	Datastream (BANKSDK)		Datastream (BANKSDK)
Egypt	1996/10-2016/12	Datastream (BANKSEY)		Datastream (BANKSEY)
Finland	1977/12-2009/9		OMX Helsinki Banks Price Index (_HX4010D) from GFD	Baron-Verner-Xiong
	2009/10-2015/1	Datastream (BANKSFN)		Datastream (BANKSFN)
France	1960/2-1986/6		"France INSEE Credit Banks" (FRBANKCM) price index from GFD	Baron-Xiong
	1986/7-2016/12	Datastream (BANKSFR)		Datastream (BANKSFR)
Germany	1960-1973		"CDAX Banks Price" (_CXKBXD) index from GFD	Baron-Xiong
	1973-2016		"CDAX Banks Price" (_CXKBXD) index from GFD	Datastream (BASNKBD)
Greece	1990/2-2016/12	Datastream (BANKSGR)		Datastream (BANKSGR)
Hong Kong	1973/2-2016/12	Datastream (BANKSHK)		Datastream (BANKSHK)
Hungary	1994/8-1998/12	Datastream (BANKSHN)		Datastream (BANKSHN)
	1999/1-2016/12	Datastream (F3HGB3L)		Datastream (F3HGB3L)
India	1994/4-2016/12	Datastream (F3INB3L)		Datastream (F3INB3L)
Indonesia	1990/5-2016/12	Datastream (BANKSID)		Datastream (BANKSID)
Ireland	1973/2-2016/12	Datastream (BANKSIR)		Datastream (BANKSIR)
Israel	1993/2-2016/12	Datastream (BANKSIS)		Datastream (BANKSIS)
Italy	1973/2-2016/12	Datastream (BANKSIT)		Datastream (BANKSIT)
Japan	1973/2-2016/12	Datastream (BANKSJP)		Datastream (BANKSJP)

Panel A – cont.

Country	Total coverage	Total returns	Price returns	Dividend returns
Korea	1987/10-2016/12	Datastream (BANKSKO)		Datastream (BANKSKO)
Luxembourg	1992/2-2016/12	Datastream (BANKSLX)		Datastream (BANKSLX)
Malaysia	1986/2-2016/12	Datastream (BANKSMY)		Datastream (BANKSMY)
Mexico	1993/1-2016/12	Datastream (BANKSMX)		Datastream (BANKSMX)
Netherlands	1973/2-2016/12	Datastream (BANKSNL)		Datastream (BANKSNL)
Norway	1990/2-2016/12	Datastream (BANKSNW)		Datastream (BANKSNW)
Peru	1994/2-2015/9	Datastream (BANKSPE)		Datastream (BANKSPE)
Philippines	1990/1-2016/12	Datastream (BANKSPH)		Datastream (BANKSPH)
Portugal	1990/4-2014/8	Datastream (BANKSPT)		Datastream (BANKSPT)
Russia	1998/5-2016/12	Datastream (BANKSRS)		Datastream (BANKSRS)
Singapore	1973/8-2016/12	Datastream (BANKSSG)		Datastream (BANKSSG)
South Africa	1980/1-1986/10		"FTSE/JSE Africa Banks" (_JBANKD) index from GFD	Baron-Verner-Xiong
	1986/11-2016/12	Datastream (BANKSSA)		Datastream (BANKSSA)
Spain	1982/7-1987/3		"Madrid SE Banking and Finance" (_IBAN_MD) from GFD	Baron-Xiong
	1987/4-2016/12	Datastream (BANKSES)		Datastream (BANKSES)
Sweden	1960/2-1982/1		"Stockholm SX Banks Price" (_SX4010D) index from GFD	Baron-Xiong
	1982/2-2016/12	Datastream (BANKSSD)		Datastream (BANKSSD)
Switzerland	1973/5-2016/12	Datastream (BANKSSW)		Datastream (BANKSSW)
Taiwan	1988/6-2016/12	Datastream (BANKSTA)		Datastream (BANKSTA)
Thailand	1977/1-1987/1		Thailand SET Banks (_SETBD) index from GFD	Baron-Verner-Xiong
	1987/2-2016/12	Datastream (BANKSTH)		Datastream (BANKSTH)
Turkey	1990/4-2016/12	Datastream (BANKSTK)		Datastream (BANKSTK)
United Kingdom	1960/2-1965/1		"UK FT-Actuaries Banks" (_LCBKD) from GFD	Baron-Xiong
	1965/2-2016/12		"UK FT-Actuaries Banks" (_LCBKD) from GFD	Datastream (BANKSUK)
United States	1960/2-1973/1		"S&P 500 Banks Index" (_5SP4010) from GFD	Baron-Xiong
	1973/2-2016/12		"S&P 500 Banks Index" (_5SP4010) from GFD	Datastream (BANKSUS)
Venezuela	1994/6-2015/9	Datastream (BANKSVE)		Datastream (BANKSVE)

Panel B: Nonfinancial equity returns

Country	Total coverage	Total returns	Price returns	Dividend returns
Argentina	1993/9-2016/12	Datastream (TOTLIAR)		Datastream (TOTLIAR)
Australia	1960/4-1973/1		"Sydney SE Industrial and Commercial" (AUINCM) price index from GFD	Australia ASX Dividend Yield (SYAUSYM)
	1973/2-2016/12	Datastream (TOTLIAU)		Datastream (TOTLIAU)
Austria	1986/8-2016/12	Datastream (TOTLIOE)		Datastream (TOTLIOE)
Belgium	1973/2-2016/12	Datastream (TOTLIBG)		Datastream (TOTLIBG)
Brazil	1994/8-2016/12	Datastream (TOTLIBR)		Datastream (TOTLIBR)
Canada	1973/2-2015/12	Datastream (TTOCOMP)		Datastream (TTOCOMP)
Chile	1989/8-2016/12	Datastream (TOTLICL)		Datastream (TOTLICL)
Colombia	1993/1-2016/12	Datastream (TOTLICB)		Datastream (TOTLICB)
Czech	1994/4-2016/12	Datastream (TOTLICZ)		Datastream (TOTLICZ)
Denmark	1976/1-2016/12	Datastream (TOTLIDK)		Datastream (TOTLIDK)
Egypt	1996/10-2016/12	Datastream (TOTLIEY)		Datastream (TOTLIEY)
Finland	1977/12-1988/3		"Finland Unitas Industrials Index" (FIUINDUD) price index from GFD	Finland Dividend Yield (SYFINYM) from GFD
	1988/4-2015/1	Datastream (TOTLIFN)		Datastream (TOTLIFN)
France	1960/2-1973/1		Euronext Paris CAC Construction and Materials (_FRCMD) from GFD	France Dividend Yield (SYFRAYM) from GFD
	1973/2-2016/12	Datastream (TOTLIFR)		Datastream (TOTLIFR)
Germany	1960/1-1973/1		"Germany CDAX Industrials" (_CXKNXD) index from GFD	Germany Dividend Yield (SYDEUYM) from GFD
	1973/2-2016/12		"Germany CDAX Industrials" (_CXKNXD) index from GFD	Datastream (TOTLIBD)
Greece	1990/2-2016/12	Datastream (TOTLIGR)		Datastream (TOTLIGR)
Hong Kong	1973/2-2016/12	Datastream (TOTLIHK)		Datastream (TOTLIHK)
Hungary	1994/8-2016/12	Datastream (TOTLIHN)		Datastream (TOTLIHN)
India	1994/4-2016/12	Datastream (TOTLIIN)		Datastream (TOTLIIN)
Indonesia	1990/5-2016/12	Datastream (TOTLIID)		Datastream (TOTLIID)
Ireland	1973/2-2016/12	Datastream (TOTLIIR)		Datastream (TOTLIIR)
Israel	1993/2-2016/12	Datastream (TOTLIIS)		Datastream (TOTLIIS)
Italy	1973/2-2016/12	Datastream (TOTLIIT)		Datastream (TOTLIIT)
Japan	1973/2-2016/12	Datastream (TOTLIJP)		Datastream (TOTLIJP)
Korea	1987/10-2016/12	Datastream (TOTLIKO)		Datastream (TOTLIKO)

Panel B – cont.

Country	Total coverage	Total returns	Price returns	Dividend returns
Luxembourg	1992/2-2016/12	Datastream (TOTLILX)		Datastream (TOTLILX)
Malaysia	1986/2-2016/12	Datastream (TOTLIMY)		Datastream (TOTLIMY)
Mexico	1993/1-2016/12	Datastream (TOTLIMX)		Datastream (TOTLIMX)
Netherlands	1973/2-2016/12	Datastream (TOTLINL)		Datastream (TOTLINL)
Norway	1990/2-2016/12	Datastream (TOTLINW)		Datastream (TOTLINW)
Peru	1994/2-2015/9	Datastream (TOTLIPE)		Datastream (TOTLIPE)
Philippines	1990/1-2016/12	Datastream (TOTLIPH)		Datastream (TOTLIPH)
Portugal	1990/4-2014/8	Datastream (TOTLIPT)		Datastream (TOTLIPT)
Russia	1998/5-2016/12	Datastream (TOTLIRS)		Datastream (TOTLIRS)
Singapore	1973/8-2016/12	Datastream (TOTLISG)		Datastream (TOTLISG)
South Africa	1980/1-2016/12	Datastream (TOTLISA)		Datastream (TOTLISA)
Spain	1982/7-1987/3		"Madrid SE Metals" (_IMET_MD) price index from GFD	Madrid SE Dividend Yield (SYESPYM) from GFD
	1987/4-2016/12	Datastream (TOTLIES)		Datastream (TOTLIES)
Sweden	1960/2-1982/1		"Stockholm SX Industrials Price Index" (_SX20PID) price index from GFD	Stockholm SE Dividend Yield (SYSWEYM) from GFD
	1982/2-2016/12	Datastream (TOTLISD)		Datastream (TOTLISD)
Switzerland	1973/5-2016/12	Datastream (TOTLISW)		Datastream (TOTLISW)
Taiwan	1988/6-2016/12	Datastream (TOTLITA)		Datastream (TOTLITA)
Thailand	1977/1-1987/1		Thailand SET Commerce Index (_SETCD) from GFD	Thailand Dividend Yield (SYTHAYM) from GFD
	1987/2-2016/12	Datastream (TOTLITH)		Datastream (TOTLITH)
Turkey	1990/4-2016/12	Datastream (TOTLITK)		Datastream (TOTLITK)
United Kingdom	1960/2-1965/1		FTSE All-Share Industrials (_FTASX2000) index from GFD	UK FT-Actuaries Dividend Yield (_DFTASD) from GFD
	1965/2-2016/12		FTSE All-Share Industrials (_FTASX2000) index from GFD	Datastream (TOTLIUK)
United States	1960/2-1973/1		S&P 500 Industrials (_5SP20) index from GFD	S&P Industrials Dividend Yield (SPYINDW) from GFD
	1973/2-2016/12		S&P 500 Industrials (_5SP20) index from GFD	Datastream (TOTLIUS)
Venezuela	1994/6-2015/9	Datastream (TOTLIVE)		Datastream (TOTLIVE)

Panel C: Returns on other asset classes

Country	JPM EMBI sovereign bonds		Residential real estate	
	Coverage	Source	Coverage	Source
Argentina	02/1994-12/2016	Datastream (JPMGARG)		
Australia			1970-2016	JST
Austria			2001-2016	BIS
Belgium			1970-2016	JST
Brazil	08/1994-12/2016	Datastream (JPMGBRA)	2002-2015	BIS
Canada			1970-2016	JST
Chile	07/1999-12/2016	Datastream (JPMGCHI)	2003-2015	BIS
Colombia	04/1997-12/2016	Datastream (JPMGCOL)	2001-2015	BIS
Czech			2009-2015	BIS
Denmark			1976-2016	JST
Egypt	09/2001-12/2016	Datastream (JPMGEGY)		
Finland			1977-2016	JST
France			1970-2016	JST
Germany			1970-2016	JST
Greece			2007-2015	BIS
Hong Kong			1980-2016	BIS
Hungary	03/1999-12/2016	Datastream (JPMGHUN)	2008-2015	BIS
India	12/2012-12/2016	Datastream (JPMGINA)	2010-2015	BIS
Indonesia	07/2004-12/2016	Datastream (JPMGIND)	2003-2015	BIS
Ireland			1973-2016	BIS
Israel			1995-2016	BIS
Italy			1970-2016	JST
Japan			1970-2016	JST
Korea			1987-2015	BIS
Luxembourg			2008-2015	BIS
Malaysia	12/1996-12/2016	Datastream (JPMGMAL)	1989-2015	BIS
Mexico	02/1994-12/2016		2006-2016	BIS
Netherlands			1970-2016	JST
Norway			1984-2016	JST
Peru	02/1994-09/2015	Datastream (JPMGPER)	1999-2014	BIS
Philippines	02/1994-12/2016	Datastream (JPMGPHL)	2009-2015	BIS
Portugal			1988-2014	BIS
Russia	05/1998-12/2016	Datastream (JPMGRUS)	2002-2015	BIS
Singapore			1970-2016	BIS
South Africa	02/1995-12/2016	Datastream (JPMGSAF)	1999-2016	BIS
Spain			1982-2016	JST
Sweden			1970-	JST
Switzerland			1973-2016	JST
Taiwan				
Thailand			1992-2015	BIS
Turkey	08/1996-12/2016	Datastream (JPMGTUR)	2011-2015	BIS
United Kingdom			1970-2016	JST
United States			1970-2016	JST
Venezuela	06/1994-09/2015	Datastream (JPMGVEN)		

Panel D: Other variables

Indicator	Source
Short-term interest rate	3-month Treasury Bill Yield (IT***3D) from GFD, except: • Indonesia 2009-2012 – 3-month JIBOR (JIIDR3MD) from GFD • Ireland 2008-2016 – 3-month Interbank Rate (IBIRL3D) from GFD • Luxembourg – Interbank Offer Rate (IBLUXM) from GFD • Russia 1992-04/1995 – Central Bank Policy Rate (RSBCBPR) from Datastream • Russia 05/1995-2001 – Ruble 3-month Deposit Rate (RBDEP3M) from Datastream • Singapore 1973-1987 – 3-month SIBOR (IBSGP3D) from GFD • Switzerland 1973-1979 – 3-month Interbank Rate (IBCHE3D) from GFD
Inflation	Consumer Price Index Inflation Rate (CP***M) from GFD
Exchange rate (USDLCU)	Local currency per US dollar (USD***) from GFD
Real GDP	GDP (constant LCU) from World Development Indicators
Consumption expenditure	Final consumption expenditure (constant LCU) from World Development Indicators
Primary balance (% GDP)	Primary net lending/borrowing as % of GDP from IMF
Monetary rate	Central Bank Discount/Repo/Lending Rate from GFD

Table C.2: Financial crises tabulated

Country	BVX banking panics	LV banking crises	LV currency crises	Balance-of-payments crises
Argentina	3/1980, 5/1985, 4/1989, 12/1994, 3/2001	3/1980, 12/1989, 1/1995, 11/2001	3/1975, 4/1981, 5/1987, 1/2002, 12/2013	6/1970, 6/1975, 2/1981, 7/1982, 9/1986, 4/1989, 2/1990
Australia	3/1990			
Austria	9/2008	9/2008		
Belgium	9/2008	9/2008		
Brazil	9/1985, 2/1990, 7/1994	2/1990, 12/1994	4/1976, 1/1982, 6/1987, 3/1992, 1/1999, 3/2015	2/1983, 11/1986, 7/1989, 11/1990, 10/1991
Canada	7/1982			
Chile	6/1975, 9/1981	11/1981	1/1972, 9/1982	12/1971, 8/1972, 10/1973, 12/1974, 1/1976, 8/1982, 9/1984
Colombia	6/1998	7/1982, 6/1998	5/1985	3/1983, 2/1985
Czech	4/1994, 6/2000	6/1996		
Denmark	9/2008	9/2008		5/1971, 6/1973, 11/1979, 8/1993
Egypt			1/1979, 1/1990, 11/2016	
Finland	9/1991	9/1991	3/1993	6/1973, 10/1982, 11/1991, 9/1992
France	9/2008	9/2008		
Germany	9/2008	9/2008		
Greece	9/2008, 8/2011	9/2008	1/1983	
Hong Kong	9/1983, 1/1998			
Hungary	2/1997, 9/2008	9/2008		
India				
Indonesia	11/1992, 1/1998	11/1997	1/1979, 1/1998	11/1978, 4/1983, 9/1986, 8/1997
Ireland	9/2008, 11/2010	9/2008		
Israel	10/1983		1/1975, 1/1980, 1/1985	11/1974, 11/1977, 10/1983, 7/1984
Italy	9/2008	9/2008	4/1981	
Japan	11/1997	11/1997		
Korea			1/1998	
Luxembourg	9/2008	9/2008		
Malaysia	7/1985, 8/1997	7/1997	1/1998	7/1975, 8/1997

Table C.2 – cont.

Country	BVX banking panics	LV banking crises	LV currency crises	Balance-of-payments crises
Mexico	9/1982, 12/1994	12/1994	1/1977, 2/1982, 1/1995	9/1976, 2/1982, 12/1982, 12/1994
Netherlands	9/2008	9/2008		
Norway	10/1991, 9/2008	10/1991		6/1973, 2/1978, 5/1986, 12/1992
Peru			6/1976, 1/1981, 1/1988	6/1976, 10/1987
Philippines	6/1974, 1/1981	7/1997	10/1983, 1/1998	2/1970, 10/1983, 6/1984, 7/1997
Portugal	9/2008	9/2008	1/1983	
Russia	8/1995, 8/1998, 9/2008	8/1998, 9/2008	8/1998, 10/2014	
Singapore				
South Africa			7/1984, 11/2015	
Spain	9/2008	9/2008	1/1983	2/1976, 7/1977, 12/1982, 2/1986, 9/1992, 5/1993
Sweden	9/1992, 9/2008	9/1991, 9/2008	2/1993	8/1977, 9/1981, 10/1982, 11/1992
Switzerland	10/1991, 9/2008	9/2008		
Taiwan	8/1985, 7/1995			
Thailand	10/1983, 5/1996	7/1997	1/1998	11/1978, 7/1981, 11/1984, 7/1997
Turkey	11/1983, 1/1991, 4/1994, 11/2000	11/2000	3/1978, 1/1984, 2/1991, 4/1996, 3/2001	8/1970, 1/1980, 3/1994
UK	2/1974, 7/1991, 9/2008	9/2007		
US	5/1984, 9/2008	12/2007		
Venezuela	12/1978, 10/1993, 11/2009	1/1994	2/1984, 3/1989, 5/1994, 2/2002, 1/2010	2/1984, 12/1986, 3/1989, 5/1994, 12/1995
Total	69	40	53	75

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