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Financial Stress and Economic Activity

Evidence from a New Worldwide Index

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Financial Stress and Economic Activity: Evidence from a New Worldwide Index

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ABSTRACT: This paper uses text analysis to construct a continuous financial stress index (FSI) for 110 countries over each quarter during the period 1967-2018. It relies on a computer algorithm along with human expert oversight and is thus easy to update. The new indicator has a larger country and time coverage and higher frequency than similar measures focusing on advanced economies. And it complements existing binary chronologies in that it can assess the severity of financial crises. We use the indicator to assess the impact of financial stress on the economy using both country- and firm-level data. Our main findings are fivefold: i) consistent with existing literature, we show an economically significant and persistent relationship between financial stress and output; ii) the effect is larger in emerging markets and developing economies and (iii) for higher levels of financial stress; iv) we deal with simultaneous causality by constructing a novel instrument—financial stress originating from other countries—using information from the text analysis, and show that, while there is clear evidence that financial stress harms economic activities, OLS estimates tend to overestimate the magnitude of this effect; (iv) we confirm the presence of an exogenous effect of financial stress through a difference-in-differences exercise and show that effects are larger for firms that are more financially constrained and less profitable.

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WORKING PAPERS

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Prepared by Hites Ahir, Giovanni Dell'Ariccia, Davide Furceri, Chris Papageorgiou, and Hanbo Qi [1]

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I. Introduction

Financial crises are to economists what earthquakes are to geologists: phenomena of enormous impact about which we have only limited understanding.[2] We know what makes them more likely to occur, but we find it extremely difficult to predict their timing and intensity. We design policies to increase resiliency *ex ante* and emergency response *ex post*, but we are unable to completely eliminate their devastating consequences. And we are often reminded of the need to develop better forecasting models and policy tools by their sudden reappearance after periods of apparent tranquility. It is therefore no surprise that research about financial crises is often seen as critical in both academia and policy making institutions.

The starting point in understanding the causes and consequences of financial crises is how to define, identify, and measure them. Indeed, while measuring the intensity of an earth tremor is relatively straightforward, evaluating financial stress and defining what counts as a crisis is not. We do not have the economic equivalent of a seismograph. As Romer and Romer (2017) point out, statistical "objective" measures of financial stress, such as credit spreads, may misidentify crisis episodes. They may react to factors other than financial stress (i.e., changes in monetary policy) and may fail to reflect aspects of financial stress episodes (for instance credit rationing) that do not translate into price effects. Further, data on these statistical indicators is typically limited to advanced economies and for relatively short time horizons.

For these reasons, the most broadly used financial-crisis indexes are based on historical analyses of events characterized by major stress in the financial sector combined with statistical indicators. Caprio and Klingebiel (1996) were the first to construct a dataset on bank insolvencies for close to hundred countries. Reinhart and Rogoff (2009) extended the work on banking crisis to 81 countries over the period of 1800 to 2014, and Laeven and Valencia (2013, 2014, and 2020) constructed and later extended one of the most comprehensive financial crises datasets covering 165 countries. All these studies use binary measures to codify financial crises episodes which are admittedly crude as they only capture the occurrence (date) of financial stress but not its intensity (although, Laeven and Valencia also provide more continuous measures such as the fiscal cost of a crisis).

[2] Bordo et al. (2001), Reinhart and Rogoff (2009), Sufi and Taylor (2021).

Romer and Romer (2017; RR thereafter) take a different tack on the same approach. First, they confine their historical analysis to the "contemporaneous narrative accounts of country conditions" published semi-annually in the OECD Economic Outlook. This limits the analysis to 24 advanced countries for the period 1967-2012,[3] but it allows for more meaningful comparisons across countries and time. Second, they seek to capture variations in crisis intensity and duration and more accurately describe financial stress. In particular, RR extends previous binary measures to an index that "classifies financial stress on a relatively fine scale." RR demonstrates that, unlike most previous narrative work that sought mainly to identify key crises episodes, it "… may be possible to go further and use narrative sources to code more nuanced developments." This approach has the potential of capturing financial stress in a more wholistic way including in addition to timing and frequency, also intensity, and duration, all from a single narrative source.

This paper introduces a new index that builds on RR's approach. We make three important modifications. First, instead of the OECD reports, we rely on the Economist Intelligence Unit (EIU) country reports which allows us to extend the country coverage to 110 countries and the frequency from semi-annual to quarterly over the period 1967-2018. Second, we take a more mechanistic approach at measuring the intensity of financial stress: we rely on search algorithms and word counts in addition to expert judgement. This has two benefits and one cost. On the benefits side: it allows for quick and semi-automatic updating of the series (an important element given the plan is to continuously update the new series); and, by reducing inconsistency as well as errors in human judgment, it further increases cross-country and time-series comparability. On the costs side: it may fail to identify some potentially important information that an expert reader devoted to reading all the relevant reports could exploit to better measure the intensity of financial stress. Our third modification follows suggestions in RR on the desirability to assess more accurately the exogenous contribution of financial stress to declines in output. To this purpose, we carefully examine the narrative in the EIU reports and identify, for each country, episodes of financial stress stemming from financial stress in other countries. Arguably these episodes less driven by domestic economic conditions and could be deemed more exogenous to domestic economic activity.

The new series performs well when put to the test. For OECD countries, our index essentially mimics RR (the correlation is 0.9). Considering the two indexes use different sources and a different approach

[3] In an update the authors add 6 countries that joined the OECD between 1994 and 2000 and extend the sample to 2017.

at measuring intensity, this reassures us that our search algorithm and word count do a more-than-decent job at measuring financial stress. In addition, our measure confirms RR's findings that financial stress is often building up ahead of the crisis year picked up by most existing binary measures.

In the second part of the paper, we use local projections (Jordà, 2005) to examine the effect of our measure of financial stress on economic activity (GDP and other economic outcomes such as stock market returns, productivity, employment, and uncertainty). We have five main findings. First, consistent with much of the literature, increases in financial stress have detrimental effects on economic activity. In particular, we find that a one-standard deviation increase in our financial stress index is associated with a reduction in the level of output by 0.35 percent one year after the increase in financial stress and by 0.2 percent 5 years after. Second, the extension of the country coverage to emerging markets and developing countries shows quantitative differences in the relationship between financial stress and output across different country groups. The effects of crises tend to be significantly larger for emerging markets and developing economies than for advanced economies. Third, the effect of financial stress on economic activity is non-linear: the effect is small and not statiscally significantly different from zero for lower levels of financial stress, while is large and more precisely estimated for medium-to-high levels of financial stress. This non-linearity is markedly more significant and robust in emerging markets than in advanced economies, adding a qualitative dimension to the quantitative differences reported above. Fourth, using our external financial stress series as an instrumental variable, we show that, while financial stress has a statistically significant exogenous effect on economic activity, simultaneous causality biases OLS coefficients downward—as weaker economic activity tends to intensify financial stress. Finally, we use a large sample of firm-level data covering advanced and emerging economies and a difference-in-differences approach to further strengthen exogeneity and examine firms' heterogeneity in response to financial stress. The results suggest that increases in financial stress lead to persistent declines in the level of firms' investment, with the effect being larger for firms that are less profitable (characterized by lower profits, revenues and return on assets) and more financially constrained (characterized by higher debt-to-asset ratios and being smaller and younger).

The remainder of the paper is organized as follows. Section II provides a brief literature review with focus on recent papers aiming to measure financial crises. Section III describes the data sources and methodology used in the construction of the new index. Section IV takes a first look at the index, presenting selected examples of country cases and some notable global trends. Section V empirically

examines the effects of FSI on economic activity. The section first reports the empirical strategy used followed by baseline and robustness results. The section ends with an investigation of mechanisms at the macro- and firm-levels. Section VI draws conclusions and poses questions for future research.

II. Literature Review

Existing measures on financial stress fall into two broad strands.[4] The first, codifies financial crises with binary variables, and further differentiates them into systemic and non-systemic. Some of the work that fall under this strand include: Bordo et al. (2001), Caprio and Klingebiel (2003), Demirgüç-Kunt and Detragiache (2005), Reinhart and Rogoff (2009), Schularick and Taylor (2012), and Laeven and Valencia (2013, 2014, and 2020).

Bordo et al. (2001) define financial crises as episodes of financial-market volatility marked by significant problems of illiquidity and insolvency among financial-market participants and/or by official intervention to contain those consequences. They identify episodes of financial crises from a review of the historical literature for 56 countries from 1880 to 1998. Caprio and Klingebiel (2003) compile a list of 113 systemic banking crises (defined as much or all of bank capital being exhausted) that have occurred in 93 countries since the late 1970s to 1999. They also provide information on 50 borderline and smaller (non-systemic) banking crises in 44 countries during the late 1970s to 1999 period. Demirgüç-Kunt and Detragiache (2005) use a signals approach and multivariate probability model and their application to studying banking crises in 94 countries from 1980 to 2002.

Reinhart and Rogoff (2009; ReRo thereafter) have compiled a dataset on banking crisis for 81 countries over the period of 1800 to 2014. The construction of the dataset relies heavily on the work of other scholars and they mark a banking crisis by two types of events: (i) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions, and; (ii) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution that marks the start of similar outcomes for other financial institutions. Schularick and Taylor (2012) have assembled a list of financial crises dataset for 14 countries over the period of 1870 to 2008 based on annual coding of financial crisis episodes documented by other scholars. They

[4] Our literature review focuses on measures of financial stress. We do not provide a comprehensive literature of the studies examining asymmetric effects of financial stress on future GDP growth. For example, Adrian et al. (2022), using panel quantile regressions for 11 economies, explore how different states of the economy can potentially interact with financial conditions in nonlinear ways in forecasting the GDP growth distribution at different time horizons.

define financial crises as events during which a country's banking sector experiences bank runs, sharp increases in default rates accompanied by large losses of capital that result in public intervention, bankruptcy, or forced merger of financial institutions.

Finally, Laeven and Valencia (2020; LV thereafter) have compiled the most comprehensive dataset on systemic banking crises for 165 countries over the period of 1970 to 2017. This effort updates the authors' global dataset on systemic banking crises (see, Laeven and Valencia 2008, 2013) which has become the gold standard in the literature on banking crises worldwide.[5] The dataset is based on defining a banking crisis as an event that meets two conditions: (i) significant signs of financial stress in the banking system; and, (ii) significant banking policy intervention measures in response to significant losses in the banking system. As in Laeven and Valencia (2013), the 2020 update on banking crises episodes is further complemented with dates of sovereign debt and currency crises during the same period. In total, 151 banking crises were identified, in addition to 236 currency crises, and 74 sovereign crises.

The second strand in the literature codifies financial stress with continuous rather than binary variables. Jalil (2015) constructs a series documenting banking panics in the US dating 1825 to 1929. This study uses newspapers as its source of narrative analysis and identifies banking panic episodes which were consequential in periods of output decline. Romer and Romer (2017) in their pioneer work used the narrative approach to develop a more comprehensive series of financial stress chronology using semi-annual data for 24 advanced economies for the period 1967 to 2012.

To construct the new measure, RR use a single, real-time narrative source—*OECD Economic Outlook*—to classify financial stress on a scale of 0 to 15. To classify financial stress, they start with a keyword search for terms likely to appear in periods of financial stress (e.g., "bank", "financial", "crisis", "rescue", "bailout", "crunch", and "squeeze") to identify which entries to read more closely. However, from December 2007 volume, they read each volume in its entirety (between 600 – 900 words) as the keyword search returned so many matches. Finally, RR classifies financial stress on a relatively fine scale and further identifies categories of stress to which they assign episodes that have natural interpretations (e.g., credit disruption, moderate crisis, extreme crisis). One of the key contributions

[5] For over a decade, the Laeven-Valencia dataset has been used in hundreds of applications and received thousands of citations in both academic and policy journals.

in RR is that it convincingly demonstrates how examining narrative sources strengthens the case for a continuous measure compared to a binary measure of financial stress classification.

Another important study in the second strand of the literature is the work by Baron et al. (2021). They use large bank equity crashes to provide an objective, quantitative, and theoretically motivated measure of banking crises. Specifically, they construct a dataset on bank equity prices and dividends for 46 advanced and emerging economies from 1870 to 2016. They supplement existing bank stock indexes with indexes assembled from new, hand-collected stock price and dividend data from historical newspapers. To validate their approach, they show that bank equity prices are strongly correlated with traditional symptoms of banking crises (e.g., likelihood of government interventions to support banking sector, deposit runs, non-performing loans, and bank failures).

In summary, the first strand of the literature is based on annual coding of financial crisis episodes, treats financial crises as a binary variable, and identifies banking crises grounded on narrative information about events such as bank runs and policy interventions. While these binary chronologies cover a large set of countries across long time periods, they have some drawbacks. Discrete chronologies may in general be too coarse. They may miss milder episodes of financial stress or if calibrated to capture these moderate stress events, they are forced to treat them the same way they treat severe episodes.

The second strand in the literature uses continuous measures not only to identify episodes of financial crises but also to characterize their respective intensity. However, this literature so far has covered only a limited set of mostly advanced countries. This paper aims at filling this gap.

There are two important areas where our work contributes to the second strand of the literature. First, our index extends the existing country sample significantly by adding about 80 developing economies and emerging markets and increase the frequency of coverage to quarterly data. Second, we make a deliberate effort to address endogeneity concerns by constructing (from the same narrative analysis) an instrumental variable reflecting stress originating outside a country's domestic economy to be used in causality identification exercises.

III. Data Collection and Index Construction

This section starts with a brief account of the data source used and the methodology applied to construct FSI.

Data Source

Our sole source for the narrative analysis used to construct our index is the Economist Intelligence Unit (EIU) country reports.[6] The EIU, part of The Economist Group, provides insight and analysis of global economic and political developments. As part of its services, the EIU provides country-specific reports covering a large number of countries. Each country report examines and explains the main political and economic developments in the domestic economy. These reports average about 12,000 words in length and are available on a quarterly basis going back to the 1950's.

To prepare the reports, the EIU relies on a comprehensive network of experts based in the field and in its network of offices in key global hubs. Designated country experts prepare a first draft of the report, based on material from experts in the field, public sources and in-house models, and these are then peer-reviewed, subedited and put through data-quality checks to make the reports consistent and standardized. This rigorous process aims to deliver transparency, accuracy and consistency.

The use of EIU country reports has several advantages. First, they are published with high frequency (minimum quarterly basis), are available over an extended time period (current work covers the period from 1967 to 2018), and cover about 180 advanced, emerging markets, and low-income countries.[7] Second, the reports blend data and analytical discussions of country economic developments. Third, the format, topics covered, and level of analysis is relatively consistent both across countries and over time.

On the negative side, one potential shortcoming of any single-source approach is that the resulting index will only be as good as the chosen source (in our case the EIU reports). Put differently, what we gain in tractability and cross-country comparability we may pay in terms of missed information.[8]

[6] See Ahir, Bloom and Furceri (2022) who also used EIU for constructing an index on economic uncertainty.

[7] See Appendix Table A1 for country coverage by income level and geographical region.

[8] In our future work we plan to use the EIU availability at the monthly frequency starting in 2008 and covering a smaller sample of (about 70) countries, as well as will include alternative versions of FSI that reflect sub-dimensions of financial stress. See Ahir, Bloom and Furceri (2022) for a similar approach.

For this reason we see single-source narrative-based indexes as a complement rather than a substitute for the more comprehensive zero-one historical efforts such as LV. That said, we are reassured by the fact that a cross-examination of FSI across other prominent measures in the literature (as discussed later on) shows that our EIU-based measure is fairly consistent with previous series.

Why choose EIU and not an alternative source such as OECD Economic Outlook reports or IMF Article IV reports? We argue that in terms of country coverage, frequency, and reporting consistency, EIU is a solid option. In comparison to OECD reports the clear advantage of EIU is that it covers the large majority of developing economies going back to the 1950's. With such wide coverage we can get a picture of global financial stress and also focus on emerging markets which as we show in the next section are the recipients of most financial crises and exhibit a relationship between financial stress and economic activity that differs from that in advanced economies. This would not be possible with the OECD reports which cover mostly advanced economies. IMF reports are a very good alternative to EIU and could be considered as the main source for future narrative analysis. For the particular indicator under consideration though, the data variation obtained using quarterly frequency is quite important, and on those grounds, EIU has a clear advantage as IMF Article IV reports are available mostly on annual basis.

Constructing the Index

We construct our financial stress index (FSI) for 110 countries for the period 1967-2018 (we restrict the sample to countries with population above 2 million). Conceptually, we follow Bernanke (1983) and RR and aim at classifying as episodes of financial stress in which an economy experiences an increase in the cost of credit intermediation or disruptions to the credit supply. As described by RR, the rise in cost of credit intermediation includes both a higher cost of funds for financial institutions relative to a safe interest rate and an increase in other operational costs associated with their lending activities. Put differently, we want to identify episodes in which, for a given level of the expected return on safe assets, the cost (quantity) of credit to the economy increases (decreases). Note that this definition excludes reductions in the supply of credit stemming from increases in interest rates due "normal" cyclical factors such as tighter monetary policy.

We follow a four-step process to construct the index. First, similar to RR, we search the EIU reports for words likely to be associated with descriptions of financial stress. More specifically, we identify

paragraphs/lines containing two set of keywords: (i) credit, financial, bank, lending, and fund, and; (ii) crisis, crunch, squeeze, bailout, rescue, tight, contract, and reluctant.

In the second step, we read the paragraphs extracted in step 1 to confirm that the text is indeed describing developments associated with *contemporaneous* financial stress. The point here is to exclude false positives. An example classified as financial stress related to domestic event is the following: United States (2009Q4): "The administration will also continue to focus on supporting a recovery from the financial and economic crisis and to implement measures that help to avoid a recurrence of such a crisis." To determine whether recovery from a crisis is a signal or noise of contemporaneous financial stress, we focus on whether the economy is "under the process of recovery" or "fully recovered from the financial stress". In this case, we read that the government is "supporting a recovery", which indicates that US is still recovering, and the effects of crisis still exist. There is no mention of the stress originating from external causes, therefore, by default, we take "crisis" here as a signal of domestically originated financial stress. At this stage, we also look for text that refers to an increase in the cost of credit intermediation due to developments external to the country (e.g., financial crisis in country A spreading to country B and leads to financial stress in country B). An example classified as financial stress related to external shock is the following: Denmark (2008Q2): "In response to the global credit crunch, the national bank has opened a new seven-day secured lending facility to support liquidity in the money market."

Our search algorithm picks several false positives. For instance, Colombia (2000Q3): "The financial services sector, having contracted by some 10% in 1998-99, continues to consolidate by cutting costs, capitalization and rebuilding reserves." We do not count this event as a contemporaneous financial stress episode. The text does not mention financial stress—that is, the contraction could be simply due to a correction in a previous expansion of the sector—nor the sources causing the contraction in financial services sector, and it refers to events one-to-two years before the publication of the report. This and other examples show how crucially important was to the data construction process the reading and validation of the text by an expert. We calculated that the text search procedure used produced over 50 percent false positive signals which had to be manually evaluated and eliminated by

human judgement. It is estimated that about half of the substantive work done in the data construction work involved carefully reading of text and validation by a human expert.[9]

In the third step, we asked IMF country economists to cross-validate the identified signals, resulting in the correction of the index for few cases (such as Ecuador, Nepal, and Venezuela).

In the last step, we sum the verified signals of financial stress in each period. An obvious difficulty with these raw counts is that the overall length of country reports varies across time, and across countries. Thus, to make the index comparable across countries, we scale the raw counts by the total number of words in each report.[10] Two factors further help improve the comparability of the index across countries. First, the index is based on a single source. Second, the reports follow a standardized process and structure. In addition, the process to put together the reports described earlier helps to mitigate concerns about the accuracy, ideological bias and consistency of the index.

IV. Financial Stress Index (FSI): Global Trends and Country Experiences

Next, we report global, regional, and country-specific financial stress trends and episodes using our newly constructed index. Also, for validation, we compare our index with existing chronologies.

Global Movement

Figure 1 shows that global financial stress as measured by the FSI rose during the Latin America debt crisis in the 1980s (often known as "La Década Perdida," The Lost Decade), the Mexican Peso Crisis in the mid-1990s, the financial crisis in Asia, Russia, and Latin America (also coinciding with the Long-Term Capital Management episode) in the late 1990s, and then rose sharply during the Global Financial Crisis (GFC) and Europe's sovereign debt crisis between 2008-2013. The index then remained relatively stable at least until our last observation in 2018 (an update to current times would likely show some activity during the COVID crisis).

[9] Appendix Table A2 reports country-by-country and period-by-period examples of EIU narratives identified as related to financial distress.

[10] As discusses in Ahir, Bloom and Furceri (2022), while the number of words is on average larger in advanced economies than in emerging and low-income countries, there are no systematic differences across income groups. For example, country reports for countries such as Nigeria or Egypt have a larger number of pages (words) than many advanced economies.

Heterogeneity across Country Income Groups

The magnitude of financial stress varies significantly across income and regional country groups and also across events. Figure 2 shows significant heterogeneity in stress levels across advanced, emerging and low-income economies. For instance, in 2008Q4, the level of the FSI is close to the global average in emerging economies, below it in low-income economies, and about three times it in advanced economies. This is in line with the GFC been described as a crisis of advanced economies.

Averages vs. Episodes

The average level of financial stress over the 1967-2018 period is higher in advanced economies than in emerging economies. Panel A in Figure 3 shows that on average the level of financial stress is 0.033 in advanced economies, followed by 0.025 in emerging economies, and 0.010 in low-income economies. However, the picture changes if we look deeper into the data. If we exclude the period 2008 to 2012 (GFC), the average level of FSI is higher in emerging economies, followed by advanced economies, and low-income economies (Figure 3, Panel B). Moreover, Figure 3c shows that the number of -quarters with financial stress (normalized by number of countries) is highest in emerging economies (20.7 quarters), followed by advanced economies (15.7 quarters), and low-income economies (13.7 quarters). The low FSI values for low-income economies in all three panels in Figure 3, likely reflect less developed and interconnected financial sectors--a leading explanation as to why these economies survived the GFC better than richer countries.

Regional Heterogeneity

Finally, Figure 4 shows the level FSI across geographical regions. It shows little financial stress in Africa and the Middle-East and Central-Asia—regions characterized by lower levels of income per capita and financial development. In contrast, the Asia-Pacific region shows financial stress during the Asian crisis as well as during the GFC. In the Western Hemisphere, the FSI registers elevated levels during the financial crises in the region in early 1980s, late 1990s and during the GFC. And, for Europe, the FSI captures financial stress during GFC and the European sovereign debt crisis.

Comparison of FSI with Existing Chronologies

Next, we focus on how our new FSI compares with existing measures of financial stress/crises. Table 1 reports key characteristics of our measure and those by RR, ReRo, and LV.[11] It shows that the country coverage, frequency, and time coverage varies across measures and that FSI generally compares favorably to other measures along all three dimensions. Table 2 provide simple pairwise correlations between each of the four measures. The correlation between FSI and RR in the overlap of observations available to both indices is remarkably high at 0.9 despite the different sources and different approaches at evaluating stress intensity. Similarly, the correlations between the FSI and the two binary indicators are also high—at 0.4 with LV and 0.4 with ReRo—but lower than with respect to RR, likely reflecting the fact that our FSI is positive for many zeros recorded in the binary chronologies. And third, the correlation between any two indicators from RR, RoRe, and LV, is in the range of 0.5 to 0.7.

To highlight commonalities and differences across measures, Figure 5 compares FSI with the other three selected existing measures of financial stress for a set of 8 countries: the United States, South Korea, Honduras, Argentina, the Philippines, Nigeria, Costa Rica, and Rwanda.[12] Data for LV ends in 2017, for ReRo ends in 2014, and RR ends in 2012, so in Figure 5 we restrict our data to match these sample periods. Using these country cases, we can make four noteworthy observations. First, as seen in the case of the US (Panel A) our measure is very closely aligned with that of RR. This is indeed the experience in most of the countries for which there is data overlap in the two indices. Compared to the LV and ReRo binary indicators, our indicator, as that of RR, captures the severity of the stress more accurately—for instance, the binary indicators are unable to distinguish between the severity of the Savings and Loans crisis against that of the GFC.

Second, the broader country coverage of FSI relative to existing continuous stress measures, allows for a greater examination of heterogeneity in the severity and duration of financial stress across countries and episodes. For example, Panels B, C, and D report comparisons of the three chronologies for Argentina, Philippines and Nigeria, respectively—countries not covered by RR. It is clear in all three cases that while the FSI is in broad agreement with LV and ReRo on the timing of financial

[11] For brevity we focus only on three alternative chronologies. Appendix Table A3 provides detailed country-by-country coverage comparison of our measure with 8 alternative measures in the literature.

[12] For comparisons between FSI and RR, ReRo, and LV chronologies for all 110 countries in our sample see Appendix Figure A3.

stress, there exist glaring differences in intensity across these episodes. Take the Argentina case (Panel B): all three indices capture the timing of the Latin America Debt Crisis in the 1980s, the Mexican Peso crisis of the 1990's, and the most severe Argentina crisis of 2001. However, the binary indicators fail to capture differences in severity across these crises, thereby equating what seems to have been a mild financial stress period during the Mexican Peso crisis to the severe Argentine financial crisis of 2001.

Third, there are some cases in which intensity measures do not capture any financial stress episodes, while binary chronologies do, and vice versa. For instance, in the case of Honduras (Panel E) FSI identifies a long period of severe financial stress (1980-1985) related to the broader debt crises in Latin America,[13] while the two binary measures do not pick up any financial stress. And conversely, in the case on Korea (Panel F), ReRo identifies a period from 1985 to 1989 of financial stress that is not identified by FSI. One possible explanation for these two differences is that the definition of financial stress to construct FSI and the definition of banking crisis in ReRo and LV are not identical. In the case of Honduras, we identified narratives such as "liquidity crisis", "credit squeeze" and "financial crisis" from 1980 to 1985, which are clear signs of financial stress to construct the FSI. But neither ReRo nor LV identified such period. In LV's study, two conditions should be met to identify a banking crisis: 1) significant signs of financial stress in the banking system; and 2) significant banking policy intervention measures. In EIU reports, we do not observe any policy intervention, which indicates that the first condition is met, but the second condition is not met—and that could possibly explain why such period is not identified as banking crisis in LV's study. In the case of Korea, the difference in the definition also seems to play a role. ReRo has a rather broad definition of financial stress (banking crisis) compared to the definition of FSI. The large-scale financial liberalization in Korea in the 1980s, and the subsequent increase in the number of banks, is seen as a risk of a banking crisis (Reinhart, 2002; Shin and Hahm, 1998). This case would be barely picked up by our index because we follow a stricter definition of financial stress, which captures a shortage of credit supply. In contrast, in Korea in the 1980s, the credit supply was increasing steadily. This is consistent with the data from LV, whose study finds no systemic banking crisis in mid 1980s, because it follows a rather strict standard to identify systemic banking crisis.

[13] According to official documents of June 1983, Honduras had accumulated 75% of GDP in total foreign debt. During the same period 8 other Latin American countries had foreign debt ranging from 75%-134% of GDP. During the 1980s, a period often referred to as "the lost decade", many Latin American countries were unable to service their foreign debt.

Fourth, in a few country cases, FSI and the binary chronologies simply do not match in identifying financial stress. Panels G and H report such instances for Costa Rica and Rwanda, respectively. For the case of Costa Rica, FSI moves only very little during the 1987 and 1995 crises identified by both LV and RoRe. This case could also be due to the differences in the definition of the measures of financial stress. According to ReRo and LV, the first period of banking crisis from 1987 is identified due to extremely high levels of non-performing loans in the banking system; and the second crisis is led by the closure of the third largest bank in the country. The narratives in the EIU reports of Costa Rica during these two periods, barely mention signals that we use to pick up financial stress. In contrast, FSI spikes in 1967 as the EIU explicitly mentions "economic and financial crisis that now seems endemic in Costa Rica", while ReRo and LV identifies this as debt and currency/external crisis. For Rwanda, FSI identifies two periods of stress that are not identified by LV. From the EIU reports, FSI picks up narratives such as "tight liquidity" in 1985 and "liquidity squeeze" in 2009, which are signals for financial stress. In 1985, "strained treasury and corporate bond is draining liquidity in the banking sector", which causes financial stress. In 2009, the financial stress is due to withdrawals of funds by major depositors, losses on foreign investments, and lower domestic saving, which is possibly associated with the Global Financial Crisis.

Overall, these discrepancies suggest that these measures are complements rather than substitutes, with costs and benefits on both sides. More generally, while we hope to have demonstrated that our new FSI has a high signal-to-noise ratio in identifying financial stress episodes and overall compares favorably with existing narrative measures, we recognize that it is by no means always the preferred one.

Finally, the FSI is also positively and statistically significantly correlated with statistical measures of financial stress such as the Financial Condition Indices (FCIs) developed by the IMF (2017)—correlation about 0.45—suggesting that the index could also be used as complement to these statistical indicators when they are not available.[14]

[14] The FCI is computed as the principal component of several financial variables such as interest rates, sovereign and corporate debt spreads, equity prices and volatility, exchange rate volatility and real house prices; it covers and unbalanced sample of 43 advanced and emerging market economies from 1996Q1.

V. Empirical Analysis: The Effect of FSI on Economic Activity

In this section, we investigate the economic effect of financial stress using country- and firm-level data.

Using country-level information, we proceed in two steps. First, we use the quarterly frequency of the data to estimate the baseline effects of our financial stress indicator on GDP for a panel of 49 countries for which data is available, consider nonlinearities in the relationship between the severity of our index and GDP, and how it varies across country groups—Advanced Economies (AEs) vs. Emerging Market and Developing economies (EMDEs). In a second step, we subject our baseline results to a battery of robustness tests.

These includes alternative data samples, alternative specifications, and alternative data frequencies—in particular, we use annual data which allows us to increase the county and time dimension of our sample but also to compare the estimates from FSI with those from previous measures. Finally, we construct a novel instrumental variable which we use to deal with simultaneous causality. This is a key contribution of this paper to the existing literature as it provides an identification strategy that does not rely on sectoral data and a diff-in-diff approach and hence allows for an estimation of level effects.

Next, we extend the analysis by using a comprehensive quarterly firm-level dataset for a set of sixty-three AEs and EMDEs over 20 years. This extension makes two important contributions. First, the large coverage of the dataset (over 20,000 firms in our sample) along with the extensive firm heterogeneity makes it possible to estimate the economic effects of financial stress with much more precision than when using country-level data.

Second, and more important, it complements our IV approach in dealing with simultaneous causality. As in previous studies (see for instance, Dell'Ariccia et al., 2008; and Kroszner et al., 2007) we employ a difference-in-differences framework—assigning firms into different groups based on their exposure to external finance—which includes country-sector-time fixed effects. The working assumption is that financial stress should have a greater impact on firms that rely more on external finance, while fixed effects effectively control for domestic macro-economic shocks (such as the policy response in the domestic economy). Evidence of a differential effect across firms, would thereby confirm the presence of causal effect from financial stress to economic activity.

Country-level Analysis

Empirical Methodology

To examine the dynamics of output following changes in financial stress, we follow the local projection method proposed by Jordà (2005), a methodology used also by Auerbach and Gorodnichenko (2013), RR, and Alesina et al. (2019) among others. This procedure does not impose the dynamic restrictions embedded in vector autoregression specifications and is particularly suited to estimating nonlinearities in the dynamic response. The first regression we estimate is:

$$y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k, \quad (1)$$

where *i* index countries, *t* refers to quarters, and *k* denotes the horizon (the quarter after the change in the financial stress indicator) being considered. *y* is the log of output; α_i are country fixed effects included to take into account differences in countries' average economic performance; γ_t are time fixed effects, included to control for economic developments facing all countries in a given year; ΔF denotes the change in financial stress.

In the baseline, we estimate Equation (1) for an unbalanced sample of 49 countries for which we have quarterly data from 1996Q1 to 2018Q4. Limited availability for quarterly data dictates the boundaries of this sample. As a robustness check and extension, we investigate the sensitivity of our results to a larger sample of 110 countries, using annual data from 1967 to 2018.

Equation (1) is estimated using ordinary least squares (OLS) for horizon (quarter) $k = 0,\ldots,20$. The coefficient β^k denotes the "impact" of changes in FSI on output at a given horizon *k*. Impulse response functions are computed using the estimated coefficients β^k, and the confidence bands associated with the estimated impulse-response functions are obtained using the estimated standard errors—clustered at the country level—of the coefficients β^k.

In the baseline, we do not take a stance on the drivers of financial stress—that is, we do not distinguish between changes in financial stress stemming from other countries and that can therefore be considered "more exogenous" to domestic economic activity, from endogenous ones that arise from domestic conditions. Later on, we investigate the sensitivity of our results to exogenous changes in

financial stress, either using these foreign-originated changes as an instrument for overall changes in financial stress or directly as regressors.

Data Sources

The quarterly and annual macroeconomic series for GDP, employment, labor productivity (defined as the ratio of GDP to employment), unemployment, policy rates and cyclically adjusted balance are taken from the IMF World Economic Outlook. The classification of countries in income groups (advanced vs. emerging markets and developing economies) and regions (Africa, Asia-Pacific, Europe, Middle-East and North Africa (MENA) and Americas) follows that of the IMF World Economic Outlook. Data for uncertainty are taken from Ahir, Bloom and Furceri (2022). Data on stock returns and return volatility are taken from Baker, Bloom and Terry (2021).

Baseline Results

Table 3 presents the results obtained estimating Equation (1) for each horizon (quarter) k, from 0 to 20. The lagged output coefficient, as expected, is close to 1, suggesting that the level of GDP is non-stationary and that the country fixed effects capture average GDP growth rates.[15] The country fixed effects are jointly statistically significant, as are the time fixed effects, reflecting the importance of global shocks.

Figure 6 presents the evolution of (log) output following a one-standard deviation increase in FSI (this is equivalent to 0.1 changes in the index). Time is indicated on the x-axis; the solid line displays the average estimated response, shaded areas denote 90 percent confidence bands. The results suggest increases in financial stress are associated with sizeable and persistent reductions in the level of output, and transitory ones in the growth rate of the economy. In particular, we find that a one standard deviation increase in FSI (such as that experienced by Germany in the third quarter of 2011) is associated with a reduction in the level of output by 0.35 percent one year after the increase in financial stress and by 0.2 percent 5 years after. This result is highly statistically significant, economically sizeable, and appears reasonable.

To put it in perspective, the results suggest that the peak increase in financial stress observed in the United States during the GFC (1.7 in the fourth quarter of 2018) would have been associated with a

[15] Panel cointegration tests reject the null hypothesis that the estimated residual of Equation (1) is non-stationary.

reduction in US GDP by about 6 percent in 2019—an estimate in line with the range found in the literature (e.g., RR).

Heterogeneity: Advanced vs. Developing Economies

Several studies using binary chronologies of crises suggest that the economic effects of banking crises tend to be larger in EMDEs than in AEs (see e.g., Cerra and Saxena 2008; Gourinchas and Obstfeld 2012; and Claessens et al. 2009, 2014). To corroborate this evidence, we re-estimate the following equation:

$$y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kAE} D \cdot \Delta F_{i,t} + \beta_0^{kEMDE}(1-D) \cdot \Delta F_{i,t-j} \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k, \quad (2)$$

where *D* is a dummy variable which takes value 1 for AEs, and zero otherwise. The coefficients β^{kAE} and β^{kEMDE} capture the relationship between output and financial stress for AEs and EMDEs, respectively.

The results reported in Figure 7 show that the response of GDP to an equal increase in financial stress, is more than twice larger in EMDEs than in AEs. This result is consistent with some existing literature based on the binary indicators which points to the greater economic severity of financial crises in EMs. However, the novelty of our results is that, thanks to the FSI intensity dimension, we are able to highlight that what drives the heterogeneity in the output response across AEs vs EMDEs is not the different severity of financial stress (since we are comparing the responses to the same increase in financial stress) but rather the differences in economic resilience, including the ability and space of fiscal and monetary policies to respond to financial stress.

Nonlinearities: Severity of Financial Stress

To investigate the possibility that more severe stress levels are disproportionately more detrimental to output than moderate levels, we estimate variants of our baseline specification that relax the assumption that the relationship between output and financial stress is independent of the level of financial stress. In particular, we modify Equation (1) as follows:

$$y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kG} I[F_{it} \in G\,] \cdot \Delta F_{i,t} + \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k, \quad (3)$$

where *I* is an indicator function which assumes value 1 when the level of financial stress belongs to a specific bin (terciles) of the distribution, which we refer to as group *G*. The coefficients β_0^{kG} capture the relationship between output and financial stress at horizon *k* for each "group" of financial stress. The main benefit of this specification is that it does not impose any functional form to capture non-linearity in the way the effect of financial stress on output varies across groups (low, medium and high) of financial stress.

The estimates reported in Figure 8 Panel A suggests nonlinearities in the response of the economy to financial stress: the effect of financial stress on output is small and not statically significantly different from zero for lower levels of financial stress, while is precisely estimated and larger than the baseline estimates of Figure 6 for medium-to-high levels of financial stress. The differences in the response between low vs. medium financial stress and low vs. high financial stress are statistically significant up to *k*=11. However, they become insignificant in the medium-term because of the large confidence bands associated with the medium-term point estimates for the low-financial stress regime (Table A4). Overall, these results are consistent with Baron et al. (2021), that find non-linear effects of bank equity returns on output and bank credit.

Next, we examine whether the extent of non-linearity in the relation between financial stress and output vary between AEs and EMDEs. To do so, we estimate a variant of Equation (3):

$$y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kGAE} I[F_{it} \in G\,] \cdot D \cdot \Delta F_{i,t} + \beta_0^{kGEMDE} I[F_{it} \in G\,] \cdot (1-D) \cdot \Delta F_{i,t} +$$

$$+ \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k. \qquad (4)$$

The results reported in Figure A2 show that for both group of countries, the output responses are not statistically significant for low levels of financial stress but become larger and more precisely estimated for medium-to-high levels of financial stress. Notably, the non-linearity is more pronounced and significant in EMDEs than AEs (where it is significant only at high levels of stress).

These results are robust to alternative specifications to capture non-linearity in the relation between financial stress and output. As a first alternative, we consider a variation of equation (2) in which *D* takes value 1 if the level of financial stress is above the median of the distribution, and zero otherwise. In a second alternative specification, we replace *D* with a smooth transition function of the level of financial stress. The results reported in Figure A2 confirm non-linearity: the response of the economy

following an increase of a given size in financial stress is large and statistically significantly when the initial level of stress is already high, while being small and typically not statistically significant when the level of financial stress is initially low.[16]

Robustness Checks

To check the robustness of these results, we performed several sensitivity tests across alternative samples and specifications.

Alternative samples. We considered samples dropping the following sets of observations: a) Outliers (those observations corresponding to the residuals in the output regression in the bottom and top percentiles of the distribution); b) High inflation episodes (inflation above 20 percent); c) Observations from the Americas; d) Asian and Sub-Saharan African economies; e) Drop small countries; f) Episodes of large changes in financial stress episodes (those corresponding to the 99th percentile of the distribution); g) Observations pertaining to the period following the GFC (after the third quarter of 2008).[17] The results are shown to be robust to all these perturbations as reported in Figure 9.

Alternative specifications and control variables. We considered two main modifications to Equation (1). First, we restrict the change in the financial stress indicator to enter Equation (1) only with a lag—that is, we do not estimate the contemporaneous effect of financial stress on GDP. This is equivalent to estimate, for $k>1$, the GDP effect of changes in financial stress that are orthogonal to contemporaneous changes in economic activity. Second, we add a set of control variables that may be related to financial stress and affect output—such as changes in monetary policy rates, changes in cyclically adjusted budget balance, stock market growth and volatility, and economic uncertainty. The results reported in Figure 10 are not statistically different from those reported in the baseline.

Alternative data frequency. We also re-estimate Equation (1) using annual data for an unbalanced panel of 110 countries over the period 1950-2018. Table 4 presents the results obtained for each horizon (quarter) k, from 0 to 5, and Panel A in Figure 11 presents the evolution of (log) output

[16] The differences in the responses in these two approaches is statistically significant only in the short term but not in the medium term because of the large confidence bands associated with the medium-term point estimates for the low-financial stress regime. In addition, differences are more noticeable for EMDEs than AEs (see Figure A1). Finally, and consistent with Romer and Romer (2017), we do not find evidence that the effect of financial stress output depends *linearly* on the level of financial stress.

[17] Similar results are obtained when excluding the period after the fourth quarter of 2007, or after 2009.

following a one-standard deviation increase in the financial stress indicator (this is equivalent to 0.1 changes in the index). The results confirm that increases in financial stress are associated with sizeable and persistent reductions in on the level of output, and transitory ones in the growth rate of the economy. In particular, we find that a one-standard deviation increase in the financial stress indicator is associated with a reduction in the level of output by 0.8 percent one year after the increase in financial stress and by 0.6 percent 5 years after. This estimate is highly statistically significant, and even larger than the one obtained using quarterly data. To check whether this larger estimate is the result of a larger sample, we repeated the analysis constraining the sample to be the same as the one used for the quarterly data. The results confirm the larger estimate obtained using annual data (Figure 11 Panel B). A possibility for this larger estimate is that reverse causality tends to be larger using annual data. This suggests that analysis on the effect of financial crises and stress using annual data are likely to overestimate the macroeconomic effect of financial stress.

Comparison with other Chronologies

Next, we compare the relationship between FSI and output using annual frequency (to allow comparisons across all measures) to those obtained using other measures. To do so, we re-estimate Equation (1) using the measures of: (i) RR (annualized); (ii) LV; and (iii) ReRo—aiming at maximizing the overlap of the estimation sample as well as the number of episodes of financial stress. We report the results in Figure 12. For each alternative measure, we report their output response as well as the output responses obtained using our index over the same sample. In particular, in the left panels we report the estimates for FSI over the samples for which RR, LV and ReRo are available. In the right panels, we show the responses of the financial stress together with the other chronologies.

The results point to two main findings. First, the responses reported in the left panels confirm the robustness of the estimates for FSI over alternative samples. Second, the magnitude of the estimates varies across chronologies. While the output effects of a one standard deviation increase in our index are in the same ballpark than that those associated with a of a one standard deviation increase in RR index, they are about one-tenth smaller than those associated with the financial crises identified in LV and ReRo.

This result provides strong support for the evidence reported previously suggesting that the relationship between financial stress and economic activity is non-linear and steepens with the intensity of the financial stress—a dimension binary measures do not capture.

Addressing Endogeneity

To address endogeneity concerns, we carefully examine the narrative in the EIU reports describing the episodes of financial stress and identify those stemming from financial stress originating outside each country.[18] Arguably these episodes are less driven by domestic economic conditions and can be treated as exogenous to GDP. Indeed, estimates of these changes on their own lags and contemporaneous and lagged GDP confirm that this is the case (Table 5).

Once these episodes are identified we use them as instruments for the overall changes in FSI. In particular, our IV strategy reads as:

$$y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^k \widehat{\Delta F_{i,t}} + \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k,$$

and

$$\Delta F_{i,t} = \pi_i \ + \tau_t \ + \vartheta \Delta EF_{i,t} + \sum_{j=1}^{2} \rho_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \sigma_j^k y_{i,t-j} + \mu_t \ , \qquad (5)$$

where $EF_{i,t}$ is the indicator of external financial stress. The first stage estimates suggest that the instrument is "strong" and statistically significant. The Kleibergen–Paap rk Wald F statistic—which is equivalent to the F-effective statistic for non-homoskedastic errors in case of one endogenous variable and one instrument (Andrews et al., 2019)—is about 1200, about 75 times the associated Stock-Yogo critical value (16.38).

Our IV results support the findings obtained with OLS: the baseline IV result indicates a significant negative and persistent effect of financial stress (Figure 13). However, the magnitude of the IV coefficient estimates is smaller in absolute value than the OLS estimate, which suggests that OLS estimates are downward biased and should be considered an upper bound of the negative effect of financial stress on economic activity. This is consistent with the evidence that some financial stress is a consequence of declines in economic activity.

[18] See the Appendix Table A5. for the list of episodes and the associated narrative.

To test the validity of our instruments, we run several checks. First, we test whether the instruments have a direct effect on economic activity by including them as additional controls in the baseline model (Table 6). If the coefficients turned out to be negative and significant, one could argue that the instrument is part of the error term and thus does not satisfy the exclusion restriction. The results suggest that this is not the case. Second, we test directly the association of the baseline residuals and the instrument. The results suggest that the relationship is indistinguishable from zero (Table 7), which supports the validity of our instruments.

Additionally, we exclude from the analysis, once at the time, the United States and other G7 economies as domestic economic conditions in these larger economies are more likely to generate financial spillovers in other countries, which could then spill back home. Also in this case, the results confirm the validity of our instruments (Figure 14). We also consider the possibility that external financial stress transmits not only through the financial channel (therefore, leading to an increase in financial stress in the domestic economy) but also through trade. To control for this possibility, we expand the regression to include GDP growth in major trading partners. Also in this case, the results corroborate the validity of our instruments (Figure 15). In addition, we also re-estimate Equation (1) using external financial stress directly as main regressor, instead of as instrument for overall financial stress. The results are qualitatively unchanged.[19]

Finally, we re-estimate Equation (2) using annual data and also re-estimate Equation (2) and (3) with an IV approach (see Figure 16-18). Similarly, to what was found above, the results, although smaller in magnitude, are qualitatively consistent with the OLS results.

Channels

We finish the cross-country analysis by making a first attempt at exploring channels through which financial stress may affect output. We do so by re-estimating Equation (1) using potential drivers of output as alternative dependent variables as follows: (i) labor productivity; (ii) employment; (iii) unemployment; (iv) the growth rate of stock market returns; (v) stock market volatility; and (vii) economic and policy uncertainty (World Uncertainty Index by Ahir, Bloom and Furceri, 2022). The results reported in Figure 19 suggest that a key channel is the statistically and economically significant

[19] We also re-estimated Equation (1) using external financial stress directly as main regressor, instead of as instrument for overall financial stress. The results are qualitatively unchanged. See Ramey (2016) for a discussion on using macroeconomic variables as shocks or instruments in VAR and Local Projection settings.

decrease in labor productivity, which declines by about 2 percent after one year following a one-standard deviation increase in financial stress. Increases in financial stress have also negative effects in the labor market by reducing employment about 1 year after the shock and increase the unemployment rate by about 0.1 percentage point, 1 year after the shock. Finally, the results corroborate existing evidence that increase in financial stress is associated with a short-term decline in stock market growth, and short-lived increase in stock market volatility and uncertainty (e.g., Caggiano et al., 2021 and references therein). Similar results are obtained when using the IV approach (Figure 20).

Firm-level Analysis

In this section, we complement our cross-country analysis with firm-level analysis. Taking advantage of extensive firm coverage and heterogeneity helps with identification and allows for further testing causality through a difference-in-differences approach.

Data

Our main source is S&P Capital IQ (CIQ), which provides extensive firm balance sheet and income statement information. The main advantage of this dataset compared to other leading corporate data providers such as Orbis or Worldscope is that data are available at the quarterly frequency, which is more suited to identify the firm-level responses to high frequency shocks—such as financial stress episodes.

The dataset covers 150 countries from 1950Q1 to 2021Q2. In order to reduce significant gaps in the time series, we restrict the sample to 2001Q1 onwards, and to 75 advanced and emerging market economies. Details regarding the sample of countries used in the analysis, by geographic region, are available in Table A6. The data is restricted to non-financial corporations and was cleaned to remove firms which had negative values for assets or debt in any year, and observations with the incorrect sign for revenue, capital expenditure, cash, tangible assets, and interest expenditure were set to missing—see Kim et al. (2020) and Arbatli-Saxegaard et al. (2022) for details. We further restrict the sample to exclude real estate and insurance companies. Tables A7 and A8 display the number of firms across countries and 20 economic sectors.

We make use of a set of balance sheet and cash-flow statement indicators from S&P Capital IQ to investigate the response of firm-level investment to financial stress, and its heterogeneity depending

on firms' characteristics. As for our investment measure, we use capital expenditures (IQ_CAPEX-2021). This variable refers to funds used by firms to acquire assets—such as property, plant, or equipment—and generally used to undertake new investments.

Empirical Methodology

Our empirical approach to quantify the effect of financial stress at the firm-level proceeds in two steps. In the first step, we estimate the average (unconditional) effect of financial stress on firm investment using Jordà's (2005) local projections. Specifically, we estimate the following specification:

$$y_{n,i,t+k} = \alpha_{isq}^{k} + \gamma_{n}^{k} + \sum_{j=0}^{2} \beta_{j}^{k} \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_{j}^{k} y_{n,i,t-j} + \varepsilon_{n,i,t}^{k}, \quad (6)$$

where dependent variable, $y_{n,i,t+k}$, is the investment ratio in firm *n* of country *i* at time (quarter) *t*; $\Delta F_{i,t}$ denotes the change in the financial stress indicator at time t; γ_n indicate firm fixed effects to control for unobservable time-unvarying firm characteristics and α_{isq}^{k} are country-sector-quarters dummies to account for cross-sector variations across countries as well as seasonality in the data.

In the second step, we expand equation (6), to estimate how the effect of financial stress varies across firms. We apply a difference-in-differences approach based on the identifying assumption that financial stress has larger effects on firms that are less profitable (characterized by lower profits, revenues and ROA) and that are more financially constrained (characterized by higher debt-to-asset ratios and being smaller and younger). In particular, we estimate the following specification:

$$y_{n,i,t+k} = \alpha_{ist}^{k} + \gamma_{nq}^{k} + \sum_{j=-k}^{4} \mu_{j}^{k} \Delta F_{i,t-j} * D_{n} + \sum_{j=1}^{4} \theta_{j}^{k} y_{n,i,t-j} + \varepsilon_{n,i,t}^{k}, \quad (7)$$

where D is a dummy which equals to one if the with the firm country characteristics is below (above) the median of the country.[20] We use the average profitability over the entire sample to define this dummy to reduce endogeneity due to the potential time-varying response of corporate debt to recessions. α_{ist}^{k} are country-sector-time fixed effects to account for macro-economic shocks and their differential effect across sectors (such as the differential effect of financial stress) as well as sector-specific shocks at the country level (such as changes in country regulations affecting a given sector). γ_{nq}^{k} are firms-quarter dummy to account for firms' characteristics as well as seasonality in the data. μ_{j}^{k}

[20] Similar results are obtained when we consider the median of the sector, and the median of the sector within each country.

indicates the marginal (additional) response of investment to financial stress in quarter k for firms with a low (below-median) level of profitability relative to those with high levels of profitability. Equations (4)-(5) are estimated using OLS (and IV) and standard errors are two-way clustered on firm and country-time.

Results

Figure 21 presents the response of (log) investment to an increase in financial stress. Time (quarter) is indicated on the x-axis; the solid line displays the average estimated response, dashed and dotted areas denote 90 and 68 percent confidence bands, respectively. The results suggest increases in financial stress are associated with persistent effects on the level of investment. In particular, we find that a one-standard deviation increase in financial stress is associated with an average reduction in the level of firms' investment of about 30 percent after 12 quarters. This effect is statistically significant and economically sizeable.

Figure 22 reports the differential response of investment to financial stress between a firm with relatively low profitability/high financial constraints and firms with relatively high profitability/low financial constraints. The results show that the differential investment loss for a firm with low profitability/high financial constraint is statistically significant and precisely estimated across all variables and most of the horizon considered, with the peak effect being economically sizeable at about 10 percent. These results are robust when estimating Equation (7) with the IV approach using the external financial stress indicator as the instrument (Figure 23).

VI. Conclusions

This paper uses text analysis to construct a continuous financial stress index (FSI) for 110 countries quarterly over the period 1967-2018. The new indicator has a larger country and time coverage and higher frequency than similar measures focusing on advanced economies (RR) and it complements binary indicators with broad country coverage extended the work on banking crisis to 81 countries over the period of 1800 to 2014 (Laeven and Valencia 2013, 2014, and 2020; and Reinhart and Rogoff, 2009) by providing a continuous measure of financial stress intensity. Further, since FSI relies primarily on a computer algorithm, it is easy to maintain and update.

We use our new indicator to revisit a set of key questions in the literature: What is the effect of financial stress on output? Can we establish a causal effect between financial stress and output loss? Is this loss temporary or persistent? Does the severity of financial stress affect its relationship with output? And is the relationship different in advanced economies, emerging markets, and developing countries?

We confirm the existence of an economically significant and persistent relationship between financial stress and output. Further, using our newly constructed series of "foreign-originated" stress we provide evidence of a causal effect of financial stress on output, but also suggest that OLS estimates will tend to overestimate such effect. Our IV approach contributes to the literature by providing novel "simultaneous-causality-proof" level estimates of the effect. Yet, we also use firm-level and a diff-in-diff approach to further confirm the direction of causality in the relationship between financial stress and economic activity.

We exploit the broad country coverage and continuous nature of our index to explore the cross-country heterogeneity of the relationship between financial stress and output. We confirm evidence that crises tend to be more disruptive in EMDCs than in AEs. But we also show that this is not due solely to the fact that less advanced economies are exposed to larger shocks. Rather, even for comparable levels of financial stress, the effects on output tend to be larger in EMDCs, suggesting that greater fiscal and monetary policy space and stronger institutional frameworks are likely to play a role. Finally, especially for EMDEs, we find evidence of nonlinearities in the relationship between financial stress and economic activity, with the effect being typically not significant for low levels of financial stress.

This paper opens important questions for future research. First, across all 110 covered countries, we observe that generally FSI tend to pick up the start date of stress earlier than the binary measures and this is especially true for developing economies. Future research could investigate whether and under what conditions an early rise in FSI could serve as a warning indicator for more severe financial crises. Second, what are the mechanisms through which financial stress impacts output? Our initial attempt points to labor productivity and unemployment as promising areas of future research. Second, further work using text analysis would certainly contribute to the frequency of observations and depth of the narrative around each observation. Third, extending the empirical exercises in this paper using emerging sources of firm-level data across different sectors and countries seems also an exciting venue of research.

References

Adrian, Tobias, Fernando Duarte and Tara Iyer. 2023, “DP17777 The Market Price of Risk and Macro-Financial Dynamics”, CEPR Press Discussion Paper No. 17777.

Adrian, Tobias, Federico Grinberg, Nellie Liang, Sheheryar Malik, and Jie Yu. 2022. "The term structure of growth-at-risk." American Economic Journal: Macroeconomics 14, no. 3: 283-323.

Ahir, Hites, Nicholas Bloom, and Davide Furceri, 2022, “World Uncertainty Index,” NBER WP 29763.

Alesina, Alberto, Carlo Favero, and Francesco Giavazzi. 2019. *Austerity: When It Works and When It Doesn’t.* Princeton, NJ: Princeton University Press.

Andrews, Isaiah, James H. Stock, and Liyang Sun. 2019. “Weak Instruments in Instrumental Variable Regressions: Theory and Practice,” *Annual Reviews*, 11, 727-753.

Arbatli Saxegaard, Elif, Davide Furceri, Jeanne Verrier, and Melih First. 2022. “U.S. Monetary Policy Shock Spillovers: Evidence from Firm-Level Data,” IMF WP 2022/191.

Auerbach, Alan J., and Yuriy Gorodnichenko. 2013. “Output Spillovers from Fiscal Policy,” *American Economic Review*, 103(3), 141-146.

Baker, Scott, Nick Bloom, and Stephen Terry. 2021. “Using Disasters to Estimate the Impact of Uncertainty,” *Review of Economic Studies* (forthcoming).

Baron, Matthew, Emil Verner, and Wei Xiong. 2021. “Banking Crisis without Panics,” *Quarterly Journal of Economics*, 136(1), 51-113.

Blanchard, Olivier, Giovanni Dell’Ariccia, and Paolo Mauro. 2010. “Rethinking Macroeconomic Policy,” *Journal of Money, Credit and Banking*, 42, 199-215.

Blanchard, Olivier, Giovanni Dell’Ariccia and Paolo Mauro. 2013. “Rethinking Macroeconomic Policy II: Getting Granular,” IMF Staff Discussion Note, 2013/03.

Bloom, Nicholas, Scott Baker, and Stephen Terry. (forthcoming). “Does Uncertainty Drive Growth? Using Disasters as Natural Experiments,” *Review of Economic Studies*.

Bernanke, Ben S. 1983. “Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression,” *American Economic Review*, 73(3), 257-276.

Bernanke, Ben S. 2011. “The Effects of the Great Recession on Central Bank Doctrine and Practice,” Speech at the Federal Reserve Bank of Boston 56th Economic Conference.

Bordo, Michael, Barry Eichengreen, Daniela Klingebiel, and Maria Soledad Martinez-Peria. 2001. “Is the Crisis Problem Growing More Severe?” *Economic Policy*, 16(32), 52-82.

Caggiano, Giovanni., Efrem Castelnuovo, Silvia Delrio, and Richard Kima. 2021.“Financial Uncertainty and Real Activity: The Good, the Bad and the Ugly,” *European Economic Review*, (forthcoming).

Caprio, Gerard, and Daniela Klingebiel. 1996. “Bank Insolvencies: Cross-Country Experience,” World Bank Policy Research WP 1620.

Caprio, Gerard, and Daniela Klingebiel. 2003. “Episodes of Systemic and Borderline Banking Crises.” In *Managing the Real and Fiscal Effects of Banking Crises*, World Bank, 31-49.

Cerra, Valerie, and Sweta Chaman Saxena. 2008. “Growth Dynamics: The Myth of Economic Recovery,” *American Economic Review*, 98(1), 439-457.

Claessens, Stijn, M. Ayhan Kose, and Marco E. Terrones. 2009. “What Happens during Recessions, Crunches, and Busts?” *Economic Policy*, 24(60), 653-700.

Claessens, Stijn, M. Ayhan Kose, and Marco E. Terrones. 2014. “The Global Financial Crisis: How Similar? How Different? How Costly?” In *Financial Crises: Causes, Consequences, and Policy Responses*, International Monetary Fund, 209-237.

Dell’Ariccia, Giovanni, Enrica Detragiache, and Raghuram Rajan. 2008. “The Real Effect of Banking Crises,” *Journal of Financial Intermediation*, 17(1), 89-112.

Demirgüç-Kunt, Asli, and Enrica Detragiache. 2005. “Cross-Country Empirical Studies of Systemic Bank Distress: A Survey,” IMF WP 05/96.

Gourinchas, Pierre-Olivier, and Maurice Obstfeld. 2012. “Stories of the Twentieth Century for the Twenty-First,” *American Economic Journal: Macroeconomics*, 4(1), 226-265.

International Monetary Fund. 2017. “Are Countries Losing Control of Domestic Financial Conditions?” Chapter 3 of Global Financial Stability Report: April 2017.

Jalil, Andrew J. 2015. “A New History of Banking Panics in the United States, 1825–1929: Construction and Implications,” *American Economic Journal: Macroeconomics,* 7(3), 295-330.

Jordà, Òscar. 2005. “Estimation and Inference of Impulse Responses by Local Projections,” *American Economic Review*, 95(1), 161-182.

Kim, Minsuk, Rui Mano, and Mico Mrkaic. 2020. “Do FX Interventions Lead to Higher FX Debt? Evidence from Firm-Level Data.” IMF WP 20/197.

Kroszner, Randall, Luc Laeven, and Daniela Klingebiel, 2007, “Banking Crises, Financial Dependence, and Growth,” *Journal of Financial Economics*, (84) 187-228.

Laeven, Luc, and Fabian Valencia. 2013. “Systemic Banking Crises Database,” *IMF Economic Review* 61(2), 225-270.

Laeven, Luc, and Fabian Valencia. 2014. “Systemic Banking Crises.” In *Financial Crises: Causes, Consequences, and Policy Responses*, International Monetary Fund, 61-137.

Laeven, Luc, and Fabian Valencia, 2020. “Systemic Banking Crises Revisited,” *IMF Economic Review* 68(2), 307-361.

Rajan, Raghuram, and Luigi Zingales.1998. “Financial Dependence and Growth,” *American Economic Review*, 88, 559-586.

Ramey, Valerie A. 2016. "Macroeconomic Shocks and Their Propagation," NBER WP 21978.

Reinhart, Carmen. 2002. “Default, Currency Crises, and Sovereign Credit Ratings,” *World Bank Economic Review* 16(2), 151-170.

Reinhart, Carmen, and Kenneth Rogoff. 2009. *This Time Is Different: Eight Centuries of Financial Folly*, Princeton University Press.

Romer, Christina, and David Romer, 2017, “New Evidence on the Aftermath of Financial Crises in Advanced Countries,” *American Economic Review*, 107(10), 3072-3118.

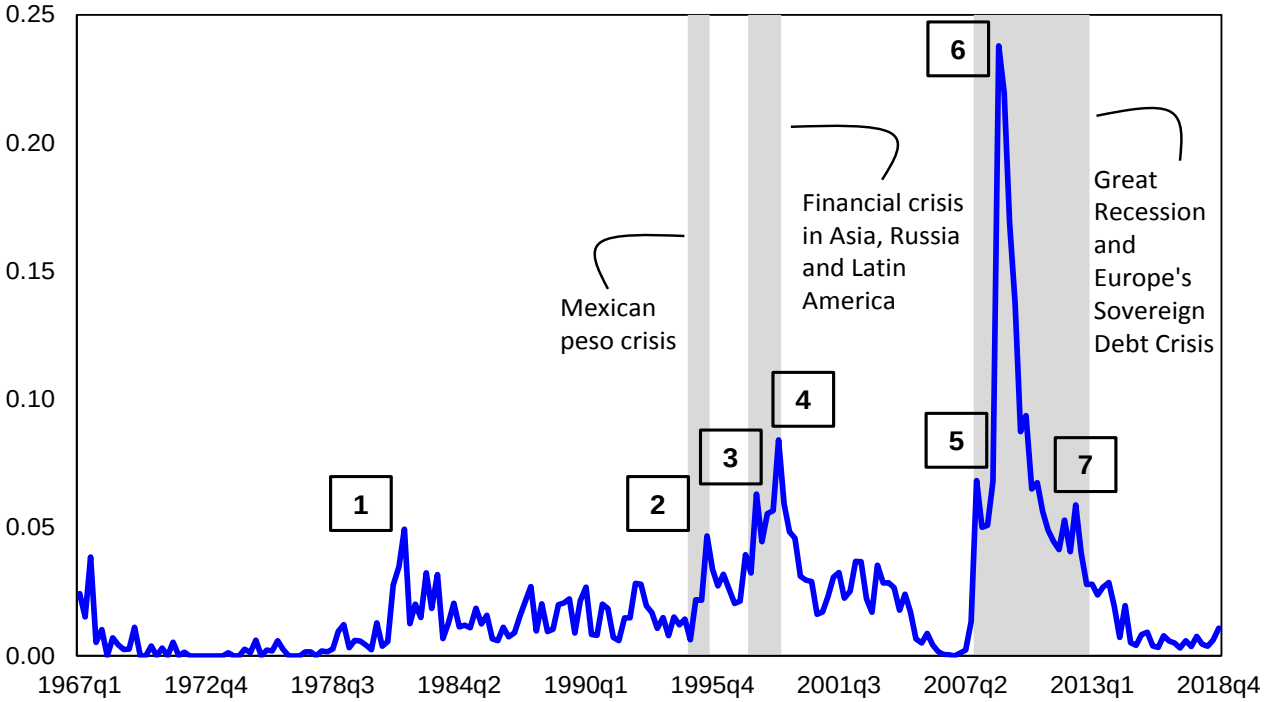
Schularick, Moritz, and Alan Taylor. 2012. “Credit Booms Gone Bust: Monetary Policy, Leverage Cycles and Financial Crises, 1870–2008,” *American Economic Review*, 102(2), 1029-1061.

Shin, Inseok and Joon-Ho Hahm. 1998. “The Korean Crisis—Causes and Resolution,” KDI Working Paper No. 9805.

Sufi, Amir, and Alan M. Taylor. 2021. “Financial Crises: A Survey,” NBER WP 29155.

Figures

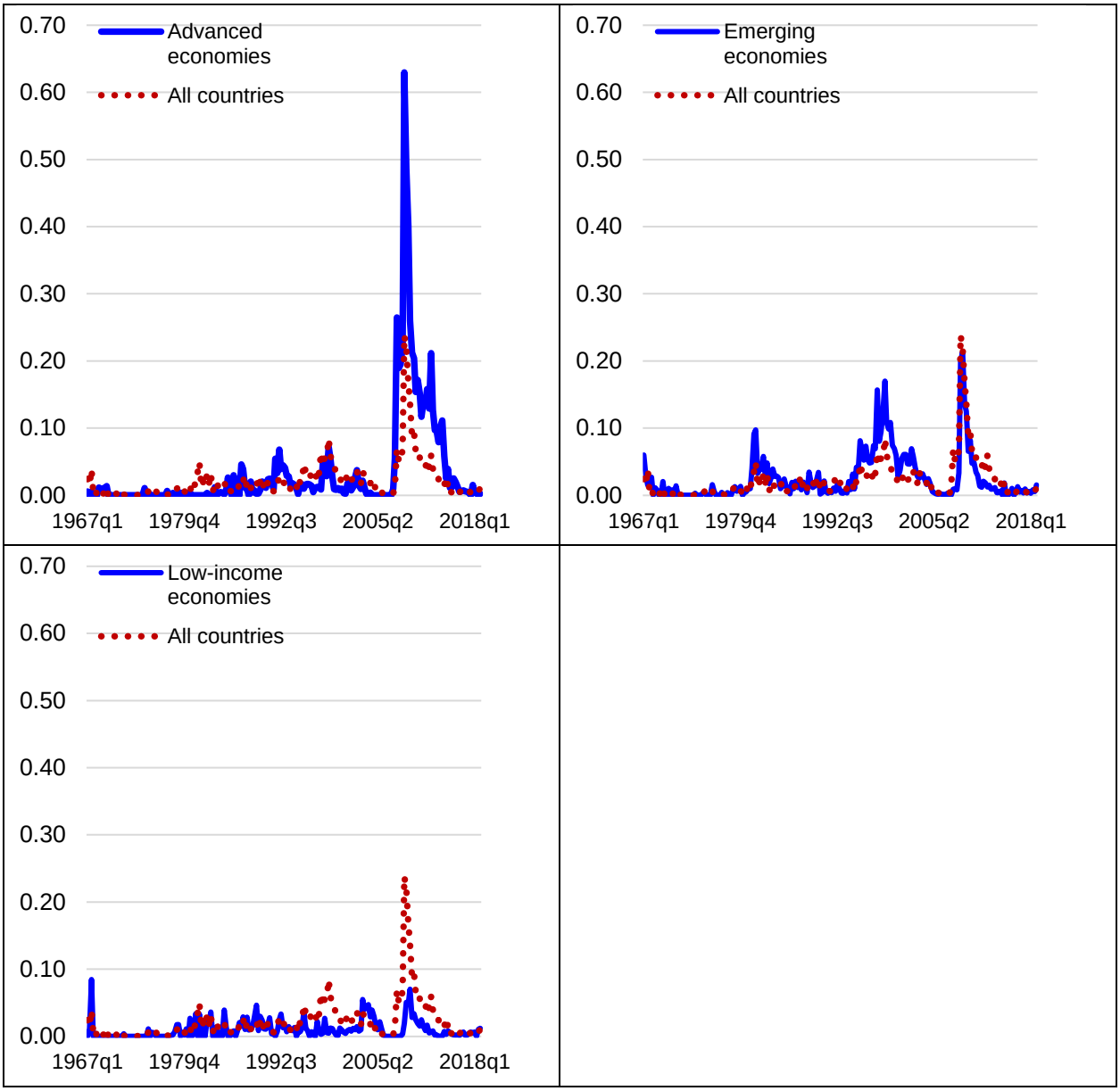
Figure 1. Financial Stress Index (FSI) over Time



Notes: The Financial Stress Index (FSI) is summing the number of keywords identified with financial stress in EIU country reports. The index is then normalized by total number of words. A higher number means higher financial stress and vice versa. The figure above is an average across 110 countries and covers 1967 to 2018 at a quarterly frequency.

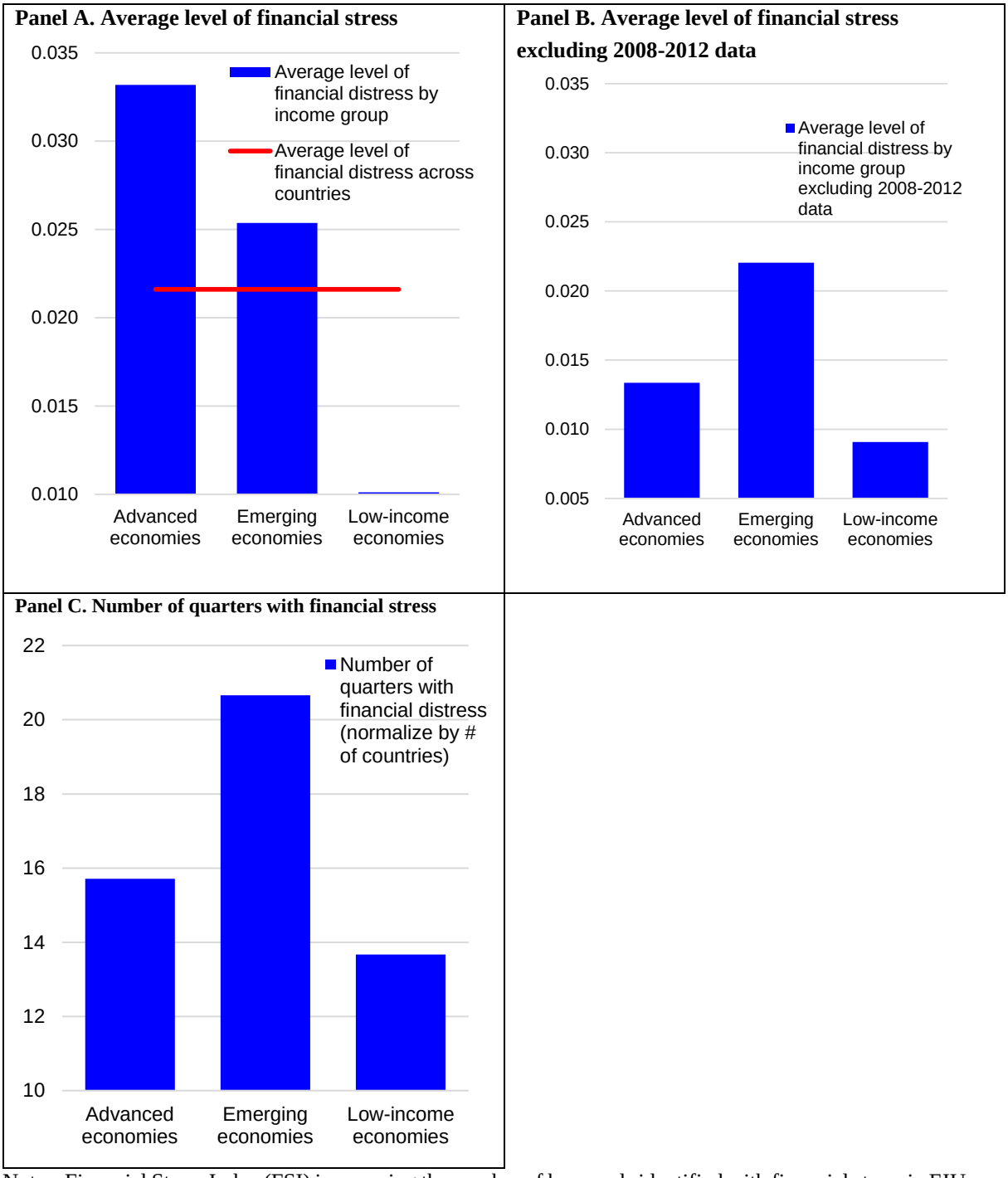
1. Financial stress in 1981Q4 in 6 countries: Argentina, Chile, Costa Rica, Ecuador, Guatemala, and Honduras.
2. Financial stress in 1995Q3 in 11 countries: Alergia, Argentina, Bolivia, Bulgaria, Cameroon, Jamaica, Japan, Liberia, Mexico, Niger, and Paraguay.
3. Financial stress in 1997Q4 in 15 countries: Brazil, Bulgaria, Hong Kong SAR, India, Indonesia, Jamaica, Japan, Korea, Malaysia, Mexico, Paraguay, Philippines, Thailand, Venezuela, and Vietnam.
4. Financial stress in 1998Q4 in 23 countries: Argentina, Brazil, Colombia, Ecuador, Egypt, Hong Kong SAR, India, Indonesia, Jamaica, Japan, Kenya, Korea, Malaysia, Panama, Paraguay, Peru, Philippines, Russia, South Africa, Sri Lanka, Thailand, United States, and Vietnam.
5. Financial stress in 2007Q4 in 19 countries: Austria, Belgium, Brazil, Canada, Denmark, El Salvador, Finland, France, Germany, Iceland, Italy, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States.
6. Financial stress in 2008Q4 in 55 countries: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Cameroon, Canada, China, Colombia, Costa Rica, Denmark, Dominican Republic, Ecuador, El Salvador, Finland, France, Gabon, Germany, Greece, Guatemala, Haiti, Honduras, Hong Kong SAR, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Lebanon, Libya, Netherlands, New Zealand, Norway, Pakistan, Panama, Paraguay, Peru, Portugal, Russia, Singapore, Spain, Sweden, Switzerland, Taiwan Province of China, Thailand, Turkey, United Kingdom, United States, Uruguay, and Vietnam.
7. Financial stress in 2012Q2 in 16 countries: Austria, Belgium, Denmark, France, Germany, Greece, Haiti, Hungary, Ireland, Italy, Netherlands, Nigeria, Pakistan, Portugal, Spain, and United Kingdom.

Figure 2. FSI over Time by Country Income Group



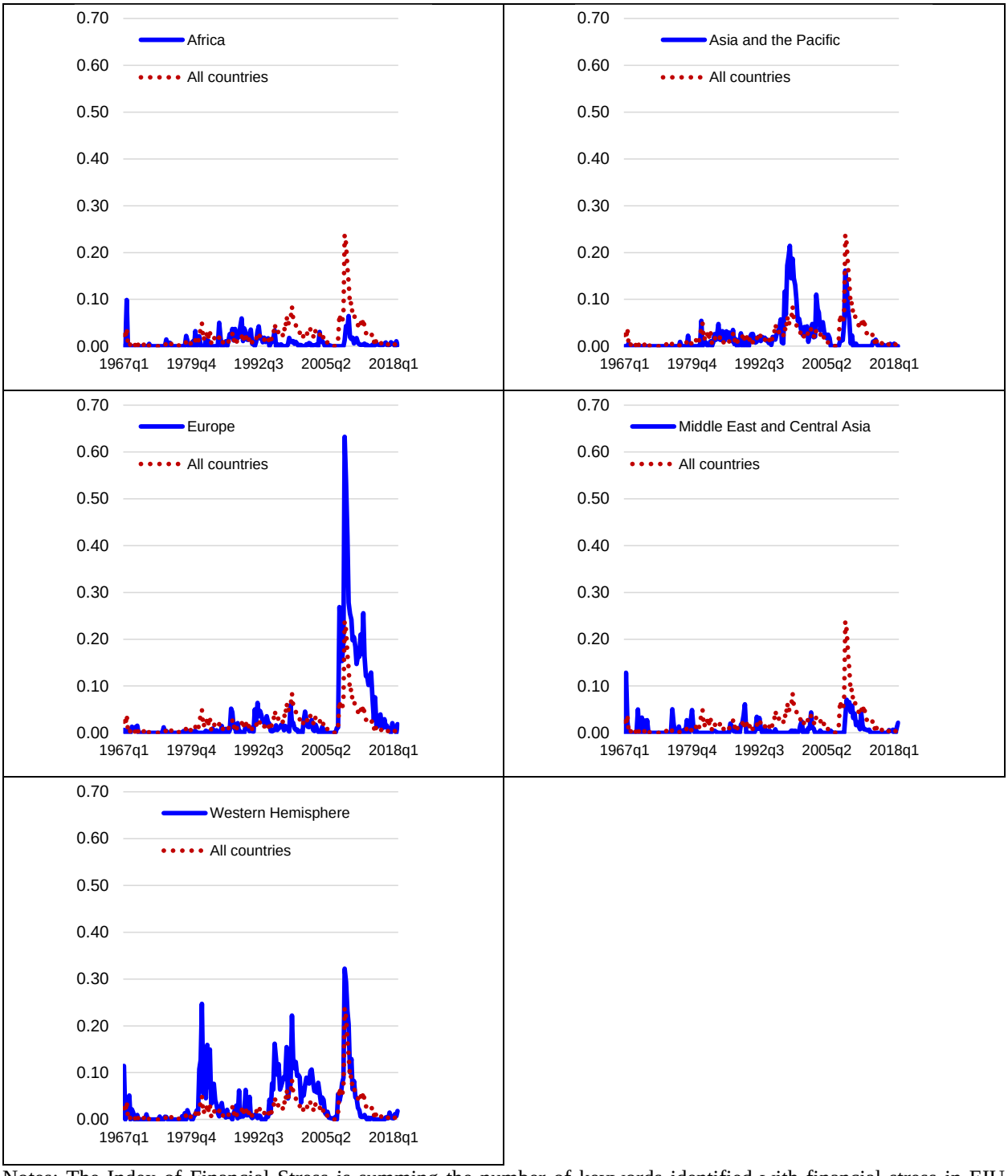
Notes: Financial Stress Index (FSI) is summing the number of keywords identified with financial stress in EIU country reports. The index is then normalized by total number of words. A higher number means higher financial stress and vice versa. For the list of countries in each income group, see Table 1. The figure above is an average of three country income levels and covers 1967 to 2018 period at a quarterly frequency.

Figure 3. FSI: Average Level vs. Number of Episodes



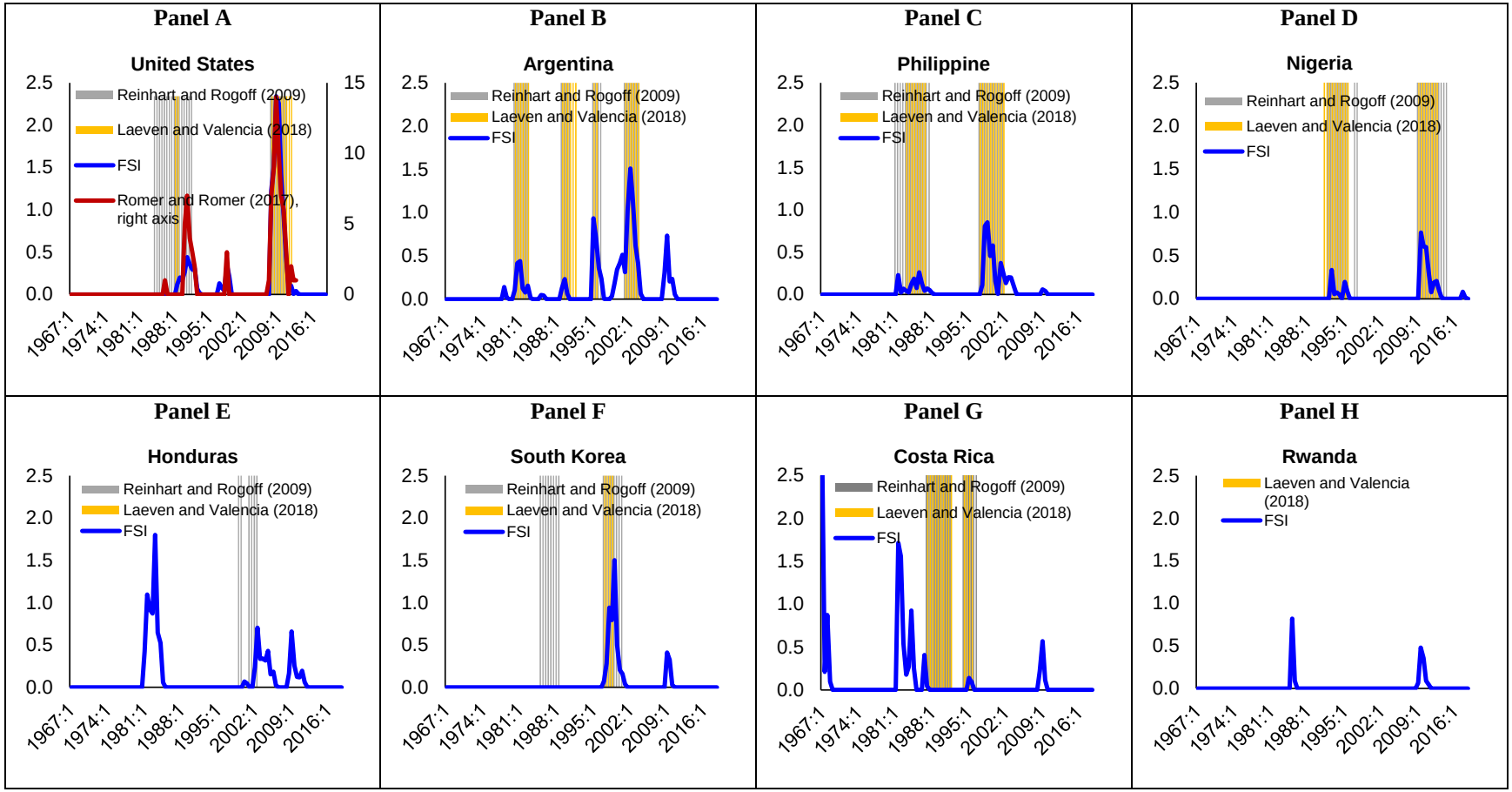
Notes: Financial Stress Index (FSI) is summing the number of keywords identified with financial stress in EIU country reports. The index is then normalized by total number of words. A higher number means higher financial stress and vice versa. For the list of countries in each income group, see Table 1. The figure above presents FSI averages across income groups and financial stress episodes over the period 1967 to 2018 at a quarterly frequency.

Figure 4. FSI over Time by Geographical Region



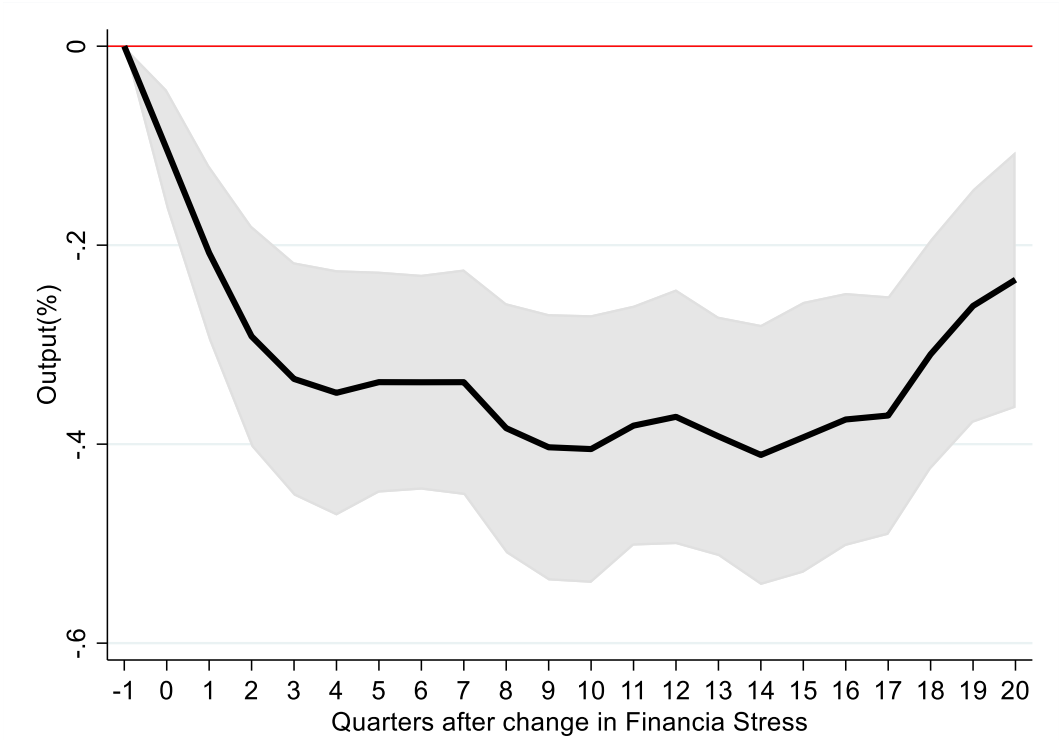
Notes: The Index of Financial Stress is summing the number of keywords identified with financial stress in EIU country reports. The index is then normalized by total number of words. A higher number means higher financial stress and vice versa. For the list of countries in each region, see Table 1. The figure above is an average over five geographical regions and covers 1967 to 2018 period at a quarterly frequency.

Figure 5. FSI vs. other Measures: country examples



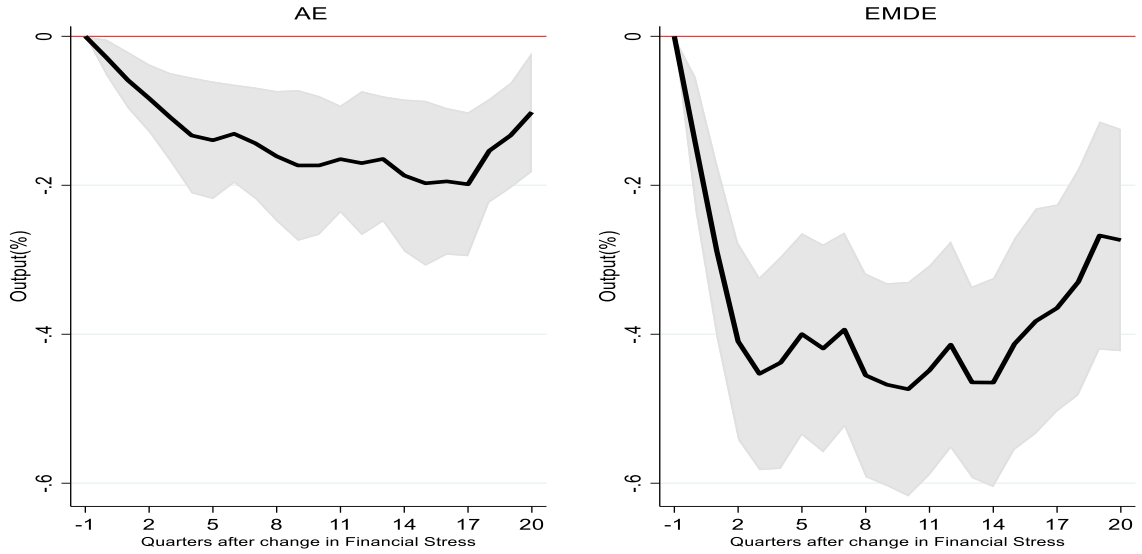
Notes: Financial Stress Index is summing the number of keywords identified with financial stress in EIU country reports. The index is then normalized by total number of words, and calculated using a moving average method. A higher number means higher financial stress and vice versa. The data plotted is semi-annual and run from 1967 until 2018, except RR until 2012, ReRo until 2014 and LV until 201

Figure 6. Impact of Change in FSI on Output (quarterly data)



Notes: The graph shows the dynamic response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$ where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI.

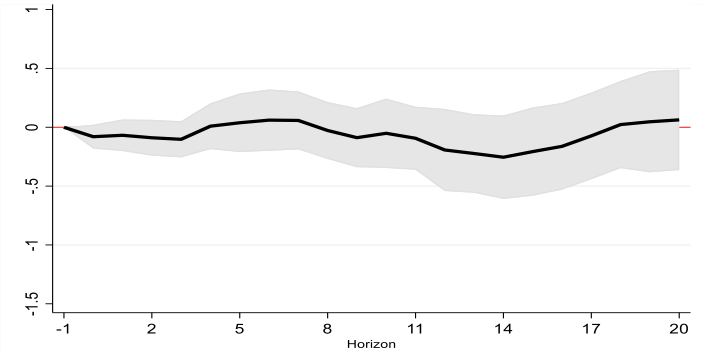
Figure 7. Impact of Change in FSI on Output—Advanced Economies (AE) vs. Emerging Markets and Developing Economies (EMDE)



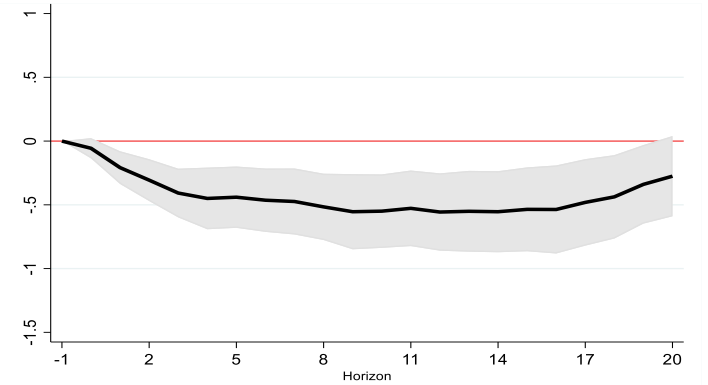
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta AE_{i,t-j} + \sum_{j=0}^{2} \partial_j^k \Delta EMDE_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔAE denotes the change in FSI in Advanced Economies (AE) and $\Delta EMDE$ denotes the change in FSI in Emerging Markets and Developing Economies (EMDE).

Figure 8. Impact of Change in FSI on Output—Non-linear Effects

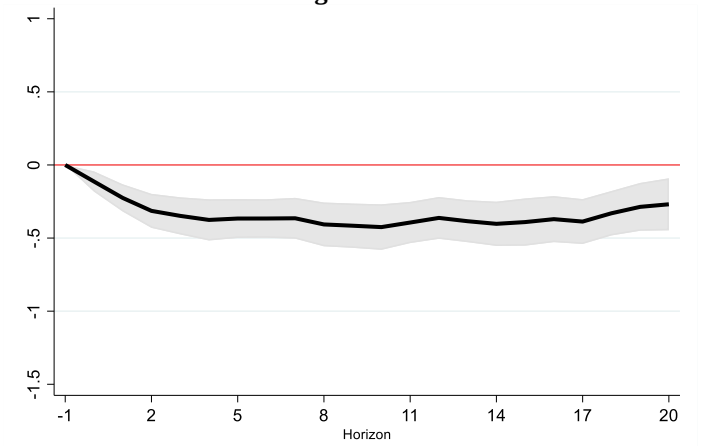
Panel A. Low financial stress



Panel B. Medium financial stress

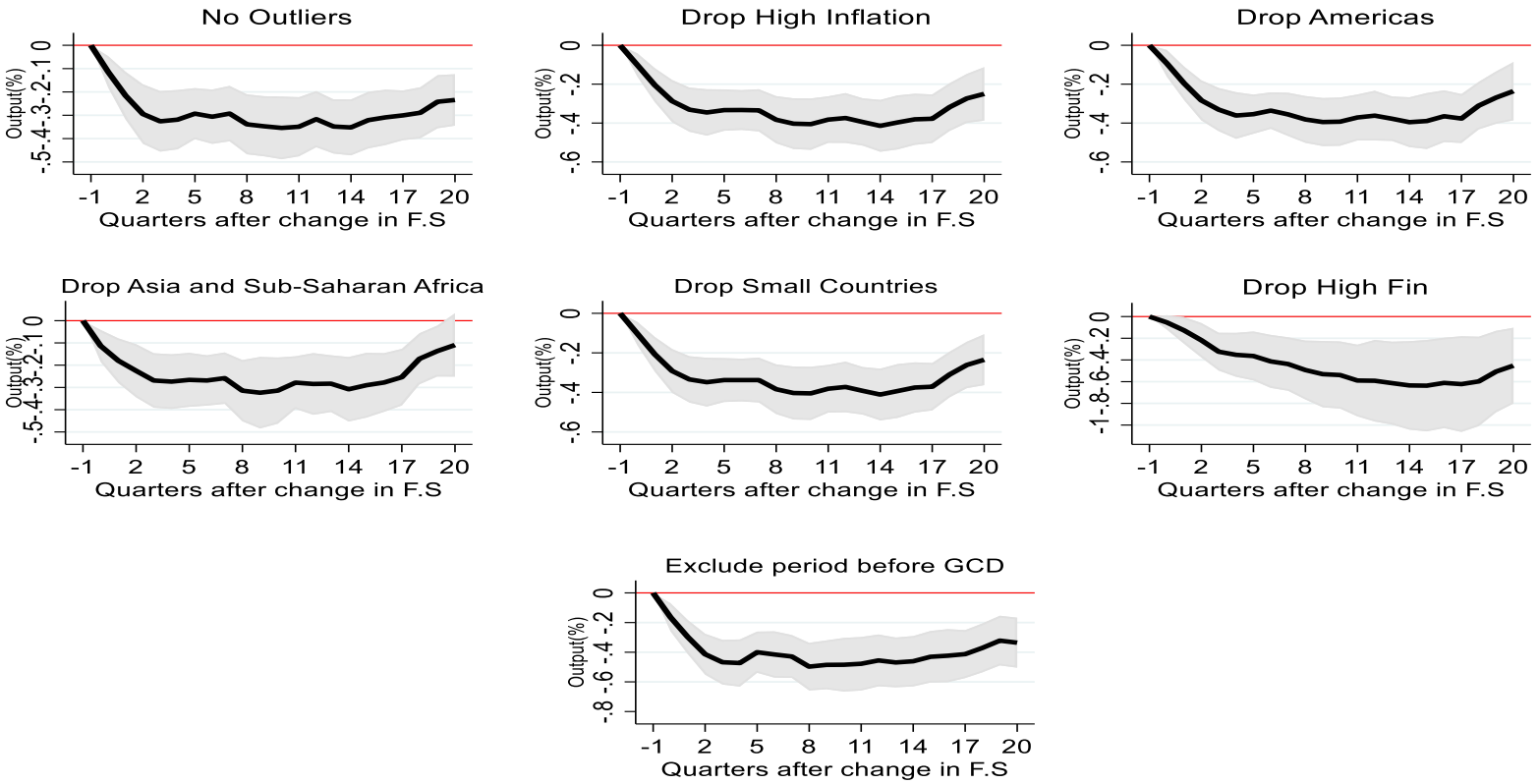


Panel C. High financial stress



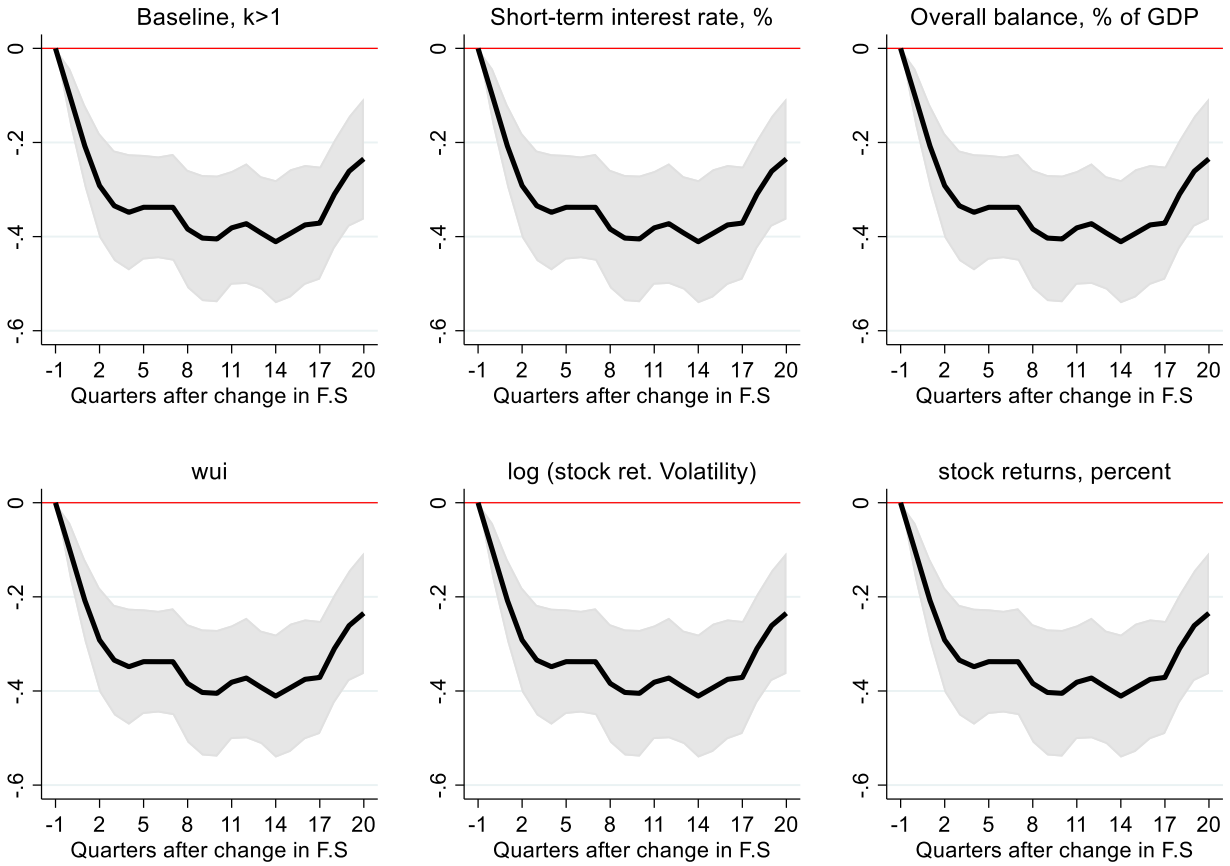
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kG} I[F_{it} \in G\ ] \cdot \Delta F_{i,t} + \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where I is an indicator function which assumes value 1 when the level of financial stress belongs to a specific bin (terciles) of the distribution, which we refer to as group G.

Figure 9. Robustness Checks—Alternative Samples



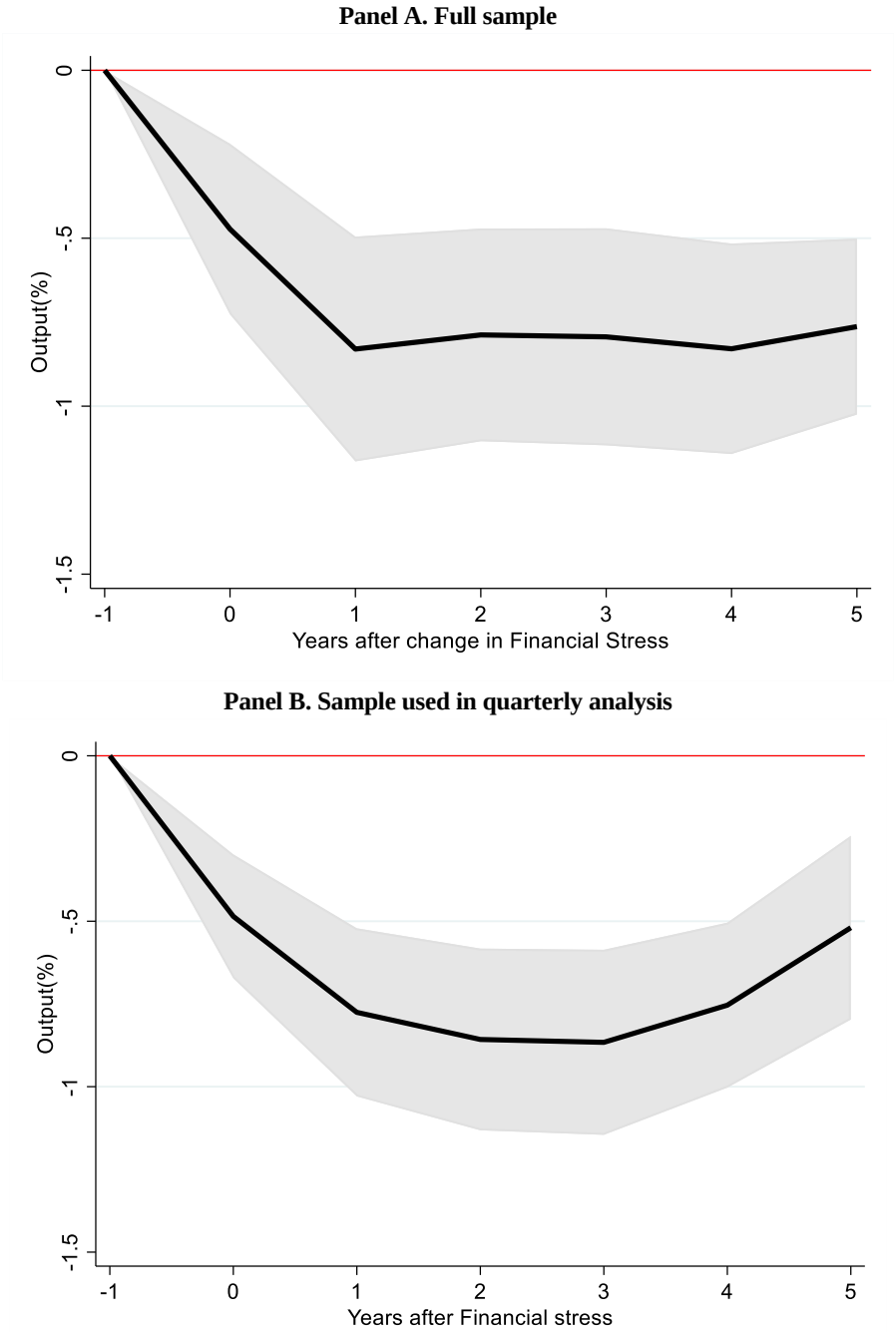
Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where *i* index countries, *t* refers to quarters, and *k* denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI. The plots above consider dropping: a) outliers (those observations corresponding to the residuals in the output regression at the bottom and top percentiles of the distribution); b) high inflation episodes (inflation above 20 percent); c) observations from the Americas; d) Asian and Sub-Saharan African economies; e) small economies (with population below two millions); f) episodes of large changes in financial stress episodes (those corresponding to the 99th percentile of the distribution); and g) excluding the period following the Global Financial Crisis (after the third quarter of 2008).

Figure 10: **Robustness Checks—Alternative Sets of Control Variables**



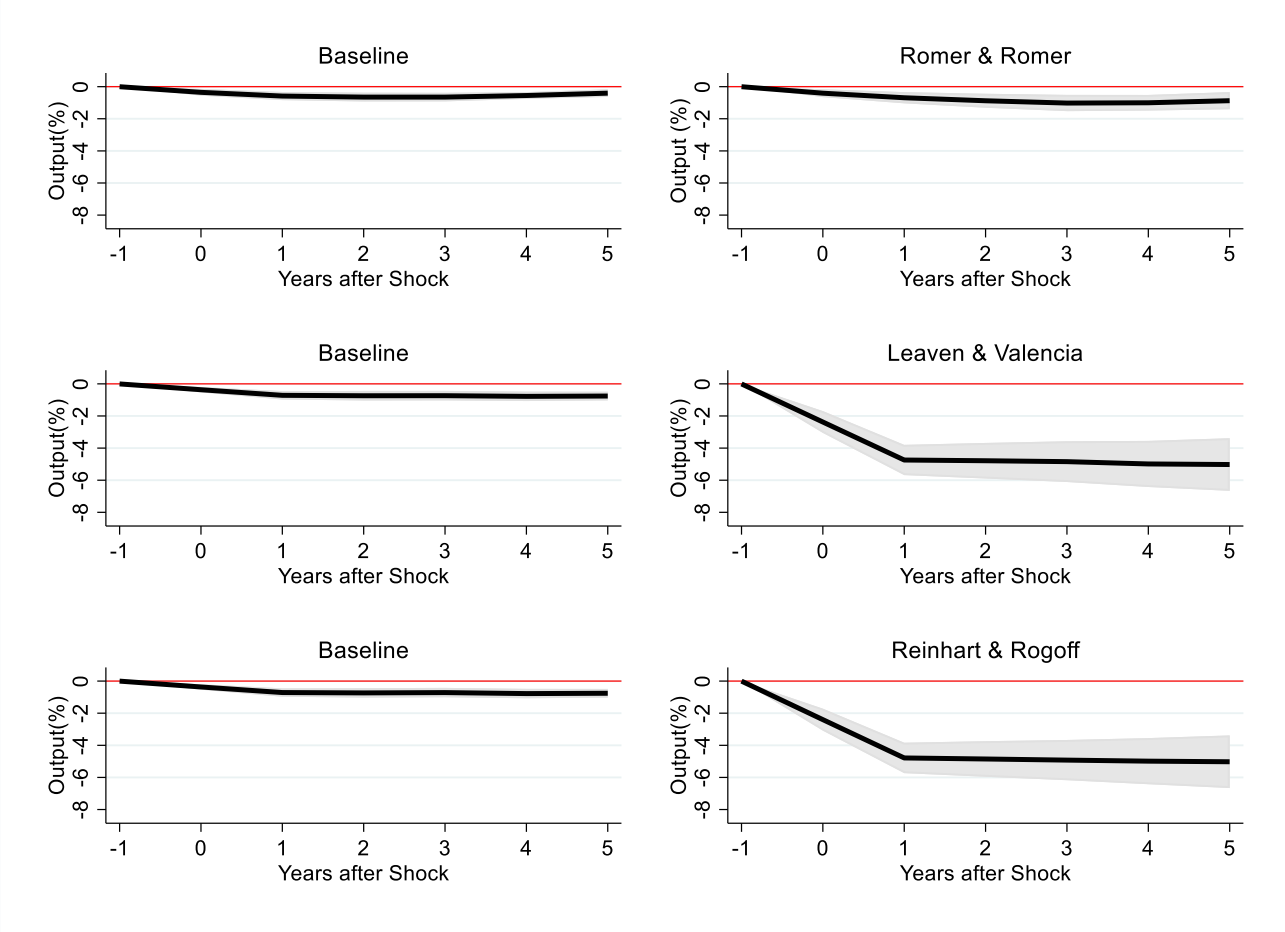
Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \sum_{j=0}^{2} \theta_j^k X_{i,t-j} + \varepsilon_t^k$, where *i* index countries, *t* refers to quarters, and *k* denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; ΔF denotes the change in FSI; and X is a set of controls as follows: i) without lag of FSI; ii) overall balance (% of GDP); iii) short-term interest rate (%); iv) uncertainty; v) log stock return volatility; and vi) stock return (%).

Figure 11. Impact of Change in FSI on Output (annual data)



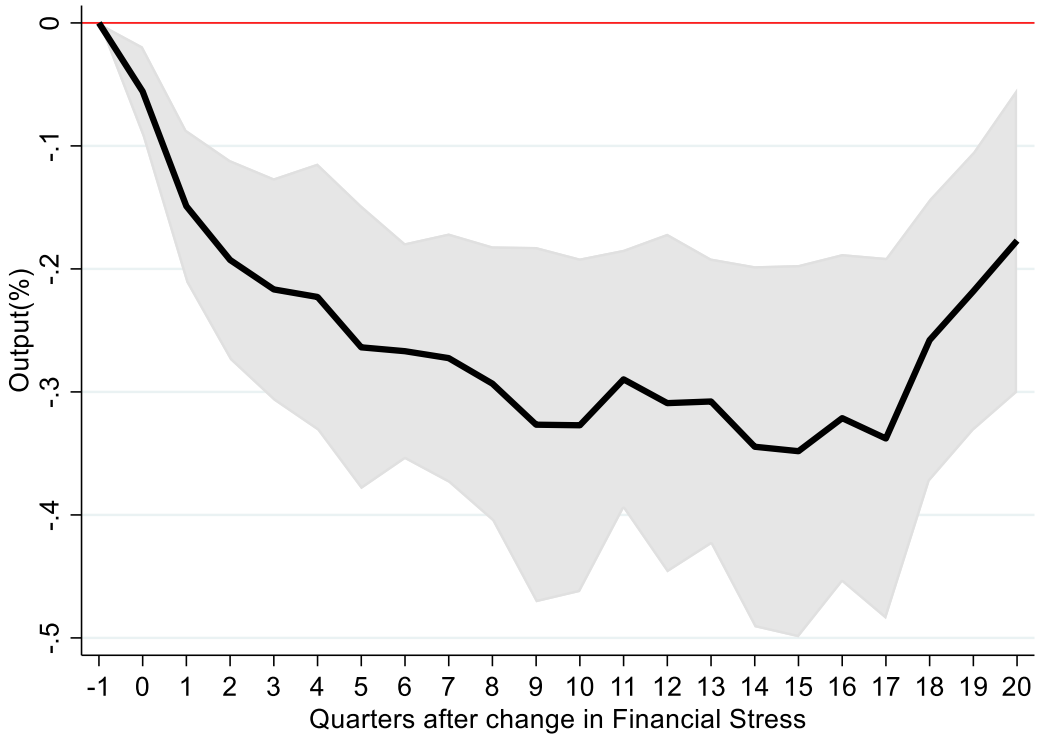
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using the full sample of 110 countries over the period 1967-2018 (Panel A), and the sample used for the quarterly data baseline equation (Panel B). Both panels are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$ where i index countries, t refers to years, and k denotes the horizon (the year after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI.

Figure 12. Impact of Change in FSI and Alternative Chronologies



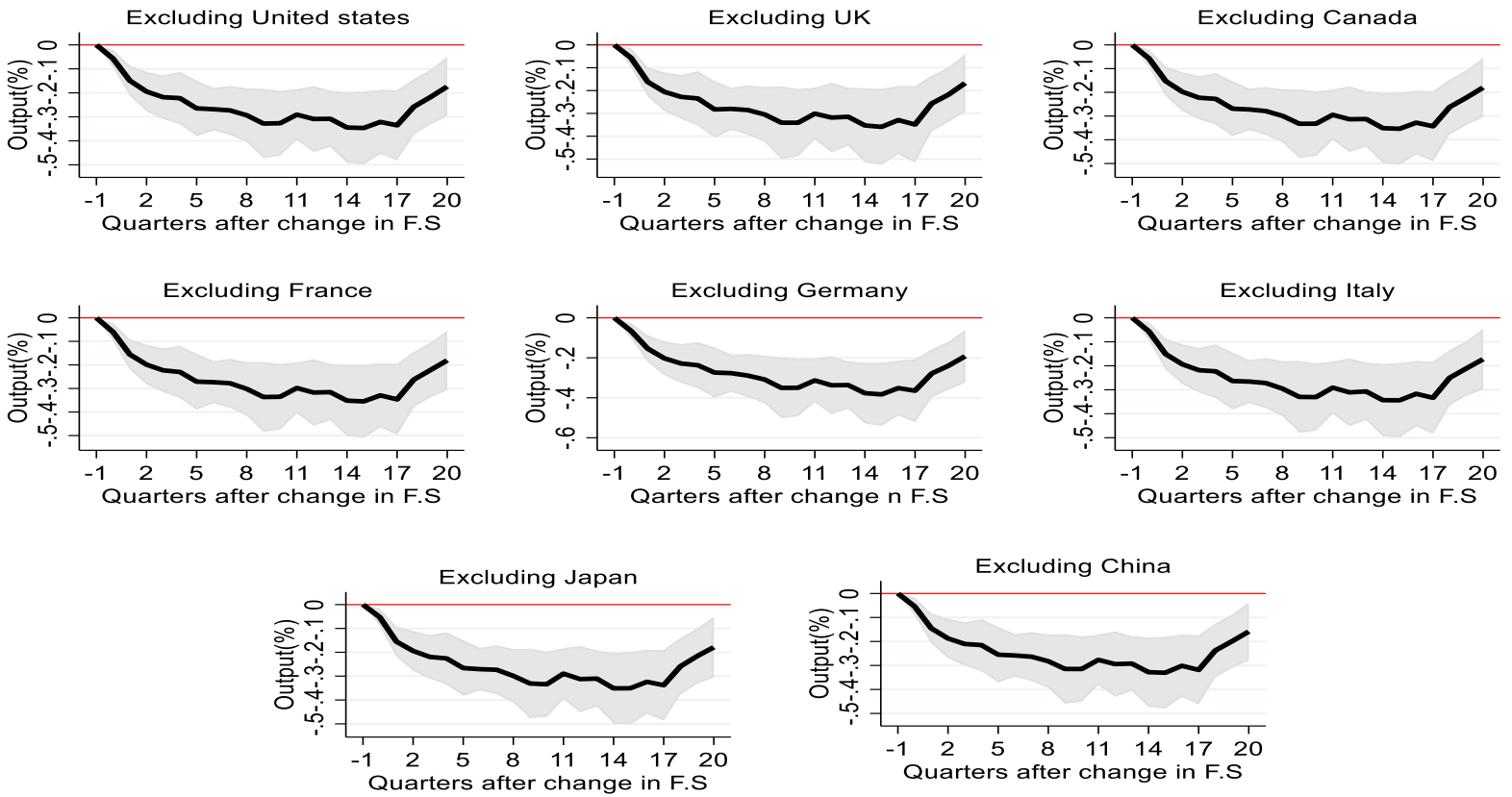
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates of baseline are obtained using a sample of 25 countries for the analysis based on the Romer&Romer sample, and of 105 countries for the others analysis over the period 1967-2018, and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$ where i index countries, t refers to quarters, and k denotes the horizon (the years after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI.

Figure 13. Impact of Change in FSI on Output—IV results



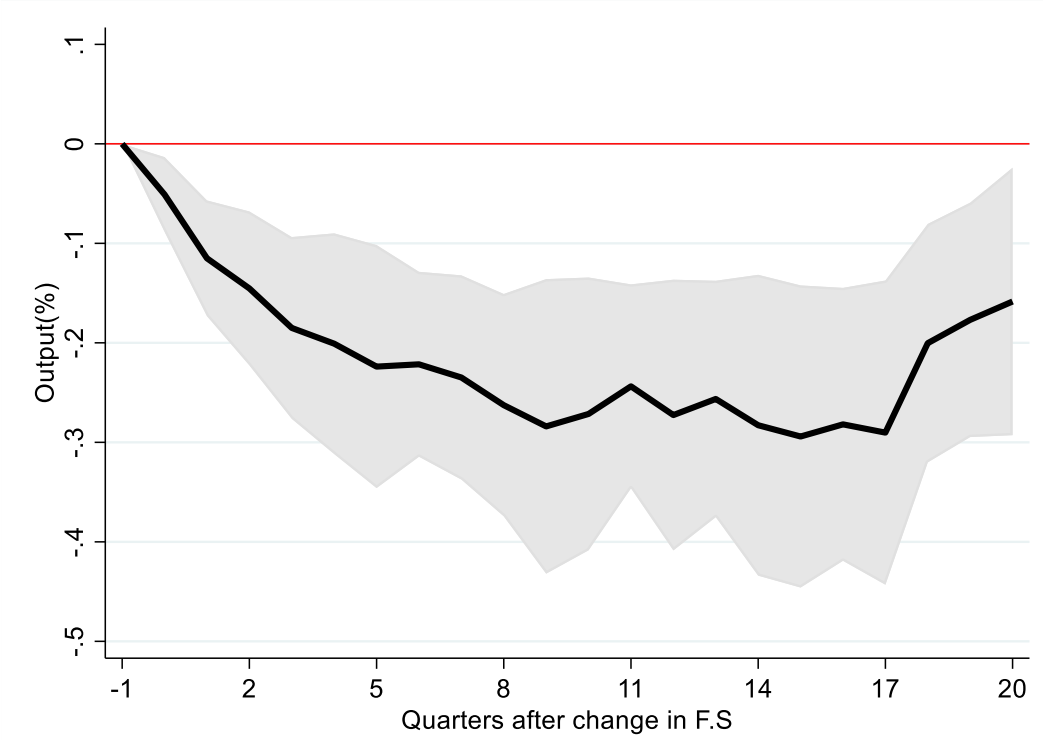
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in financial stress. The instrumental variable (IV) approach consist of $\Delta F_{i,t} = \pi_i + \tau_t + \vartheta \Delta EF_{i,t} + \sum_{j=1}^{2} \rho_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \sigma_j^k y_{i,t-j} + \mu_t$, whereas $EF_{i,t}$ is the indicator of external financial stress produced using the information on episodes of external financial stress.

Figure 14. IV Results—Excluding G7 Economies and China



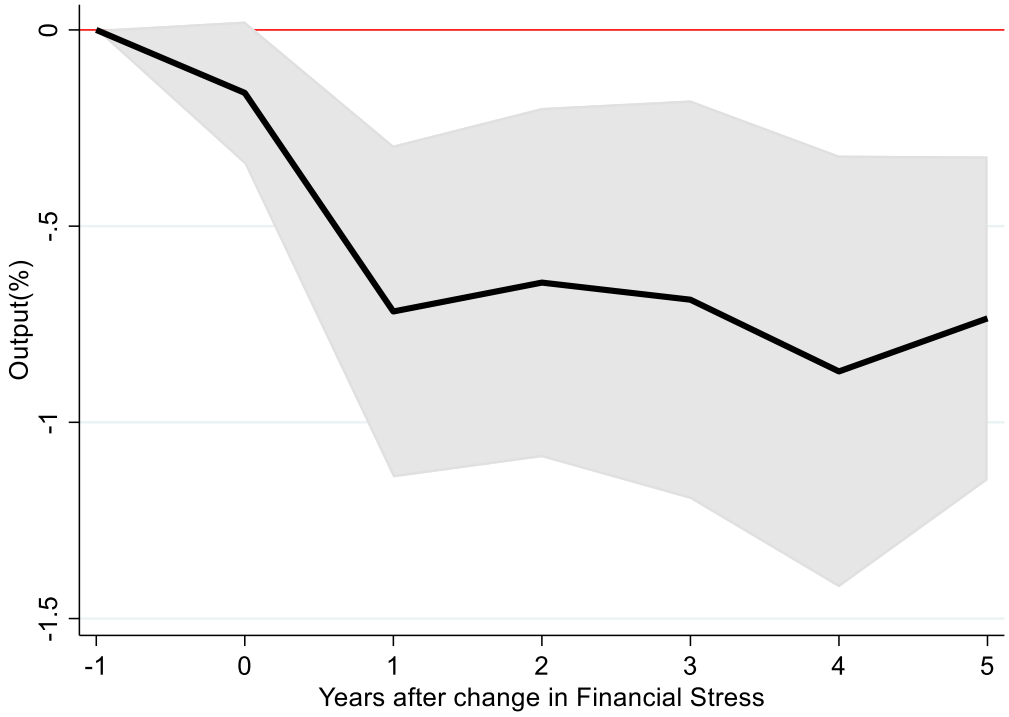
Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI. The instrumental variable (IV) approach consist of $\Delta F_{i,t} = \pi_i + \tau_t + \vartheta \Delta EF_{i,t} + \sum_{j=1}^{2} \rho_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \sigma_j^k y_{i,t-j} + \mu_t$, where $EF_{i,t}$ is the indicator of external financial stress. Excluding the G7 countries and China one at a time

Figure 15. IV Results—Controlling for Growth in Major Trading Partners



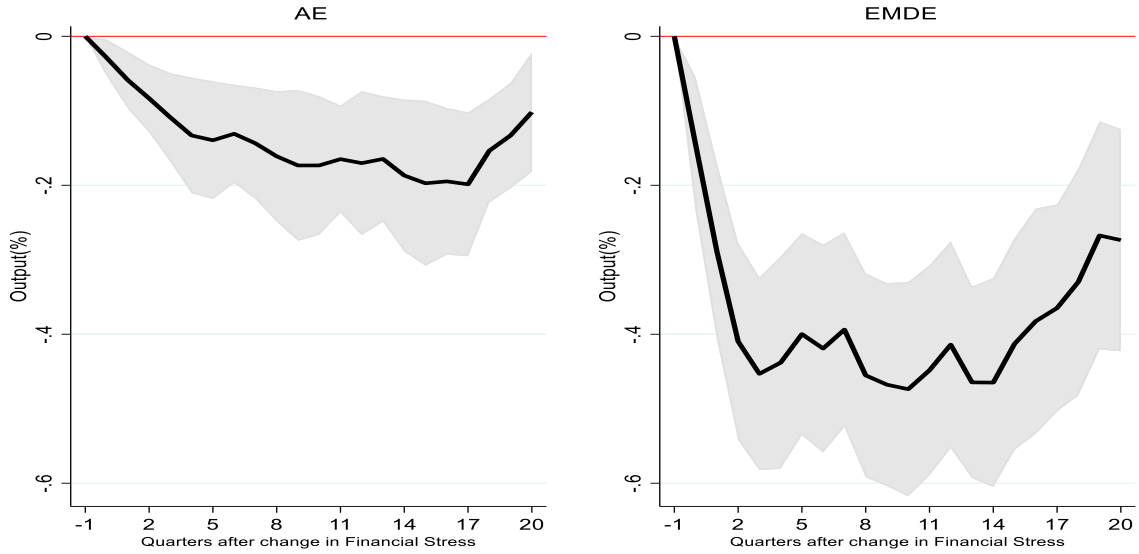
Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI. The instrumental variable (IV) approach consist of $\Delta F_{i,t} = \pi_i + \tau_t + \vartheta \Delta EF_{i,t} + \sum_{j=1}^{2} \rho_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \sigma_j^k y_{i,t-j} + \sum_{j=0}^{2} \theta_j^k foreign\_g_{i,t-j} + \mu_t$, where $EF_{i,t}$ is the indicator of external financial stress, $and\ foreign\_g_{i,t-j}$ is the growth in major trading partners.

Figure 16. IV Results—Annual Data



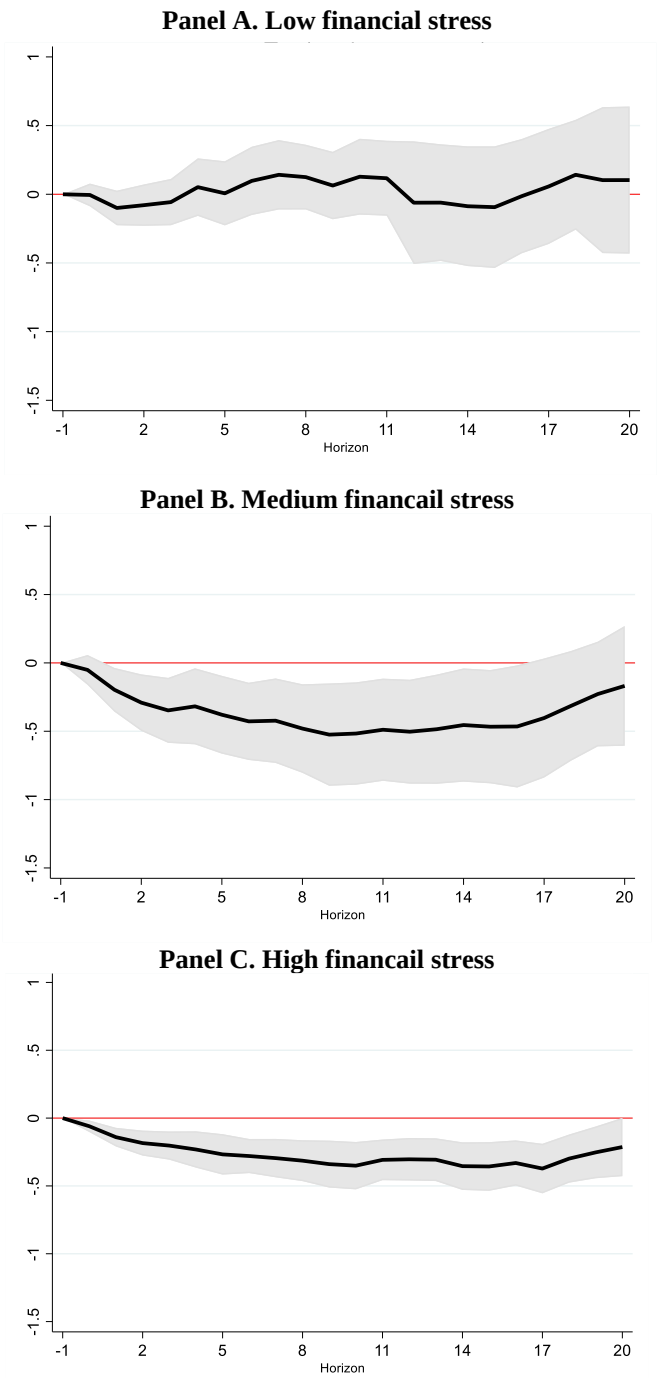
Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 110 countries over the period 1967-2018 and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where *i* index countries, *t* refers to years, and *k* denotes the horizon (the year after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI. The instrumental variable (IV) approach consist of $\Delta F_{i,t} = \pi_i + \tau_t + \vartheta \Delta EF_{i,t} + \sum_{j=1}^{2} \rho_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \sigma_j^k y_{i,t-j} + \mu_t$, whereas $EF_{i,t}$ is the indicator of external FSI.

Figure 17. Impact of Change in FSI on Output—Advanced Economies (AE) vs. Emerging Markets and Developing Economies (EMDE)



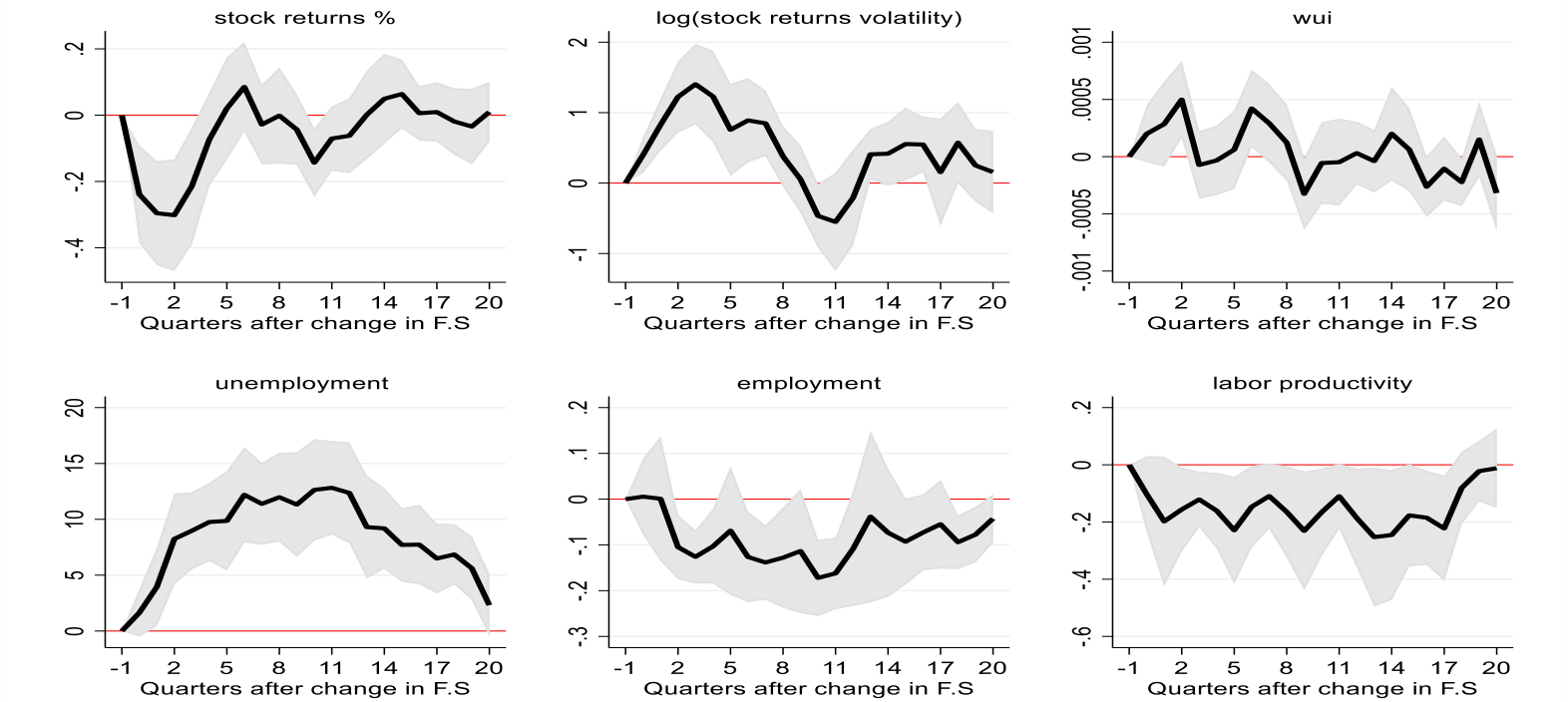
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, and are based are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kAE} D \cdot \Delta F_{i,t} + \beta_0^{kEMDE}(1-D) \cdot \Delta F_{i,t-j} \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI. where D is a dummy variable which takes value 1 for AE, and zero otherwise..

Figure 18. Impact of Change in FSI on Output—Non-linear Effects



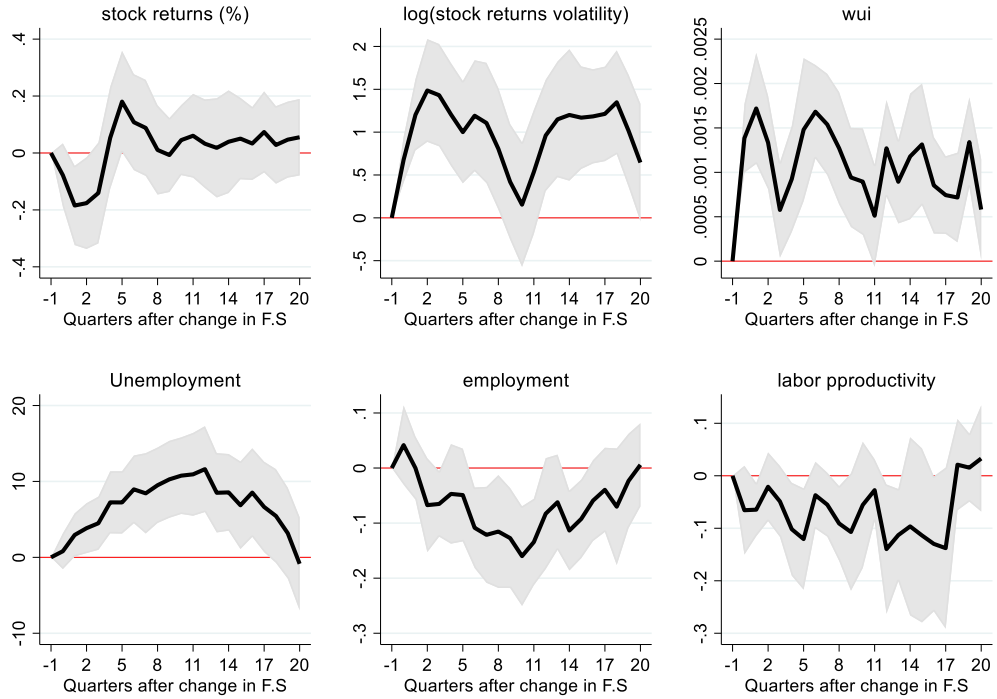
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kG} I[F_{it} \in G\ ] \cdot \widehat{\Delta F_{i,t}} + \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where I is an indicator function which assumes value 1 when the level of financial stress belongs to a specific bin (terciles) of the distribution, which we refer to as group G.

Figure 19. Impact of Change in FSI on other Macroeconomic Variables



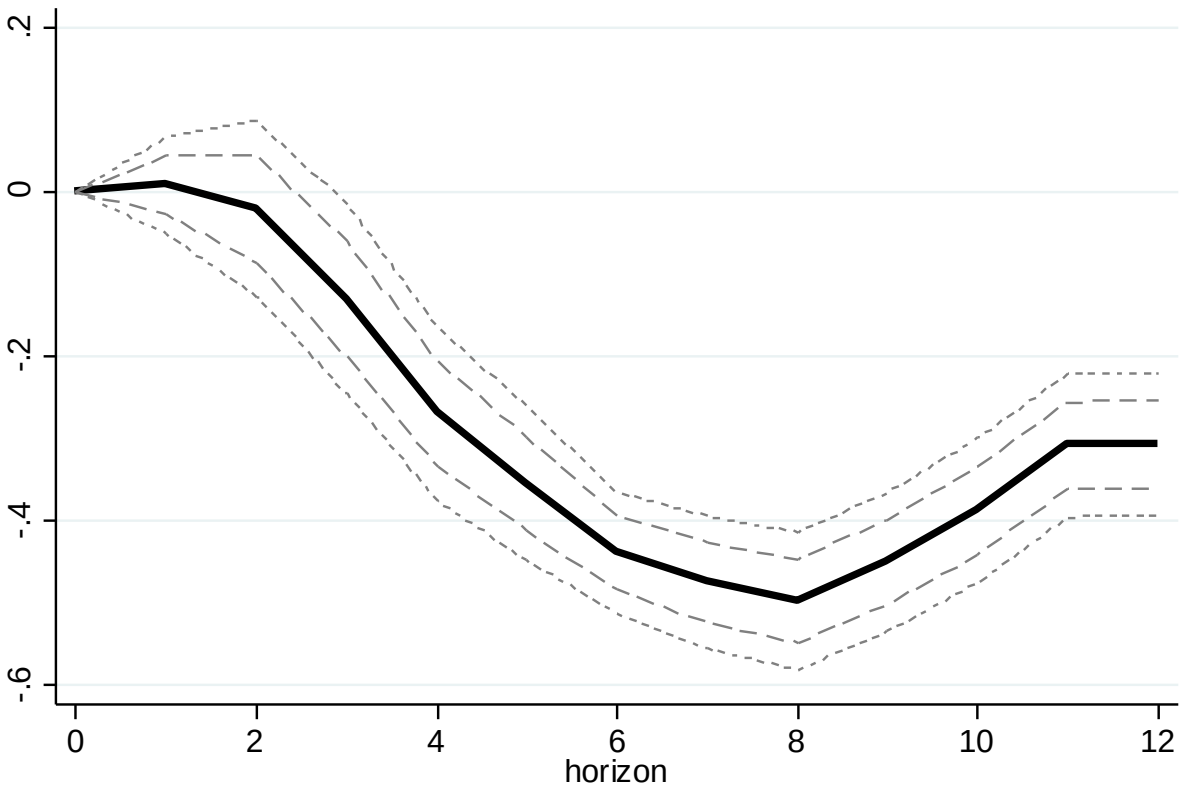
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is: (i) stock returns %; (ii) log (stock returns volatility); (iii) World Uncertainty Index (wui); (iv) unemployment; (v) employment; and (vi) labor productivity; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI.

Figure 20. Impact of Change in FSI on other Macroeconomic Variables—IV Results



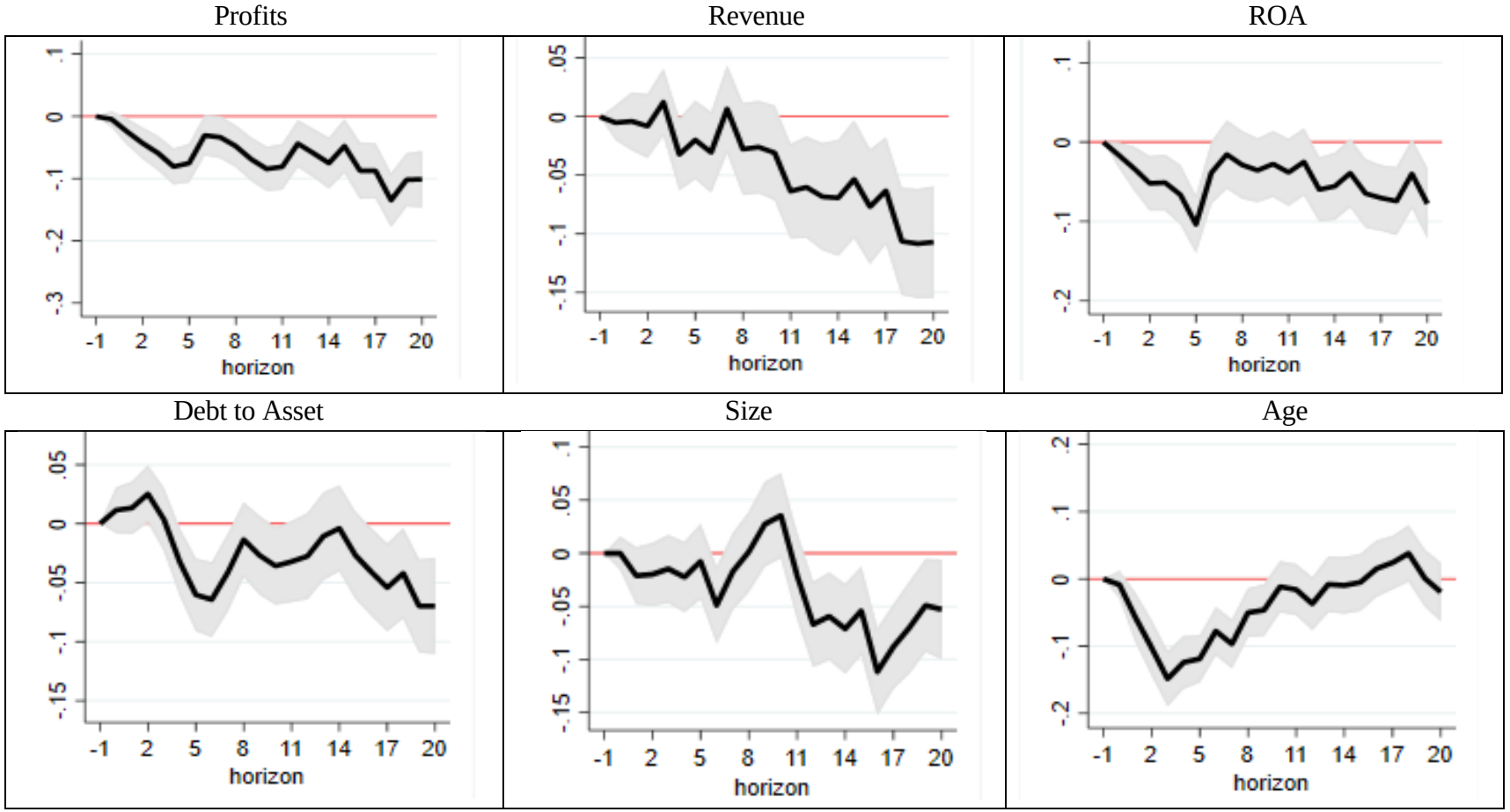
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is: (i) stock returns %; (ii) log (stock returns volatility); (iii) World Uncertainty Index (wui); (iv) unemployment; (v) employment; and (vi) labor productivity; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI.

Figure 21. Impact of Change in FSI on Firm Investment



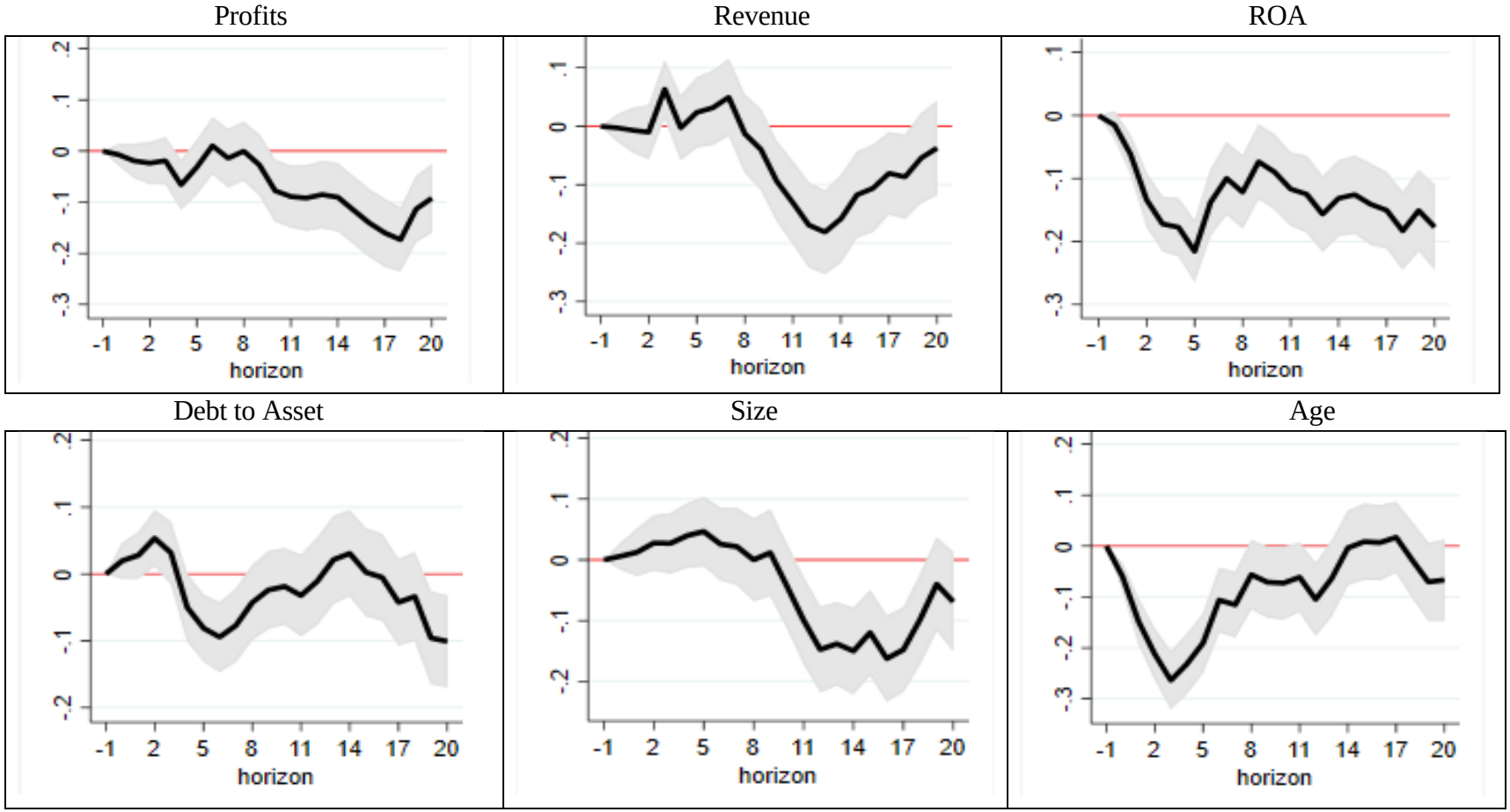
Note: Impulse response functions based on local projection methods following Jordà (2005) using firm-level quarterly data from 75 countries for the period 2001Q1 to 2020Q4. Estimates based on the regression $y_{n,i,t+k} = \alpha_{is}^{k} + \gamma_{nq}^{k} + \sum_{j=0}^{4} \beta_{j}^{k} \Delta F_{i,t-j} + \sum_{j=1}^{4} \theta_{j}^{k} y_{n,i,t-j} + \varepsilon_{n,i,t}^{k}$ for different horizons 'k', where $y_{n,i,t+k}$ is the log change in capital expenditure of firm *n* in country *i* at time *t* over the next *k* quarters, $\Delta F_{i,t-j}$ is the change in FSI, γ_{nq}^{k} are firm-quarters fixed effects, and α_{is}^{k} are country-sector fixed effects. The regression is estimates separately for different horizons *k* (for up to 12 quarters). The solid line shows the point estimate for β_{0}^{k} for different horizons *k*, while the dotted lines are the 68 percent and 90 percent confidence intervals. Standard errors are clustered at two-way at the firm and country-time level.

Figure 22. Impact of Change in FSI on Firm Investment—the Role of Firm Characteristics



Note: Impulse response functions based on local projection methods following Jordà (2005) using firm-level quarterly data from 75 countries for the period 2001Q1 to 2020Q4. Estimates based on the regression $y_{n,i,t+k} = \alpha_{ist}^{k} + \gamma_{nq}^{k} + \sum_{j=-k}^{4} \mu_{j}^{k} \Delta F_{i,t-j} * D_n + \sum_{j=1}^{4} \theta_{j}^{k} y_{n,i,t-j} + \varepsilon_{n,i,t}^{k}$ for different horizons '*k*', where $y_{n,i,t+k}$ is the log change in capital expenditure of firm *n* in country *i* at time *t* over the next *k* quarters, $\Delta F_{i,t-j}$ is the change in FSI, γ_{nq}^{k} are firm-quarters fixed effects, and α_{is}^{k} are country-sector fixed effects. The regression is estimates separately for different horizons *k* (for up to 12 quarters). The solid line shows the point estimate for β_0^k for different horizons *k*, while the dotted lines are the 68 percent and 90 percent confidence intervals. Standard errors are clustered at two-way at the firm and country-time level.

Figure 23: Impact of Change in FSI on Firm Investment—the Role of Firm characteristics (IV)



Note: Impulse response functions based on local projection methods following Jordà (2005) using firm-level quarterly data from 75 countries for the period 2001Q1 to 2020Q4. Estimates are based on the regression $y_{n,i,t+k} = \alpha_{ist}^{k} + \gamma_{nq}^{k} + \sum_{j=-k}^{4} \mu_j^k \Delta F_{i,t-j} * D_n + \sum_{j=1}^{4} \theta_j^k y_{n,i,t-j} + \varepsilon_{n,i,t}^{k}$ for different horizons 'k', where $y_{n,i,t+k}$ is the log change in capital expenditure of firm n in country i at time t over the next k quarters, $\Delta F_{i,t-j}$ is the change in FSI, γ_{nq}^{k} are firm-quarters fixed effects, and α_{is}^{k} are country-sector fixed effects. The regression is estimates separately for different horizons k (for up to 12 quarters). The solid line shows the point estimate for β_0^k for different horizons k, while the dotted lines are the 68 percent and 90 percent confidence intervals. Standard errors are clustered at two-way at the firm and country-time level.

Tables

Table 1. Data Coverage: FSI vs. other Chronologies

	Romer&Romer (RR)	**Reinhart&Rogoff (ReRo)**	**Laeven&Valencia (LV)**	**FSI**
Variable Type	Numeric (0-15)	Binary (0, 1)	Binary (0, 1)	Numeric
Country Coverage	24 OCED economies	81 economies	165 economies	110 economies
Time Horizon	1967-2012	1800s to 2014 (updated)	1970 to 2017	1967-2018
Source	OECD reports	Historical Events	Historical Events	EIU reports
Definition & Method	Narrative Approach over paragraphs with key words (Intensity is identified subjectively)	1) Bank runs leading to government intervention;or 2) Government intervention	1) Signs of financial stress 2) Banking policy intervention	Narrative Approach over paragraphs (Intensity determined by frequencies of keywords)

Notes: The table reports country and time coverage across 4 financial stress indicators. It also provides the definition and method used to arrive at the financial stress variable constructed.

Table 2. Pair-wise Correlations between Chronologies

	FSI	Romer&Romer (RR)	Reinhart&Rogoff (ReRo)	Laeven&Valencia (LV)
FSI	1.0			
Romer&Romer (RR)	0.9	1.0		
Reinhart&Rogoff (ReRo)	0.4	0.5	1.0	
Laeven&Valencia (LV)	0.4	0.7	0.6	1.0

Notes: The table reports correlations for each pair of the 4 financial stress indicators.

Table 3. Impact of Change in FSI on Output (quarterly data)

	k=0	k=5	k=10	k=15	k=20
$F_{i,t}$	-0.103***	-0.338***	-0.405***	-0.393***	-0.235***
	(0.0363)	(0.0675)	(0.0818)	(0.0827)	(0.0782)
$F_{i,t-1}$	-0.126***	-0.358***	-0.437***	-0.409***	-0.200*
	(0.0352)	(0.0841)	(0.101)	(0.107)	(0.107)
$F_{i,t-2}$	-0.102***	-0.246***	-0.300***	-0.306***	-0.144*
	(0.0285)	(0.0695)	(0.0828)	(0.0928)	(0.0801)
$y_{i,t-1}$	0.0193	0.0860	0.172	0.332*	0.102
	(0.0683)	(0.306)	(0.360)	(0.187)	(0.203)
$y_{i,t-2}$	-0.0182	-0.0932	-0.219	-0.441**	-0.278
	(0.0662)	(0.302)	(0.362)	(0.187)	(0.189)
Observations	4,211	3,966	3,721	3,476	3,231
R-squared	0.197	0.433	0.514	0.586	0.654

Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on: $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where *i* index countries, *t* refers to quarters, and *k* denotes the horizon (the quarter after the change in FSI) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI.

Table 4. Impact of change in FSI on Output (annual data)

	K=0	K=1	K=2	K=3	K=4	K=5
$F_{i,t}$	-0.473***	-0.830***	-0.788***	-0.794***	-0.829***	-0.763***
	(0.154)	(0.203)	(0.192)	(0.196)	(0.190)	(0.159)
$F_{i,t-1}$	-0.340***	-0.309**	-0.315**	-0.354**	-0.275**	-0.259**
	(0.0938)	(0.125)	(0.128)	(0.137)	(0.130)	(0.130)
$F_{i,t-2}$	-0.000464	-0.0755	-0.131	-0.0741	-0.110	-0.187
	(0.0667)	(0.0821)	(0.0939)	(0.0917)	(0.120)	(0.131)
$y_{i,t-1}$	0.109	0.115	0.145	0.106	0.0705	0.107
	(0.0775)	(0.0910)	(0.108)	(0.121)	(0.148)	(0.127)
$y_{i,t-2}$	-0.135*	-0.171*	-0.228**	-0.226*	-0.223	-0.296**
	(0.0777)	(0.0892)	(0.106)	(0.117)	(0.138)	(0.117)
Observations	5,058	5,058	5,058	4,949	4,840	4,731
R-squared	0.150	0.213	0.276	0.321	0.365	0.411

Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1,5 and 10 percent, respectively. Estimates are obtained using a sample of 110 countries over the period 1967-2018 and based on: $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where *i* index countries, *t* refers to years, and *k* denotes the horizon (the year after the change in FSI) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI.

Table 5. Foreign Shocks—Reverse Causality

	K=0	k=5	k=10	k=15	k=20
$EF_{i,t-1}$	-1.470***	-0.976***	-0.963***	-1.035***	-1.011***
	(0.0376)	(0.0367)	(0.0204)	(0.0127)	(0.0106)
$EF_{i,t-2}$	-0.245***	-0.0257	-0.00119	-0.00200	-0.00848
	(0.0467)	(0.0363)	(0.0276)	(0.0145)	(0.0111)
$\Delta lngdp_{i,t}$	-0.0973	0.115	0.0851	-0.0908	-0.0784
	(0.0770)	(0.0935)	(0.0590)	(0.0721)	(0.124)
$\Delta lngdp_{i,t-1}$	-0.0917	-0.0143	-0.0617	-0.0168	0.218
	(0.0638)	(0.0710)	(0.0389)	(0.0588)	(0.177)
$\Delta lngdp_{i,t-2}$	0.0368	-0.0586	-0.0902	-0.142	-0.138
	(0.0633)	(0.0484)	(0.108)	(0.106)	(0.0908)
Observations	4,203	3,958	3,713	3,468	3,223
R-squared	0.741	0.575	0.569	0.597	0.585

Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on $EF_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=1}^{2} \beta_j^k EF_{i,t-j} + \sum_{j=0}^{2} \beta_j^k \Delta lngdp_{i,t-j} + \varepsilon_t^k$, where *i* index countries, *t* refers to quarters, and *k* denotes the horizon (the quarter after the change in the financial stress indicator) being considered. *EF* is the foreign shock; α_i are country fixed effects; γ_t are time fixed effects; and $\Delta lngdp$ is the change in the log of output.

Table 6. **Adding the Instrument as a Control Variable**

	k=0	k=5	k=10	k=15	k=20
$F_{i,t}$	-0.156**	-0.421***	-0.493***	-0.444***	-0.298***
	(0.0703)	(0.102)	(0.115)	(0.106)	(0.105)
$F_{i,t-1}$	-0.124***	-0.356***	-0.434***	-0.408***	-0.197*
	(0.0341)	(0.0837)	(0.101)	(0.107)	(0.107)
$F_{i,t-2}$	-0.101***	-0.244***	-0.298***	-0.305***	-0.142*
	(0.0289)	(0.0700)	(0.0833)	(0.0933)	(0.0808)
$y_{i,t-1}$	0.0199	0.0870	0.173	0.333*	0.104
	(0.0686)	(0.306)	(0.360)	(0.188)	(0.203)
$y_{i,t-2}$	-0.0188	-0.0942	-0.220	-0.442**	-0.279
	(0.0664)	(0.302)	(0.362)	(0.187)	(0.189)
$EF_{i,t}$	0.00896	0.0140	0.0148	0.00851	0.0108
	(0.00673)	(0.00989)	(0.0104)	(0.00995)	(0.00899)
Observations	4,211	3,966	3,721	3,476	3,231
R-squared	0.198	0.433	0.514	0.586	0.654

Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \partial_j^k \mathrm{C}_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI, and $EF_{i,t}$ refers to the instrumental variable.

Table 7. Validity of the Instrument

(Regressing instrument on residuals of baseline)

	k=0	k=5	k=10	k=15	k=20
$resid_{i,t}$	0.00319	0.00494	0.00520	0.00299	0.00382
	(0.00226)	(0.00595)	(0.00833)	(0.0102)	(0.0116)
Observations	4,211	3,966	3,721	3,476	3,231

Notes: Standard errors clustered at the country-level in parenthesis. ***, **, * denote statistical significance at 1, 5 and 10 percent, respectively. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4 and are based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \sum_{j=0}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where *i* index countries, *t* refers to quarters, and *k* denotes the horizon (the quarter after the change in the financial stress indicator) being considered. *y* is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in FSI. Subsequently, by taking the residual from the baseline and checking the validity of the instrumental variable, estimates are obtained based on $resid_{i,t+k} = \alpha_i^k + \beta_j^k \Delta EF_{i,t} + \varepsilon_t^k$, where $resid$ is the residual obtained from the baseline and $EF_{i,t}$ is the indicator of external financial stress used as an instrument.

APPENDIX

Table A1. Country Coverage across Income Levels and Geographical Regions

Africa (32):	Asia and the Pacific (19):	Europe (24):	Middle East and Central Asia (13):	Western Hemisphere (22):
Benin	Australia	Albania	Afghanistan	Argentina
Botswana	China	Austria	Algeria	Bolivia
Burkina Faso	Hong Kong SAR	Belgium	Egypt	Brazil
Burundi	Indonesia	Bulgaria	Iraq	Canada
Cameroon	India	Denmark	Islamic Republic of Iran	Chile
Central African Republic	Japan	Finland	Jordan	Colombia
Chad	Cambodia	France	Lebanon	Costa Rica
Côte d'Ivoire	Korea	Germany	Libya	Dominican Republic
Dem. Rep. of the Congo	Lao P.D.R.	Greece	Mauritania	Ecuador
Ethiopia	Sri Lanka	Hungary	Morocco	El Salvador
Gabon	Myanmar	Iceland	Pakistan	Guatemala
Ghana	Malaysia	Ireland	Sudan	Haiti
Guinea	Nepal	Israel	Tunisia	Honduras
Kenya	New Zealand	Italy		Jamaica
Lesotho	Philippines	Netherlands		Mexico
Liberia	Singapore	Norway		Nicaragua
Madagascar	Thailand	Portugal		Panama
Malawi	Taiwan Province of China	Romania		Paraguay
Mali	Vietnam	Russia		Peru
Niger		Spain		United States
Nigeria		Sweden		Uruguay
Republic of Congo		Switzerland		Venezuela
Rwanda		Turkey		
Senegal		United Kingdom		
Sierra Leone				
South Africa				
Tanzania				
The Gambia				
Togo				
Uganda				
Zambia				
Zimbabwe				

Note: The table presents country coverage of the index across income levels and geographical regions. Font in blue = advanced economies, red = emerging economies, and black = low-income economies.

Table A2. Financial Distress: Examples of Type of Discussion in EIU Reports, 1967-2018

Country	Date	Example of what the EIU discuss
Afghanistan	2009Q4	Discussion related to the fallout from the Global Financial Crisis such as the impact of the credit crunch.
	2011Q4	Discussion related to the domestic financial distress such as: banking crisis related to corruption at Kabul Bank and warning that that a second Afghan banking institution, Azizi Bank, is on the brink of collapse.
Albania	1997Q2 – 1997Q3	Discussion related to the domestic financial distress such as: IMF and the World Bank will be involved in development of policies to extract the country from the financial crisis.
	2002Q3 – 2003Q1	Discussion related to the domestic financial distress such as: banking crisis forces Bank of Albania to lending to government
	2009Q1 – 2010Q2	Discussion related to the fallout from the Global Financial Crisis such as: increased liquidity strains and measures to help mitigate the impact of the credit squeeze.
	2013Q1 – 2014Q3	Discussion related to the domestic financial distress such as: high proportion of non-performing loans has hindered credit growth, with lending to business contracting.
Algeria	1984Q1	Discussion related to the domestic financial distress such as: depressed hydrocarbon earnings leads to a tight financial situation.
	1987Q2 – 1995Q3	Discussion related to the domestic financial distress such as: international banks are increasingly reluctant to lend, and it will take them time to take into account the IMF deal. Also, the need to address the financial crisis.
	2004Q1	Discussion related to the domestic financial distress such as: banks have been reluctant to lend, so the government has been reluctant to spend.
Argentina	1978Q1	Discussion related to the domestic financial distress such as: rise in interest rates—higher than the rate of inflation—produced an atmosphere of crisis, which compelled some companies and financial entities to adjust quickly.
	1980Q2 – 1982Q3	Discussion related to the domestic financial distress such as: the central bank has liquidated a finance company and the largest private bank and taken over three other banks to overcome a banking crisis.
	1985Q1 – 1985Q3	Discussion related to the domestic financial distress such as: the new minister of economy has stressed that the financial system is in a state of crisis and in need of radical restructuring.
	1989Q2 – 1989Q4	Discussion related to the domestic financial distress such as: GDP is likely to contract most abruptly in the second and third quarter of the year, reflecting the financial crisis itself and second the impact of the first stabilization measures.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Argentina	1995Q1 – 1996Q3	Discussion related to the fallout from Mexico's Tequila Crisis such as: tight credit as banks are reluctant to lend, tightening of credit regulations by the Central Bank and the concentration of the banking sector.
	1998Q4 – 2000Q4	Discussion related to the impact of the crises in Asia, Russia and Brazil such as: tight liquidity, banks reluctant to lend and authorities adopting measures to prevent a run on bank deposits.
	2001Q2 – 2003Q4	Discussion related to domestic financial distress such as: crisis in confidence with loss in bank deposits, credit crunch, measures to halt the decline in bank deposits (e.g., deposit freeze for 90 days, restricted access to bank deposits). Also, some banks reduced in size, others left the country, and others suspended by banking regulators.
	2008Q4 – 2010Q2	Discussion related to the fallout from the Global Financial Crisis such as: a run on bank deposits, tight credit, and banks reluctant to lend.
Australia	1977Q3	Discussion related to domestic financial distress such as: bank liquidity tightened as a result of the increased balance of payments deficit.
	1990Q4 – 1993Q1	Discussion related to domestic financial distress such as: taxpayer bailout of the State bank of South Australia.
	2008Q1 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: firms falling victim of tightening in credit conditions, and measures to reignite lending.
Austria	2007Q4 – 2012Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight lending conditions in the interbank markets, and tighter bank lending policies, resulting from the problems of the sub-prime market in the US.
Belgium	2007Q4 – 2014Q1	Discussion related to the fallout from the Global Financial Crisis and Euro debt crisis such as: tightening of short-term credit market conditions for inter-bank lending and bulging of the yield curve in the intermediate credit range.
Benin	1989Q1 – 1992Q1	Discussion related to domestic financial distress such as: the Bankque Commerciale du Benin—the only commercial bank in the country—is suffering a serious liquidity crisis.
	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: tight financial markets worldwide have made borrowing at commercial rates prohibitively expensive for Benin.
Bolivia	1995Q3 – 1996Q3	Discussion related to domestic financial distress such as: collapse of the Banco Boliviano Americano's offshore operation which threatened a run on the system. The government responded by putting the bankers responsible for the crisis in prison.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Bolivia	1999Q1 – 2005Q4	Discussion related to domestic financial distress such as: measures to boost bank lending not been taken up by the troubled banking sector. Also, reluctance by banks to make new loans due to stricter credit regulations and continued credit squeeze by the banks.
	2018Q4	Discussion related to domestic financial distress such as: the central bank may ease reserve requirements to prevent a slowdown in credit growth if the liquidity crunch persists.
Botswana	1982Q3	Discussion related to domestic financial distress such as: central bank forecasts a shortage of bank liquidity with a consequent tightening of credit due to significant decreases in the level of deposits in the banking system.
	1988Q3 – 1989Q1	Discussion related to domestic financial distress such as: credit tightening together with money supply contraction.
Brazil	1967Q1	Discussion related to domestic financial distress such as: anti-inflation policy has led to a financial crisis and credit squeeze continues – to crisis point.
	1982Q4 – 1985Q2	Discussion related to domestic financial distress such as: the National Monetary Council approved a rescue package for the state banks which will force them to reorganise their affairs in exchange for federal financial assistance.
	1987Q1 – 1988Q1	Discussion related to domestic financial distress such as: the government also announced that banks would have access to an emergency credit line to ease liquidity crises.
	1990Q1 – 1990Q4	Discussion related to domestic financial distress such as: the freeze on a large proportion of bank and savings accounts and the restricted access to funds deposited in the overnight market and other short term market instruments constitute a severe liquidity squeeze which will cause private consumption to fall in the short term.
	1996Q1 – 1999Q3	Discussion related to domestic financial distress such as: measures by the central bank to ease credit squeeze, credit restrictions such as maximum-term limits to bank loans, loans by the central bank to financial institutions to eliminate serious banking crisis. The central bank loans offered for liquidity assistance to stimulate restructuring and mergers by banks.
	2002Q3	Discussion related to domestic financial distress such as: restricted credit.
	2006Q2 – 2010Q2	Discussion related to the fallout from the Global Financial Crisis such as: Brazil's financial markets been strongly affected by the global credit crunch, constraint on access to financing, even to large companies, and many firms forced to accept less favorable conditions.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Brazil	2016Q4 – 2018Q4	Discussion related to domestic financial distress such as: small- and medium-sized enterprises face restricted access to credit.
Bulgaria	1990Q1	Discussion related to domestic financial distress such as: Bulgaria planned to seek membership of the IMF, IBRD and Gatt. Like other Comecon members, the Bulgarian authorities clearly appreciate that the country's severe financial crisis cannot be solved without assistance from these bodies.
	1995Q1 – 1999Q1	Discussion related to domestic financial distress such as: a rescue package for two ailing commercial banks—the Mineral bank and the Economic Bank, rescue of the Agrobusiness Bank, and banks reluctant to lend.
	2008Q4 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis such as: the crisis rocking bank balance sheets and leading to a sharp tightening in liquidity and central bank measure to free up the tightening inter-bank market.
	2015Q2 – 2016Q4	Discussion related to domestic financial distress such as: contraction of credit, withdrawal of the license of a failed Corporate Commercial Bank, and cautious lending by Bulgarian subsidiaries of Greek banks.
Burkina Faso	1992Q2	Discussion related to domestic financial distress such as: ongoing financial crisis.
	2009Q2 – 2010Q1	Discussion related to domestic financial distress such as: tighter liquidity conditions and a collapse in financial inflows.
Burundi	—	—
Cambodia	1993Q4	Discussion related to domestic financial distress such as: resumption of multilateral financial assistance and the immediate financial crisis is set to continue in the wake of UNTAC's departure.
	2009Q4 – 2010Q1	Discussion related to domestic financial distress such as: credit is scarce, and banks are reluctant to lend.
Cameroon	1985Q2 – 1985Q4	Discussion related to domestic financial distress such as: contraction of credit partly due to banks taking a tougher stand when assessing credit risk.
	1987Q1 – 1992Q4	Discussion related to domestic financial distress such as: banks' liquidity crisis.
	1995Q2 – 1996Q4	Discussion related to domestic financial distress such as: a significant size of non-performing loans and the need to restricting the banking system.
	2008Q4 – 2009Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight financial markets, and unwillingness of local banks to provide credit due to growing proportion of non-performing loans.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Cameroon	2015Q3 – 2017Q4	Discussion related to domestic financial distress such as: restricted access to credit
Canada	1982Q4 – 1985Q4	Discussion related to domestic financial distress such as: federal and provincial governments have had to rescue some financial institutions.
	2007Q4 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: marked tightening in financial conditions, and local financial markets have been severely affected by the crisis and tight credit conditions.
Central African Republic	—	—
Chad	1992Q3 – 1995Q1	Discussion related to domestic financial distress such as: ongoing financial crisis.
Chile	1981Q4 – 1985Q4	Discussion related to domestic financial distress such as: the government has intervened in the banking crisis.
	2003Q2	Discussion related to domestic financial distress such as: the ruling Concertación has been damaged by a series of corruption scandals, one of which has resulted in the resignation of the central bank president, and a financial panic and liquidity crisis requiring intervention by the central bank.
	2009Q1 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis such as: liquidity tight and commercial banks cautious, and borrower continue to have more restricted access to international credit lines.
China	1993Q3 – 1993Q4	Discussion related to domestic financial distress such as: a continuing liquidity crisis for local governments and bank branches.
	1998Q1 – 1999Q3	Discussion related to domestic financial distress such as: tightening credit, and the big four banks under pressure to restrict lending to bankable projects.
	2008Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight credit conditions and deteriorating external demand have also played a role.
Colombia	1967Q3 – 1969Q3	Discussion related to domestic financial distress such as: consumer goods industries have complained of slow sales and tight credit.
	1980Q4 – 1987Q4	Discussion related to domestic financial distress such as: Betancur's election was welcomed in business circles and his success in getting the amnesty through Congress and his handling of the banking crisis reinforced confidence in him.
	1994Q3	Discussion related to domestic financial distress such as: the central bank's squeeze on credit created a liquidity crisis.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Colombia	1998Q3 – 2003Q1	Discussion related to domestic financial distress such as: high interest rates and banks reluctance to lend, and government intervention as the banking sector faces a crisis.
	2008Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: domestic credit tightened due to global conditions.
Congo, Republic of	1990Q1 – 1994Q1	Discussion related to domestic financial distress such as: the country has not been receiving any World Bank money recently because of arrears on old loans, the resumption of bank funding could make a big difference to the current financial squeeze.
	2005Q3	Discussion related to domestic financial distress such as: although many banks have been privatised, the four main banks remain in a state of crisis, with inadequate capital bases.
	2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: the global economic crisis, the fall in commodity prices, and the credit crunch have negatively affected the mining sector.
Costa Rica	1967Q1 – 1968Q1	Discussion related to domestic financial distress such as: the economic and financial crisis that now seems endemic in Costa Rica shows no signs of diminishing.
	1981Q3 – 1984Q2	Discussion related to domestic financial distress such as: the administration of Luis Alberto Monge has had to preside over the country's worst economic and financial crisis for at least 50 years.
	1995Q2	Discussion related to domestic financial distress such as: intervening in crisis-stricken banks to maintain the stability of the financial sector.
	1996Q1	Discussion related to domestic financial distress such as: indicators showing a relative stringency of the domestic credit.
	2008Q4 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: tight credit conditions, and measures by the Ministry of Finance in response to the escalation of the international financial crisis, which caused a spike in interest rates and squeezed credit to corporates and households.
Côte d'Ivoire	1987Q2 – 1992Q4	Discussion related to domestic financial distress such as: commercial banks have been facing a liquidity squeeze owing to a combination of the slump in earnings and the flight of capital.
	1998Q1	Discussion related to domestic financial distress such as: a liquidity squeeze due to domestic borrowing by the government combined with increased seasonal demand for credit by cocoa exporters.
	2004Q1	Discussion related to domestic financial distress such as: government taking steps to rescue distressed banks in order toa vert a collapse of the financial system

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Côte d'Ivoire	2011Q1 – 2011Q3	Discussion related to domestic financial distress such as: a political crisis and international sanctions worsening the liquidity crisis, run on banks and the financial sector been shut down, and almost all banks suspending operations.
Democratic Republic of the Congo	1971Q4	Discussion related to domestic financial distress such as: commercial banks have been restricting credit.
	1981Q1 – 1985Q1	Discussion related to domestic financial distress such as: bank operations are restricted by tight liquidity.
	1991Q1 – 1993Q3	Discussion related to domestic financial distress such as: reluctance of private creditors to lend even with a public guarantee.
Denmark	1969Q2 – 1969Q3	Discussion related to domestic financial distress such as: The currency crisis that resulted in the raising of bank rate to a record level.
	1987Q2 – 1990Q3	Discussion related to domestic financial distress such as: an embarrassing series of failures and rescues had led the central bank, to tighten up its loan policy.
	2007Q4 – 2014Q2	Discussion related to the fallout from the Global Financial Crisis such as: tighter lending conditions in the inter-bank markets, banks have curtailed lending to one another following losses, and measures in response to the global credit crunch such as seven-day secured lending facility to support liquidity in the money market.
Dominican Republic	1990Q1 – 1990Q4	Discussion related to domestic financial distress such as: a crisis of confidence hit the banking sector after two commercial banks collapsed.
	2003Q3 – 2005Q3	Discussion related to domestic financial distress such as: the collapse of Baninter, government request financial support from the IMF to defray the fiscal costs associated with rescuing Baninter, and central bank support to the bank to enable it to meet depositors demands for withdrawals.
	2008Q3 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: tighter credit conditions.
Ecuador	1981Q2 – 1986Q1	Discussion related to domestic financial distress such as: tight credit and high interest rates, devaluation of the sucre, slack domestic demand, heavy indebtedness and the government's emphasis on agro-industry have all hit manufacturing firms.
	1995Q4 – 2004Q4	Discussion related to domestic financial distress such as: Banco Continental's liquidity crisis, rescue of Banco Continental to avoid destabilizing the country's banking sector, tighter credit conditions, and restrictions in credit lines following the liquidation of Solbanco and a run on deposits at Banco del Progreso shrank the inter-bank market.
	2008Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: access to capital increasingly tight, and severe credit constraints.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Egypt	1992Q3 -1992Q4	Discussion related to domestic financial distress such as: he prime minister detailed the government's rescue plan for the failed Bank of Credit and Commerce Misr (BCCM).
	1998Q4 – 2002Q4	Discussion related to domestic financial distress such as: lingering problem in foreign-exchange liquidity, tighter credit conditions, inject liquidity in a tight money market.
El Salvador	2001Q3 – 2001Q4	Discussion related to domestic financial distress such as: a commercial bank has defaulted on a controversial bail-out loan.
	2007Q4 – 2011Q3	Discussion related to the fallout from the Global Financial Crisis such as: high interest rates reflecting tighter international credit conditions and the custom by Salvadoran banks to fund themselves in the US market. An increase in inter-bank rate, reflecting tight liquidity among all of El Salvador's foreign-owned banks.
Ethiopia	1995Q2	Discussion related to domestic financial distress such as: credit conditions remain tight.
	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: tighter financial conditions.
	2018Q3	Discussion related to domestic financial distress such as: there are signs that a currency crisis could be turning into a wider credit crunch that could slow economic growth.
Finland	1991Q4 -1994Q3	Discussion related to domestic financial distress such as: the central bank has had to rescue Shopbanken—Finland's fourth largest bank.
	2007Q4 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: tighter lending conditions in the inter-bank markets, and tightening liquidity condition as a result of global financial market turmoil.
France	1994Q2 – 1995Q2	Discussion related to domestic financial distress such as: the rescue plan announced provides for a Fr4.9bn capital increase for troubled Credit Lyonnais.
	2007Q4 – 2014Q1	Discussion related to the fallout from the Global Financial Crisis such as: tightening of credit conditions in the wake of financial turmoil, and credit squeeze has increased the cost of credit for French firms, which combined with a worsening global outlook, could put a damper on investment plans.
Gabon	1999Q3 – 1999Q4	Discussion related to domestic financial distress such as: given the depth of the country's financial crisis.
	2008Q4 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: domestic credit is likely to become tighter as commercial banks adopt more conservative lending strategy.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Gambia, The	1978Q4	Discussion related to domestic financial distress such as: tight credit and the generally depressed state of the economy.
Germany	1974Q3	Discussion related to domestic financial distress such as: restrictive policy eased to assist tight liquidity in banking sector.
	2002Q2 – 2003Q4	Discussion related to domestic financial distress such as: banks tightening their credit conditions, and fear that banks are under pressure to improve their balance-sheet position could further tighten their lending criteria, pushing more borrowers into difficulty. Talk of systemic risk to the banking sector may be exaggerated, but there are some signs of stress.
	2007Q4 – 2014Q1	Discussion related to the fallout from the Global Financial Crisis such as: tighter credit conditions resulting from German banks having been quite badly hit by US sub-prime losses, and in response to the international squeeze in financial markets, German banks are likely to trim their new lending.
Ghana	1979Q3	Discussion related to domestic financial distress such as: the coup has induced a tightening of credit from overseas creditors.
	1986Q2 – 1990Q3	Discussion related to domestic financial distress such as: a more important contributor to the problem is the liquidity crisis stemming from the cedi's substantial devaluation.
	1993Q1	Discussion related to domestic financial distress such as: banks remain reluctant to lend.
	2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: credit is currently tight in domestic financial markets.
Greece	1994Q3	Discussion related to domestic financial distress such as: there was a severe crisis throughout the financial system. Liquidity dried up and banks, particularly the new private banks with limited deposit bases, became desperate for cash.
	2008Q3 – 2018Q2	Discussion related to the fallout from the Global Financial Crisis and the debt crisis such as: risk that the Greek banks will require bail-outs over the next few years, and two EU/IMF bail-out schemes include €48 billion in funding to recapitalise banks—€10 billion under the first package to create the Hellenic Financial Stability Fund.
Guatemala	1981Q2 – 1983Q2	Discussion related to domestic financial distress such as: banking regulations are changed to ease liquidity crisis.
	1999Q1 – 2002Q1	Discussion related to domestic financial distress such as: crisis in the financial sector, which has squeezed credit growth.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Guatemala	2008Q3 – 2010Q4	Discussion related to the fallout from the Global Financial Crisis such as: in response to a freeze in credit lines from international banks owing to the international financial crisis, the central bank eased the requirements on bank's accounting of reserves and established a temporary US-dollar fund facility for banks.
Guinea	2014Q1 – 2014Q3	Discussion related to domestic financial distress such as: with tighter liquidity now a concern, the central bank reduced its policy rate.
Haiti	2008Q3 – 2012Q4	Discussion related to the fallout from the Global Financial Crisis such as: adverse economic conditions could hamper commercial bank's willingness to extend loans to the private sector.
Honduras	1981Q2 – 1984Q1	Discussion related to domestic financial distress such as: the illiquid nature of the banking system has made credit extremely tight and many sectors have been hard hit.
	2000Q2	Discussion related to domestic financial distress such as: banks are still reluctant to lend.
	2002Q1 – 2005Q3	Discussion related to domestic financial distress such as: banks turned to more speculative activity to boost their loan portfolio. This led to huge levels of bad debt for banks and a liquidity crisis. Banking authorities have been tightening legislation to strengthen the sector. This has led to a gradual consolidation of the financial system, brought about through a mix of high-profile bank failures and of mergers and acquisitions.
	2008Q4 – 2011Q2	Discussion related to the fallout from the Global Financial Crisis such as: the aggressive monetary easing been necessary to provide liquidity to the banking system and avoid a crisis in the payment system.
Hong Kong SAR	1983Q4 – 1986Q4	Discussion related to domestic financial distress such as: the government has been forced to intervene directly in the financial sector to avert a secondary banking crisis.
	1992Q2 – 1993Q3	Discussion related to domestic financial distress such as: tight credit.
	1997Q4 – 1999Q4	Discussion related to the fallout from the Asian Crisis such as: the financial crisis of Asia really began to affect Hong Kong with the Hong Kong Monetary Authority injecting funds to the monetary system to demonstrate determination to push down term inter-bank rates and avoid a politically sensitive rise in the prime rate lending rate.
	2008Q4 – 2010Q4	Discussion related to the fallout from the Global Financial Crisis such as: credit availability has tightened significantly in line with financial conditions across the world.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Hungary	1990Q2 – 1994Q1	Discussion related to domestic financial distress such as: the extreme liquidity crisis due to tight credit and high interest rates has left few firms untouched.
	2008Q4 – 2014Q3	Discussion related to the fallout from the Global Financial Crisis such as: the government has adopted a bank bai-out package to minimize risk.
	2017Q4 – 2018Q4	Discussion related to domestic financial distress such as: bank lending remains restricted.
Iceland	1985Q3 – 1987Q3	Discussion related to domestic financial distress such as: more worrying being the major financial crisis at the state owned Fisheries bank.
	2007Q2 – 2011Q4	Discussion related to domestic financial distress such as: the financial crisis wiped out around 90 percent of the value of listed stocks, caused a collapse of the money market, the krona to plummet, the bond market to freeze up and 30 percent drop in assets of domestic pension funds.
India	1991Q1 – 1998Q4	Discussion related to domestic financial distress such as: complaints from the business sector about excessively tight liquidity.
	2008Q4 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: the fallout from the global financial crisis has had an increasingly severe impact on India, causing the banking sector to experience a sudden liquidity crisis.
	2016Q1 – 2016Q4	Discussion related to domestic financial distress such as: the ability of banks to extend lending is currently constrained by the high number of bad loans on their books.
Indonesia	1967Q4	Discussion related to domestic financial distress such as: the bank crisis slowed down collection of import duties and taxes.
	1984Q4 – 1988Q4	Discussion related to domestic financial distress such as: the strong dollar has combined with cash flow problems in the banking sector to trigger a liquidity crisis requiring forceful central bank intervention.
	1993Q1 – 1994Q3	Discussion related to domestic financial distress such as: several bankers have pointed out that the banks' ability to increase their lending remains constrained by their heavy portfolio of non-performing loans.
	1997Q4 – 2003Q3	Discussion related to domestic financial distress such as: the deepening financial crisis has forced Indonesia to seek IMF support. A large rescue package was agreed in return for pledges of wide-raging economic reform.
	2008Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: concern over accessing finance as credit dries up.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Iran	1984Q2	Discussion related to domestic financial distress such as: large scale withdrawal of deposits was reported and, faced with a serious financial crisis.
	1987Q1	Discussion related to domestic financial distress such as: tight credit conditions.
	2017Q1 – 2017Q3	Discussion related to domestic financial distress such as: tight liquidity in the banking sector.
Iraq	—	—
Ireland	2008Q4 – 2017Q1	Discussion related to the fallout from the Global Financial Crisis and debt crisis such as: financial crisis resulting from the near collapse of the banking system and the fiscal crisis.
Israel	1967Q1 – 1968Q3	Discussion related to domestic financial distress such as: the cumulative effect of the recession throughout the economy has brought on a series of failures and crises throughout the business and financial sectors. bankruptcies have soared.
	1983Q4 – 1984Q3	Discussion related to domestic financial distress such as: even before the severe crisis that overtook Israel's major commercial banks, the "Big Three" banks appeared to be in some difficulty.
	2008Q4	Discussion related to the fallout from the Global Financial Crisis: banking sector will be hurt by the global credit crunch.
Italy	1993Q2	Discussion related to domestic financial distress such as:
	1996Q2 – 1997Q1	Discussion related to domestic financial distress such as: the crisis in banking sector continues. Istituto Nazionale delle Assicurazioni and Banca Nazionale del Lavoro have bought Banco di Napoli.
	2007Q4 – 2018Q4	Discussion related to the fallout from the Global Financial Crisis and debt crisis such as: expectation that Italy will avoid a major sovereign and banking debt crisis.
Jamaica	1995Q3 – 1999Q3	Discussion related to domestic financial distress such as: since the closure of Century National Bank, there has been a series of runs on the deposit of financial institutions, most of which have been supported by the advances or overdraft from the central bank.
	2008Q4 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis such as: the global financial crisis will lead to tighter borrowing conditions and wider spreads for markets with weaker fundamentals and large debt burdens such as Jamaica.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Japan	1990Q1 – 2004Q2	Discussion related to domestic financial distress from economic recession such as: the opposition will gain support from its criticism of the government's decision to use public funds for the rescue of insolvent financial institutions.
	2008Q3 – 2010Q1	Discussion related to the fallout from the Global Financial Crisis such as: concerns about the economy and the global credit crunch are inhibiting the extension of credit to several industries, especially the real estate and construction groups.
Jordan	1989Q3	Discussion related to domestic financial distress such as: financial crisis.
	1993Q2 – 1993Q3	Discussion related to domestic financial distress such as: the central bank has moved to curb speculation on the stock exchange, following large increases in activity; and has rescued the Cooperative Bank.
	2009Q1 – 2012Q1	Discussion related to the fallout from the Global Financial Crisis such as: in an effort to protect the banking sector from the fallout from the global financial crisis, the prime minister, Nader al-Dahabi, announced that the government will guarantee all bank deposits until end-2009. Nevertheless, inter-bank rates have risen markedly.
Kenya	1975Q1	Discussion related to domestic financial distress such as: the consequent credit squeeze is biting hard.
	1981Q2	Discussion related to domestic financial distress such as: tight liquidity situation.
	1986Q1 – 1987Q3	Discussion related to domestic financial distress such as: the Banking Amendment Act has come into force, but not in time to prevent a banking crisis.
	1992Q2 – 1993Q2	Discussion related to domestic financial distress such as: Trade Bank and Pan African bank experience a liquidity crisis.
	1998Q4 – 1999Q4	Discussion related to domestic financial distress such as: swift action by the central bank in assembling rescue packages for the failed institutions averted serious catastrophe.
	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: global financial markets are expected to remain tight, making it difficult for Kenya to raise funds.
Korea	1997Q2 – 2000Q4	Discussion related to domestic financial distress such as: the government announced a new bail-out fund to be led by Korean Asset Management Corporation which take over some of the non-performing loans held by banks.
	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: banks faced constraints after the outbreak of the global financial crisis.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Lao P.D.R.	1998Q2 – 1998Q3	Discussion related to the fallout from the Asian Crisis such as: Laos has been hit hard by the regional financial crisis.
	2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: impact of the global credit crunch on the domestic credit.
Lebanon	1967Q2	Discussion related to domestic financial distress such as: the aftermath of the Intra bank crisis saw yet another run on a bank—the British Bank of the Middle East.
	1969Q3 -1970Q4	Discussion related to domestic financial distress such as: banks continue to pursue a credit restriction policy.
	1976Q1 – 1979Q4	Discussion related to domestic financial distress such as: banks are claiming tight liquidity.
	1989Q1 – 1989Q4	Discussion related to domestic financial distress such as: the banking crisis is likely to have major repercussions as it is feared that it may result in an accelerated outflow of foreign currency assets held by the commercial banks.
	1998Q3	Discussion related to domestic financial distress such as: the government is borrowing abroad in order to reduce high cost of servicing domestic debt, to extend maturity of the debt and to ease liquidity restraints at home.
	2008Q4	Discussion related to the fallout from the Global Financial Crisis such as: domestic banks impacted by the global credit crunch.
	2018Q3 – 2018Q4	Discussion related to domestic financial distress such as: the six main banks saw their overall deposits decline, a sign of shaky market sentiment regarding the Lebanese economy. Lending was also down and at a sharper rate than deposits.
Lesotho	—	—
Liberia	1967Q3	Discussion related to domestic financial distress such as: credit remains tight.
	1986Q2	Discussion related to domestic financial distress such as: commercial banks have become increasingly reluctant to lend.
	1995Q3	Discussion related to domestic financial distress such as: a liquidity crisis cripples the banking system.
	2004Q1	Discussion related to domestic financial distress such as: money supply held outside the banking system as cash—credit constrained.
Libya	2008Q4 – 2009Q2	Discussion related to domestic financial distress such as: the banking system has severely restricted access to credit.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Libya	2017Q4	Discussion related to domestic financial distress such as: a liquidity crisis in the country's banks.
Madagascar	2009Q2	Discussion related to domestic financial distress such as: the government is facing a severe financial crisis.
Malawi	—	—
Malaysia	1979Q1	Discussion related to domestic financial distress such as: tight liquidity situation.
	1984Q1 – 1989Q1	Discussion related to domestic financial distress such as: tight local credit conditions.
	1997Q4 – 2000Q2	Discussion related to domestic financial distress such as: a collapse of property prices in Malaysia could bankrupt overextended developers, leaving the financial institutions which funded the construction boom with gaping losses. This squeeze would compound other pressures on the banking sector, such as those resulting from heavy exposure to companies which are having difficulty servicing their foreign debt, as well as from borrowers who pledged their now-devalued equity holdings as security. Signs of rising strain on the banking sector would further depress share prices.
Mali	1987Q2 – 1988Q1	Discussion related to domestic financial distress such as: further financial aid from the IMF and other donors will depend on whether the government is seen to be willing to cope with an acute financial crisis.
	1992Q3	Discussion related to domestic financial distress such as: reluctance of banks to provide the necessary credit.
Mauritania	2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: a credit squeeze has made it difficult for the country to access international capital markets.
Mexico	1982Q4 – 1983Q1	Discussion related to domestic financial distress such as: with the aid of the IMF and other bodies, and with the support of the international banks, the financial crisis should be dealt with before it has caused long lasting damage to the economy itself.
	1994Q1 – 1997Q4	Discussion related to domestic financial distress such as: the government had to take control of another bank, Inverlat, and it agreed to assume the problem loans on the books of the country's two leading commercial banks, Banco Nacional de México and Banco de Comercio in exchange for an injection of fresh capital by the institutions' shareholders. In addition, the government has been forced to introduce a debt-relief scheme for some of the country's larger companies.
	2009Q1 – 2011Q2	Discussion related to the fallout from the Global Financial Crisis such as: although the global downturn appeared easing, credit remained constrained.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Morocco	1983Q4 – 1985Q4	Discussion related to domestic financial distress such as: faced with this financial crisis, Morocco called a meeting of more than 40 banking creditors.
	2010Q1 – 2010Q4	Discussion related to domestic financial distress such as: credit conditions tightening.
Myanmar	2003Q2 – 2005Q4	Discussion related to domestic financial distress such as: in an effort to stem the run on bank deposits that followed the reported failure of 14 unregulated non-bank financial institutions and widespread rumours of imminent bankruptcies of the 20 private banks operating throughout the country, private banks imposed strict weekly limits on cash withdrawals.
Netherlands	1969Q3	Discussion related to domestic financial distress such as: tightened bank liquidity.
	2007Q4 – 2013Q4	Discussion related to the fallout from the Global Financial Crisis and Euro debt crisis such as: the slowing economy and financial crisis have forced the government to intervene massively in the Dutch financial system, in order to stabilise it amid ongoing dislocations. The Dutch state has taken over two banks and taken ownership stakes in three others, by providing capital injections, as well as moving to revive bank lending.
New Zealand	1987Q4 – 1991Q1	Discussion related to domestic financial distress such as: the central bank eased short term liquidity problems caused by the financial crisis.
	2007Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: the high spread indicates that there is considerable tightness in inter-bank lending markets, stemming from concerns about bank's ability to repay their loans.
Nicaragua	1978Q3 – 1979Q1	Discussion related to domestic financial distress such as: there is an illiquid financial system and a credit squeeze which have limited economic activity.
	2001Q2 – 2001Q3	Discussion related to domestic financial distress such as: the banking superintendency, under pressure from the IMF to improve loan provisions after the recent bank failures, is opposed to relaxing the rules, which essentially oblige the banks to foreclose on producers who do not pay promptly.
	2009Q2 – 2011Q3	Discussion related to the fallout from the Global Financial Crisis such as: as a result of the global credit crunch, the banking sector has seen its international credit lines disrupted.
	2018Q3	Discussion related to domestic financial distress such as: credit crunch.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Niger	1983Q1	Discussion related to domestic financial distress such as: credit squeeze from foreign lenders.
	1989Q2	Discussion related to domestic financial distress such as: Banque de Developpement de la Republique du Niger is reported to have been rescued from its insolvency by government action combined with the participation of international financial institutions.
	1992Q2 – 1996Q1	Discussion related to domestic financial distress such as: the new government cannot eradicate the financial crisis it will inherit.
Nigeria	1992Q3 – 1995Q2	Discussion related to domestic financial distress such as: the central bank moves to alleviate the cash squeeze on banks.
	2009Q3 – 2013Q1	Discussion related to domestic financial distress such as: the central bank explained that the unprecedented bailout had been necessary to prevent the collapse of the five banks, which could have triggered a systemic banking crisis. Between them the five banks had built up US$7.6 billion in bad loans, representing a staggering 40 percent of their total loan portfolio.
Norway	1992Q3 – 1995Q2	Discussion related to domestic financial distress such as: two savings banks were rescued by the central bank.
	2007Q4 – 2009Q4	Discussion related to the fallout from the Global Financial Crisis such as: the authorities have undertaken a number of measures designed to reduce risk premiums in the money markets and improve bank access to funding, although Norway's financial sector has so far not been as hard hit as in some European countries.
Pakistan	1971Q2	Discussion related to domestic financial distress such as: bank liquidity tight as depositors withdraw.
	2008Q4 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis such as: the global financial crisis has provoked a liquidity crunch in Pakistan.
	2012Q2 – 2013Q2	Discussion related to domestic financial distress such as: tightness in local credit markets.
Panama	1988Q1 – 1988Q4	Discussion about domestic financial distress such as: liquidity crunch.
	1998Q4 – 1999Q1	Discussion about the impact of international market such as: private consumption will be dampened by scarce credit and higher interest rates as Panamanian banks are forced to adjust to tighter liquidity in world capital markets.
	2000Q4 – 2002Q2	Discussion about domestic financial distress such as: tightening of bank credit after three years of strong growth.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Panama	2008Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: the government began negotiations with multilateral lenders, with the aim of securing funds for local banks facing restrictions on access to credit as a result of the seizure in the international financial markets. The moves came as some local businesses began to report difficulties accessing credit and the cancellation of previously agreed credit lines.
Paraguay	1995Q3 – 2001Q1	Discussion related to domestic financial distress such as: the inflation rate has continued to decline sharply in recent months as a result of weak consumer demand and the credit shortage resulting from the banking crisis. In particular, the government has made extensive use of the emission of Treasury bills, to counter monetary growth in the wake of the commercial bank bail-out.
	2002Q2 – 2003Q2	Discussion related to domestic financial distress such as: producers are facing a major credit squeeze that is jeopardising government targets for planting. Commercial banks are restricting the availability of credit because of the perceived increase in political risk, the failure to reach an agreement with the IMF, and the rapid increase in their own bad debt portfolio.
	2008Q4 – 2010Q1	Discussion related to the fallout from the Global Financial Crisis such as: the central bank eased policy rates and reserve requirements in recent months to inject liquidity into the domestic financial system after the global financial crisis caused a seizure in local and foreign credit lines.
Peru	1967Q3 – 1968Q3	Discussion related to domestic financial distress such as: large withdrawals brought restriction of lending.
	1983Q4 – 1984Q3	Discussion related to domestic financial distress such as: tight credit situation persists.
	1992Q3 – 1992Q4	Discussion related to domestic financial distress such as: the crisis in the financial sector gets worse.
	1998Q3 – 2001Q1	Discussion related to domestic financial distress such as: the central bank and the government have been forced to intervene in the banking and corporate sectors to boost liquidity following a severe credit crunch.
	2008Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: upward pressure on rates from tighter international credit.
Philippines	1981Q3 – 1987Q4	Discussion related to domestic financial distress such as: the liquidity of the commercial banks has been under severe pressure since the payments crisis.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Philippines	1997Q4 – 2003Q3	Discussion related to the fallout from the Asian Crisis such as: another set of reforms introduced reflects a specific recent event: the country's first banking collapse since the regional crisis hit the Philippines. It fell victim to a run on deposits, after rumours that the head of its parent company, José Go, had committed suicide or left the country, and needed emergency loans from the central bank.
	2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: central bank measures to support the banking sector due to pressure from the financial crisis.
Portugal	1974Q3 – 1975Q1	Discussion related to domestic financial distress such as: many of the smaller enterprises have had to close down, caught between soaring costs of labour and materials on one hand and, owing to the liquidity crisis, the inability of the banks to tide them over, on the other.
	2001Q2 – 2003Q3	Discussion related to domestic financial distress such as: tighter credit conditions and weaker business confidence.
	2008Q4 – 2015Q3	Discussion related to the fallout from the Global Financial Crisis and Euro debt crisis such as: a €20 billion state guarantee offered to banks in need of funding. The three largest privately-owned banks, Banco Comercial Português, Banco Espírito Santo and Banco Portugues do Investimento have stated that they will apply for this support. Banco Privado Português, has seen its application for the guarantee denied by the government and was heading towards bankruptcy when a consortium of the major domestic banks, backed by government funds, apparently managed to rescue.
Romania	1996Q3 – 1996Q4	Discussion related to domestic financial distress such as: a number of crises affecting banks and mutual funds.
	2008Q3 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis and Euro debt crisis such as: restriction on consumer credit in a context of financial distress.
	2014Q1 – 2014Q3	Discussion related to domestic financial distress such as: credit crunch to corporate sector worsens.
Russia	1995Q4	Discussion related to domestic financial distress such as: the banking sector is facing a severe crunch.
	1998Q1 – 2001Q1	Discussion related to domestic financial distress such as: the major pressure for monetary loosening has come from the banks. Faced with the prospect of a systemic crisis in the banking sector, the central bank opted to bail the banks out, even at the expense of price and exchange-rate stability.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Russia	2004Q3 – 2004Q4	Discussion related to domestic financial distress such as: the liquidity problems caused in the inter-bank market by the banking confidence crisis forced the central bank to ease monetary policy in order to inject additional liquidity into the banking system.
	2008Q2 – 2011Q4	Discussion related to the fallout from the Global Financial Crisis such as: the authorities have begun to implement a US$200 billion financial rescue package.
	2014Q1 – 2014Q4	Discussion related to domestic financial distress such as: banks have restricted access to international lending.
Rwanda	1985Q1	Discussion related to domestic financial distress such as: bank operations are restricted by tight liquidity.
	2009Q2 – 2010Q4	Discussion related to the fallout from the Global Financial Crisis such as: the monetary authorities responded vigorously to the domestic liquidity squeeze that compromised lending to the private sector. The central bank reduced commercial bank reserve requirements, restricted the rollover of maturing treasury bills and created a new financing facility for banks.
Senegal	1975Q4	Discussion related to domestic financial distress such as: tighter credit.
	1988Q1 – 1990Q4	Discussion related to domestic financial distress such as: government efforts to reduce public sector arrears to the banking system would resolve a serious liquidity squeeze.
Sierra Leone	1979Q1	Discussion related to domestic financial distress such as: the country's worst financial crisis since independence.
	1987Q3 – 1990Q1	Discussion related to domestic financial distress such as: the country has been suffering from a serious liquidity crisis.
Singapore	1985Q4 – 1986Q2	Discussion related to domestic financial distress such as: both the competence and credibility of the government and the Monetary Authority of Singapore have been severely undermined by the crisis in the financial system.
	2008Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight credit conditions.
South Africa	1998Q3 – 1998Q4	Discussion related to the fallout from the emerging markets such as: contagion from the emerging-market crisis hit South Africa's financial markets. The release of various economic indicators, including problematic money supply and credit data, along with the spread of the emerging-market crisis to Russia, progressively weakened the rand.
	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: tight credit.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Spain	1978Q2 – 1980Q3	Discussion related to domestic financial distress such as: the Banco de Navarra was rescued by the central bank.
	2007Q4 – 2014Q4	Discussion related to the fallout from the Global Financial Crisis and debt crisis such as: our central forecast is that either a domestic banking crisis or contagion from the euro area crisis will force Spain to access some form of emergency financial support from its euro zone partners in the coming months.
Sri Lanka	1985Q2	Discussion related to domestic financial distress such as: there is a liquidity crisis, and outside Jaffna most banks have been closed since almost all the government banks and many other state institutions have been bombed or robbed.
	1998Q4	Discussion related to the fallout from the Russian crisis: outstanding export bills resulting from the Russian crisis have also tightened the liquidity position of several commercial banks.
Sudan	1967Q2 – 1967Q3	Discussion related to domestic financial distress such as: a liquidity crisis going on.
	1978Q1 – 1980Q3	Discussion related to domestic financial distress such as: deepening financial crisis.
	1987Q4	Discussion related to domestic financial distress such as: liquidity crisis.
	2009Q2 – 2010Q2	Discussion related to domestic financial distress such as: the central bank intervened to rescue Nile Commercial Bank from the risk of collapsing because of mounting non-performing loans. Nile Commercial is the largest lender in Southern Sudan.
	2018Q4	Discussion related to domestic financial distress such as: soaring inflation, low credibility of the banking system, persistent weakening of the Sudanese pound on the black market and restriction of money supply growth have contributed to a liquidity crisis.
Sweden	1991Q1 – 1994Q1	Discussion related to domestic financial distress such as: several finance companies found themselves in an acute liquidity crisis, and many banks reported huge credit losses.
	2007Q4 – 2011Q1	Discussion related to the fallout from the Global Financial Crisis: the government's financial stabilisation package was passed by parliament, which provides a framework for alleviating the impact of the global financial crisis on domestic banks. The plan introduces a government loan guarantee scheme for debt issued by the banks, establishes a stabilisation fund to deal with liquidity problems and allows the government to step in to provide equity injections (including the possibility of full nationalisation) for troubled financial institutions.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Switzerland	1968Q3 – 1969Q1	Discussion related to domestic financial distress such as: credit expansion has been restricted by insufficient liquidity.
	1992Q2	Discussion related to domestic financial distress such as: UBS rescued Bank EvK.
	2007Q4 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis: Credit Suisse, until lately a better survivor of the banking crisis than UBS, has announced job losses and cost-cutting, amid losses in October-November.
Taiwan	1983Q4 – 1984Q2	Discussion related to domestic financial distress such as: debt defaults have led to a tightening on credit extension by foreign banks.
	1993Q3	Discussion related to domestic financial distress such as: tight credit.
	1995Q4 – 1996Q1	Discussion related to domestic financial distress such as: crisis among small financial institutions.
	1999Q1 – 2003Q3	Discussion related to domestic financial distress such as: faced with a credit crunch, officials have been actively encouraging banks to increase lending to viable institutions.
	2008Q4 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: the central bank is worried that the credit crunch is reducing liquidity in money markets.
Tanzania	1975Q3	Discussion related to domestic financial distress such as: domestic problems contributing to the current financial crisis.
Thailand	1981Q3 – 1991Q3	Discussion related to domestic financial distress such as: the central bank has responded to the crisis with two types of measures: (i) financial institutions permitted to raise the ceilings on their lending rates, and (ii) more money injected into the banking system.
	1996Q2 – 2001Q3	Discussion related to domestic financial distress such as: the government is engaged in a delicate balancing act designed to ensure that the steps taken to deal with the financial crisis do not create such a serious slowdown as to exacerbate the financial sector's troubles with serious knock-on effects for the wider economy. As it is, although the government's bail-out scheme for the property sector will take some non-performing loans off the banks' books, the glut of real estate is not expected to be cleared for at least three years.
	2008Q3 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: financing constraints resulting from the stock market downturn and banking sector liquidity problems.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Togo	1980Q1 – 1981Q2	Discussion related to domestic financial distress such as: the government has announced targets for its stabilization programme which is intended to avert the financial crisis.
	1992Q2 – 1994Q2	Discussion related to domestic financial distress such as: a continuing fall in the amount of commercial bank lending to residents in Togo since the crisis
Tunisia	1987Q1 – 1987Q3	Discussion related to domestic financial distress such as: Tunisia's European allies have provided a strong show of support for the government's attempts to remedy the financial crisis through its programme of economic reform.
	2005Q4 – 2006Q1	Discussion related to domestic financial distress such as: concerns over bad debts in the banking sector are also constraining lending.
	2012Q1	Discussion related to domestic financial distress such as: local banks remain reluctant to lend.
Turkey	1982Q3 – 1984Q2	Discussion related to domestic financial distress such as: banking crisis continues.
	1987Q1	Discussion related to domestic financial distress such as: Four state banks are to be merged and privatised. Those involved are Anadolu Bank, Eti Bank, Sumer Bank, and Denizcilik BANK. The move was prompted by the rescue operation.
	1994Q2 – 1994Q4	Discussion related to domestic financial distress such as: the government has had to cope with Turkey's most serious economic and financial crisis.
	2001Q1 – 2003Q3	Discussion related to domestic financial distress such as: the stock of public debt had risen to US$70 billion, mainly as a result of the government bail-out of the state-owned banks and takeover of the private-sector banks.
	2008Q3 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: the global credit squeeze has made international financing more difficult and more costly than in the recent past.
	2018Q4	Discussion related to domestic financial distress such as: tightening financial conditions.
Uganda	1985Q2	Discussion related to domestic financial distress such as: there are continuing reports that the banking sector is suffering a serious liquidity crisis because too little of the currency in circulation is passing through the banks.
	1987Q4 – 1991Q2	Discussion related to domestic financial distress such as: the financial bottleneck was caused by the liquidity crisis.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Uganda	2002Q1	Discussion related to domestic financial distress such as: commercial banks have been increasingly reluctant to advance loans to the businesses, on the grounds that they are too risky, preferring instead to put their funds into Treasury bills or to build up their reserves.
	2009Q3 – 2009Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight credit conditions.
United Kingdom	1984Q3 – 1985Q1	Discussion related to domestic financial distress such as: the UK experienced a mini financial crisis as sterling fell to less than $1.30 and clearing banks' base rates jumped 2.75 percentage points to 12 percent.
	2007Q4 – 2013Q3	Discussion related to the fallout from the Global Financial Crisis such as: the UK experienced its first major bank run for over a century, as Northern Rock, the country's fifth-largest mortgage lender, came close to collapse.
	2017Q2	Discussion related to domestic financial distress such as: tightening credit availability.
United States	1988Q3 – 1992Q4	Discussion related to domestic financial distress such as: the rescue of eight Texas thrifts cost the Federal Savings and Loan Insurance Corporation some $5.5 bn, making it the most expensive rescue ever in the financial sector.
	1997Q1 – 1998Q4	Discussion related to domestic financial distress such as: the Fed's current stance reflects a number of concerns related to the domestic economy: the potential effects on personal consumption of recent losses in the stock market; reduced rates of profit growth as an indicator of a weakening economy; a developing credit crunch, at least on consumer credit; and a consumer debt burden which is exacerbated by high real interest rates.
	2007Q3 – 2012Q3	Discussion related to domestic financial distress such as: the Fed has struggled to address a severe credit crunch, cutting the discount rate by 50 basis points and probably heading to cut its Fed Funds target. A plan by the president to help households hit by the sub-prime mortgage crisis is likely to have only a small impact.
Uruguay	1971Q2	Discussion related to domestic financial distress such as: several of the banks in difficulties may have to be rescued by the government.
	1982Q4 – 1983Q4	Discussion related to the crisis in Argentina and Latin America such as: Uruguay's already faltering economy has been badly affected by Argentina's economic crisis and the general financial troubles of Latin America as a whole. The country has been forced to borrow short term as medium term credits have dried up.
	1988Q4	Discussion related to domestic financial distress such as: rescue operation is mounted for failing banks.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Uruguay	2002Q3 – 2010Q1	Discussion related to domestic financial distress such as: the government faces another difficult year in 2003. Its popularity, already low at the start of 2002, has plummeted as the recession has deepened and as the banking system teetered on the brink of collapse.
Venezuela	1973Q4 – 1975Q1	Discussion related to domestic financial distress such as: central bank has taken action to ease liquidity.
	1982Q4 - 1985Q3	Discussion related to domestic financial distress such as: the weakness of some Venezuelan banks has added to the overall sense of financial crisis.
	1994Q1 - 1995Q4	Discussion related to domestic financial distress such as: bank privatisations are planned. Various of the banks taken over during the financial crises are to be sold. Next to go is apparently Banco de Venezuela, the country's second largest bank, for which the government is hoping to find a buyer before the middle of the year. Still to be resolved fully is the issue of the transfer of liabilities from other failed institutions.
	2001Q3 – 2003Q1	Discussion related to domestic financial distress such as: new liquidity requirements for banks and the higher discount rate, are generating upward pressure on interest rates in the marketplace. Overnight rates rose above 40 percent owing to a liquidity crunch as banks scrambled to meet the new liquidity measures. This is of particular concern because those loans are mostly taken up only by large corporates. Small and medium-sized enterprises had limited access to funding even before this latest liquidity crunch tightened conditions further.
	2018Q2	Discussion related to domestic financial distress such as: impact of economic crisis on the banking sector.
Vietnam	1995Q5	Discussion related to domestic financial distress such as: business has been complaining of a credit crunch.
	1997Q2 – 2000Q3	Discussion related to domestic financial distress such as: faced with the crisis in the banking sector the central bank has again responded deftly. It has at long last allowed the dong to depreciate, but not too quickly, in order to avoid pushing local firms with dollar loans into bankruptcy. It has said that its two priorities are to build up its foreign exchange reserves and inject some (but not too much) liquidity into the banking system. It has given the impression that it stands ready to support the banking system should it get into serious trouble.
	2008Q4 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: liquidity constraints.

Table A2 – Continued

Country	Date	Example of what the EIU discuss
Vietnam	2014Q1 – 2014Q4	Discussion related to domestic financial distress such as: despite some concern in the local press about the domino effect of banking closures, the government is acutely aware that economic performance depends on robust credit growth and securing the confidence of international investors. With the central bank's foreign- exchange reserves alone totaling US$4 billion at the start of 2014, policymakers have the resources and the wherewithal to step in and save vulnerable institutions.
Zambia	2004Q3	Discussion related to domestic financial distress such as: liquidity was tight.
	2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: credit remains tight owing to the knock-on effects of the global downturn.
	2018Q3	Discussion related to domestic financial distress such as: liquidity constraints.
Zimbabwe	1998Q2 – 2006Q1	Discussion related to domestic financial distress such as: Zimbabwe's economy is not expected to perform well. Despite adequate rainfall and a good tobacco crop, growth will be hampered by low tobacco prices, low mineral prices and the unfolding crisis in the financial sector with the collapse of United Merchant Bank.
	2014Q1 – 2018Q4	Discussion related to domestic financial distress such as: the central bank has sought to conserve foreign exchange and ease the cash crisis in the economy. Banks have been forced to restrict withdrawals to customers.

Table A3. Financial Stress Dates: FSI vs. 8 other Measures

Countries: Afghanistan to Botswana

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Afghanistan	2009Q4	-	-	-	-	-	-	-	-
Afghanistan	2011Q4	-	-	-	-	-	-	-	-
Albania	0	0	-	-	1992 - ?	-	-	-	-
Albania	0	1994	-	-	0	-	-	-	-
Albania	1997Q2 - 1997Q3	0	-	-	0	-	-	-	-
Albania	2002Q3 - 2003Q1	0	-	-	-	-	-	-	-
Albania	2009Q1 - 2010Q2	0	-	-	-	-	-	-	-
Albania	2013Q1 - 2014Q3	0	-	-	-	-	-	-	-
Algeria	1984Q1	0	-	0	0	0	-	-	-
Algeria	1987Q2 - 1995Q3	1990 - 1994	-	1990 - 1992	1990 - 1992	1990 - 1992	-	-	-
Algeria	2004Q1	0	-	0	-	-	-	-	-
Argentina	1978Q1	0	-	0	0	-	-	0	-
Argentina	1980Q3 - 1982Q3	1980 - 1982	-	1980 - 1982	1980 - 1982	1980 - 1982	-	1980	-
Argentina	1985Q1 - 1985Q3	0	-	0	0	0	-	1985	-
Argentina	1989Q2 - 1989Q4	1989 - 1991	-	1989 - 1990	1989 - 1990	1989 - 1990	-	1989	-
Argentina	1995Q1 - 1996Q3	1995	-	1995 - 1996	1995	0	-	1995	1995
Argentina	1998Q4 - 2000Q4	0	-	0	0	0	-	0	0
Argentina	2001Q2 - 2003Q4	2001 - 2003	-	2001 - 2003	-	2002	-	-	2001
Argentina	2008Q4 - 2010Q2	0	-	0	-	-	-	-	0
Australia	1977Q3	0	0	0	0	-	0	0	0
Australia	1990Q4 - 1993Q1	0	0	1989 - 1992	1989 - 1992	-	1989	1989	1989
Australia	2008Q1 - 2009Q1	0	2008:1 - 2009:1	0	-	-	0	-	2008
Austria	2007Q4 - 2012Q4	2008 - 2012	2008:2 - 2016:1	2008 - 2011	-	-	-	-	2008
Belgium	2007Q4 - 2014Q1	2008 - 2012	2008:2 - 2011:2	2008 - 2014	-	-	-	-	2008
Benin	1989Q1 - 1992Q1	1988 - 1992	-	-	1988 - 1990	1988 - 1990	-	-	-
Benin	0	0	-	-	0	1994 - 1997	-	-	-
Benin	2009Q1 - 2009Q3	0	-	-	-	-	-	-	-
Bolivia	0	1986	-	1986 - 1987	1986 - 1988	1986 - 1988	-	-	-
Bolivia	1995Q3 - 1996Q3	1994	-	1994 - 1996	1994 - ?	1994 - 1997	-	-	-
Bolivia	1999Q1 - 2005Q4	0	-	1999	-	2001 - 2002	-	-	-
Bolivia	2018Q4	-	-	-	-	-	-	-	-
Botswana	1982Q3	0	-	-	0	-	-	-	-
Botswana	1988Q3 - 1989Q1	0	-	-	0	-	-	-	-

Table A3 – continued

Countries: Brazil to China

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Brazil	1967Q1	0	-	0	0	-	-	0	0
Brazil	1982Q4 - 1985Q2	0	-	1985 - 1986	0	0	-	0	-
Brazil	1987Q1 - 1988Q1	0	-	0	0	0	-	0	0
Brazil	1990Q1 - 1990Q4	1990 - 1994	-	1990 - 1991	1990	1990	-	1990	-
Brazil	1996Q1 - 1999Q3	1994 - 1998	-	1994 - 1997	1994 - 1999	1994 - 1999	-	1994	0
Brazil	2002Q3	0	-	0	-	0	-	-	0
Brazil	2006Q2 - 2010Q2	0	-	0	-	-	-	-	0
Brazil	2016Q4 - 2018Q4	0	-	-	-	-	-	-	-
Bulgaria	1990Q1	0	-	-	0	-	-	-	-
Bulgaria	1995Q1 - 1999Q1	1996 - 1997	-	-	1990s	-	-	-	-
Bulgaria	2008Q4 - 2010Q3	0	-	-	-	-	-	-	-
Bulgaria	2015Q2 - 2016Q4	0	-	-	-	-	-	-	-
Burkina Faso	1992Q2	1990 - 1994	-	-	1988 - 1994	1988 - 1994	-	-	-
Burkina Faso	2009Q2 - 2010Q1	0	-	-	-	-	-	-	-
Burundi	0	1994 - 1998	-	-	1994 - ?	1994 - 1997	-	-	-
Cambodia	1993Q4	0	-	-	-	-	-	-	-
Cambodia	2009Q4 - 2010Q1	0	-	-	-	-	-	-	-
Cameroon	1985Q2 - 1985Q4	0	-	-	0	0	-	-	-
Cameroon	1987Q1 - 1992Q4	1987 - 1991	-	-	1987 - 1993	1987 - 1993	-	-	-
Cameroon	1995Q2 - 1996Q4	1995 - 1997	-	-	1995 - 1998	1995 - 1998	-	-	-
Cameroon	2008Q4 - 2009Q4	0	-	-	-	-	-	-	-
Cameroon	2015Q3 - 2017Q4	0	-	-	-	-	-	-	-
Canada	1982Q4 - 1985Q4	0	0	1983 -1985	1983 -1985	-	0	0	1983
Canada	2007Q4 - 2009Q1	0	2007:2 - 2009:2	0	-	-	0	-	2007
Central African Republic	0	1995 - 1996	-	1988 - 1999	1988 - 1999	1988 - 1999	-	-	-
Chad	1992Q3 - 1995Q1	1992 - 1996	-	-	1992	1992	-	-	-
Chile	0	1976	-	1976 - 1977	1976	0	-	1976	1976
Chile	1981Q4 - 1985Q4	1981 - 1985	-	1981 - 1984	1981 - 1983	1981 - 1987	-	1981	1980
Chile	2003Q2	0	-	0	-	-	-	-	0
Chile	2009Q1 - 2010Q3	0	-	0	-	-	-	-	0
China	1993Q3 - 1993Q4	0	-	0	0	-	-	0	-
China	1998Q1 - 2001Q4	1998	-	1997 - 1999	1998	-	-	0	-
China	2008Q4	0	-	-	-	-	-	-	-

Table A3 – continued

Countries: Colombia to Ecuador

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Colombia	1967Q3 - 1969Q3	-	-	0	-	-	-	0	0
Colombia	1980Q4 - 1987Q4	1982	-	1982 - 1987	1982 - 1987	1982 - 1985	-	1982	1982
Colombia	1994Q3	0	-	0	0	0	-	0	0
Colombia	1998Q3 - 2003Q1	1998 - 2000	-	1998 - 2000	0	1999 - 2000	-	0	1998
Colombia	2009Q1 - 2009Q3	0	-	0	-	-	-	-	0
Colombia	2013Q2 - 2014Q1	0	-	0	-	-	-	-	0
Colombia	2017Q2 - 2017Q3	0	-	-	-	-	-	-	-
Congo, Republic of	1990Q1 - 1994Q1	1992	-	-	1992 - 1999	1992 - 2002	-	-	-
Congo, Republic of	2005Q3	0	-	-	-	-	-	-	-
Congo, Republic of	2009Q1	0	-	-	-	-	-	-	-
Costa Rica	1967Q1 - 1968Q1	-	-	-	-	-	-	0	-
Costa Rica	1981Q3 - 1984Q2	0	-	-	0	0	-	0	-
Costa Rica	1986Q3	1987 - 1991	-	1987 - 1991	1987 - ?	0	-	1987	-
Costa Rica	1995Q2	1994 - 1995	-	1994 - 1996	1994 - ?	1994 - 1997	-	0	-
Costa Rica	2008Q4 - 2009Q2	0	-	0	-	-	-	-	-
Côte d'Ivoire	1987Q2 - 1992Q4	1988 - 1992	-	1988 - 1991	1988 - 1991	1988 - 1991	-	-	-
Côte d'Ivoire	1998Q1	0	-	0	-	0	-	-	-
Côte d'Ivoire	2004Q1	0	-	0	-	-	-	-	-
Côte d'Ivoire	2011Q1 - 2011Q3	0	-	0	-	-	-	-	-
Democratic Republic of the Congo	1971Q4	0	-	-	0	-	-	-	-
Democratic Republic of the Congo	1981Q1, 1985Q1	1983	-	-	1980s	0	-	-	-
Democratic Republic of the Congo	1991Q1 - 1993Q3	1991 - 1994	-	-	1991 - 1992	0	-	-	-
Democratic Republic of the Congo	0	1994 - 1998	-	-	1994 - 1999	1994 - 2002	-	-	-
Denmark	1969Q2 - 1969Q3	-	0	0	-	-	0	-	0
Denmark	1987Q2 - 1990Q3	0	0	Mar. 1987 - 1992	1987 - 1992	-	1987	1987	1987
Denmark	2007Q4 - 2014Q2	2008 - 2009	2008:1 - 2013:2	2008 - 2014	-	-	0	-	2008
Dominican Republic	1990Q1 - 1990Q4	0	-	0	-	-	-	-	-
Dominican Republic	0	0	-	1996	-	-	-	-	-
Dominican Republic	2003Q3 - 2005Q3	2003 - 2004	-	2003 - 2004	-	-	-	-	-
Dominican Republic	2008Q3 - 2009Q2	0	-	0	-	-	-	-	-
Ecuador	1981Q2 - 1986Q1	1982 -1986	-	1981	Early 1980s	0	-	1981	-
Ecuador	1995Q4 - 2004Q4	1998 - 2002	-	1996 - 2002	1996 - 1999	1995 - 2002	-	0	-
Ecuador	2008Q4 - 2009Q3	0	-	0	-	-	-	-	-

Table A3 – continued

Countries: Egypt to Guinea

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Egypt	0	1980	-	1981 - 1983	Early 1980s	-	-	1981	-
Egypt	1992Q3 - 1992Q4	0	-	1990 - 1995	1991 - 1995	-	-	1990	-
Egypt	1998Q4 - 2002Q4	0	-	0	0	-	-	0	0
El Salvador	0	1989 - 1990	-	1989 - 1990	1989	1989	-	-	-
El Salvador	0	0	-	1998 - 1999	0	0	-	-	-
El Salvador	2001Q3 - 2001Q4	0	-	0	-	0	-	-	-
El Salvador	2007Q4 - 2011Q3	0	-	0	-	-	-	-	-
Ethiopia	1995Q2	0	-	-	1994 - 1995	-	-	-	-
Ethiopia	2009Q1 - 2009Q3	0	-	-	0	-	-	-	-
Ethiopia	2018Q3	0	-	-	0	-	-	-	-
Finland	1991Q4 - 1994Q3	1991 - 1995	1992 - 1994	1991 - 1994	1991 - 1994	1991 - 1994	-	1991	1991
Finland	2007Q4 - 2009Q2	0	2008:2 - 2009:2	0	-	-	-	-	2008
France	1994Q2 - 1995Q2	0	1995:1 - 1997:1	1994 - 1995	1994 - 1995	-	-	1994	1994
France	2007Q4 - 2014Q1	2008 - 2009	2007:2 - 2013:2	2008 - 2014	-	-	2008	-	2007
Gabon	1999Q3 - 1999Q4	0	-	-	0	-	-	-	-
Gabon	2008Q4 - 2009Q1	0	-	-	0	-	-	-	-
Gambia, The	1978Q4	0	-	-	0	-	-	-	-
Gambia, The	0	0	-	-	1985 - 1992	-	-	-	-
Germany	1974Q3	0	1974:2	0	0	-	0	0	1974
Germany	0	0	0	1977 - 1979	Late 1970s	-	0	1977	1977
Germany	2002Q2 - 2003Q4	0	2003:1	0	-	-	0	-	2003
Germany	2007Q4 - 2014Q1	2008 - 2009	2007:2 - 2014:1	2008 - 2010	-	-	2008	-	2007
Ghana	1979Q3	0	-	0	0	-	-	-	-
Ghana	1986Q2 - 1990Q3	1982 - 1983	-	1982 - 1989	1982 - 1989	1982 - 1989	-	-	-
Ghana	1993Q1	0	-	0	0	0	-	-	-
Ghana	0	0	-	1997 - 1999	1997 - 1999	1997 - 2002	-	-	-
Ghana	2009Q3	0	-	0	-	-	-	-	-
Greece	1994Q3	0	0	1991 - 1995	1991 - 1995	-	-	0	1991
Greece	2008Q3 - 2018Q2	2008 - 2012	2008:2 - 2017:2	2008 - 2014	-	-	-	-	2008
Guatemala	1981Q2 - 1983Q2	0	-	0	0	-	-	-	-
Guatemala	0	0	-	1990	1990s	-	-	-	-
Guatemala	1999Q1 - 2002Q1	0	-	2001	-	-	-	-	-
Guatemala	0	0	-	2006	-	-	-	-	-
Guatemala	2008Q3 - 2010Q4	0	-	2006	-	-	-	-	-
Guinea	2014Q1 - 2014Q3	0	-	-	-	-	-	-	-

Table A3 – continued

Countries: Haiti to Italy

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Haiti	0	1994 - 1998	-	-	-	-	-	-	-
Haiti	2008Q3 - 2012Q4	0	-	-	-	-	-	-	-
Honduras	1981Q2 - 1984Q1	0	-	0	-	-	-	-	-
Honduras	2000Q2	0	-	1999	-	-	-	-	-
Honduras	2002Q1 - 2005Q3	0	-	2001 - 2002	-	-	-	-	-
Honduras	2008Q4 - 2011Q2	0	-	0	-	-	-	-	-
Hong Kong SAR	1983Q4 - 1986Q4	0	-	1982 - 1986	1982 - 1986	-	-	1982	1982
Hong Kong SAR	1992Q2 - 1993Q3	0	-	0	0	-	-	0	0
Hong Kong SAR	1997Q4 - 2000Q3	0	-	1998	1998	-	-	0	1998
Hong Kong SAR	2008Q4 - 2010Q4	0	-	0	-	-	-	-	0
Hungary	1990Q2 - 1994Q1	1991 - 1995	0	1991 - 1995	-	-	-	-	-
Hungary	2008Q4 - 2014Q3	2008 - 2012	2008:2 - 2016:1	2008 - 2014	-	-	-	-	2008
Hungary	2017Q4 - 2018Q4	0	0	-	-	-	-	-	-
Iceland	1985Q3 - 1987Q3	0	0	1985 - 1986	1985 - 1986	0	-	0	-
Iceland	0	-	-	-	1993	0	-	0	-
Iceland	2007Q2 - 2011Q4	2008 - 2012	2006:2 - 2013:1	2007 - 2014	-	-	-	-	2006
India	1991Q1 - 1998Q4	1993	-	1993 - 1998	1993 - 1999	1991 - 1994	-	1994	1991
India	2008Q4 - 2009Q1	0	-	0	-	-	-	-	0
India	2016Q1 - 2016Q4	0	-	0	-	-	-	-	-
Indonesia	1967Q4	-	-	0	-	-	-	0	0
Indonesia	1984Q4 - 1988Q4	0	-	0	-	0	-	0	0
Indonesia	1993Q1 - 1994Q3	0	-	1992 - 1994	1994	1992 - 1995	-	1992	1992
Indonesia	1997Q4 - 2003Q3	1997 - 2001	-	1997 - 2002	1997 - 1999	1997 - 2002	-	1997	1997
Indonesia	2008Q4 - 2009Q3	0	-	0	-	-	-	-	0
Iran	1984Q2	0	-	-	-	-	-	-	-
Iran	1987Q1	0	-	-	-	-	-	-	-
Iran	2017Q1 - 2017Q3	0	-	-	-	-	-	-	-
Iraq	0	-	-	-	-	-	-	-	-
Ireland	2008Q4 - 2017Q1	2008 - 2012	2007:2 - 2017:2	-	-	-	-	-	2007
Israel	1967Q1 - 1968Q3	-	-	-	-	-	-	0	1977
Israel	1983Q4 - 1984Q3	1983 - 1986	-	-	1977 - 1983	1983 - 1984	-	1977	1983
Israel	2008Q4	0	-	-	0	0	-	0	0
Italy	1993Q2	0	0	1990 - 1995	1990 - 1995	1990 - 1995	1990	0	1990
Italy	1996Q2 - 1997Q1	0	1997:1	0	0	0	0	0	1997
Italy	2007Q4 - 2018Q4	2008 - 2009	2007:2 - 2017:2	2008 - 2014	-	-	2008	-	2007

Table A3 – continued

Countries: Jamaica to Malawi

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Jamaica	1995Q3 - 1999Q3	1996 - 1998	-	-	1994 - 1999	1996 - 2000	-	0	-
Jamaica	2008Q4 - 2010Q3	0	-	-	-	-	-	-	-
Japan	1990Q1 - 2004Q2	1997 - 2001	1990:2 - 2005:1	1992 - 2001	1990s	1992 - 2002	1992	1992	1991
Japan	2008Q3 - 2010Q1	0	2008:2 - 2010:1	0	-	-	0	-	2008
Jordan	1989Q3	1989 - 1991	-	-	1989 - 1990	1989 - 1990	-	-	-
Jordan	1993Q2 - 1993Q3	0	-	-	-	-	-	-	-
Jordan	2009Q1 - 2012Q1	0	-	-	-	-	-	-	-
Kenya	1975Q1	0	-	0	0	-	-	-	-
Kenya	1981Q2	0	-	0	0	0	-	-	-
Kenya	1986Q1 - 1987Q3	1985	-	1985 - 1988	1985 - 1989	0	-	-	-
Kenya	1992Q2 - 1993Q2	1992 - 1994	-	1992 - 1995	1992 - 1995	1993 - 1995	-	-	-
Kenya	1998Q4 - 1999Q4	0	-	0	1996 - ?	0	-	-	-
Kenya	2009Q1 - 2009Q3	0	-	0	-	-	-	-	-
Korea	1997Q2 - 2000Q4	1997 - 1998	1997:1 - 2005:1	1997 - 2000	1997 - 1999	1997 - 2002	-	1997	1997
Korea	2009Q1 - 2009Q3	0	2008:2 - 2012:2	-	-	-	-	-	0
Lao P.D.R.	0	0	-	-	Early 1990s	-	-	-	-
Lao P.D.R.	1998Q2 - 1998Q3	0	-	-	0	-	-	-	-
Lao P.D.R.	2009Q2	0	-	-	-	-	-	-	-
Lebanon	1967Q2	-	-	-	-	-	-	-	-
Lebanon	1969Q3 - 1970Q4	0	-	-	-	-	-	-	-
Lebanon	1976Q1 - 1979Q4	0	-	-	0	-	-	-	-
Lebanon	1989Q1 - 1989Q4	1990 - 1993	-	-	1988 - 1990	1988 - 1990	-	-	-
Lebanon	1998Q3	0	-	-	0	0	-	-	-
Lebanon	2008Q4	0	-	-	-	-	-	-	-
Lebanon	2018Q3 - 2018Q4	-	-	-	-	-	-	-	-
Lesotho	0	0	-	-	-	-	-	-	-
Liberia	1967Q3	-	-	-	-	-	-	-	-
Liberia	1986Q2	0	-	-	0	0	-	-	-
Liberia	1995Q3	1991 - 1995	-	-	1991 - 1995	1991 - 1995	-	-	-
Liberia	2004Q1	0	-	-	-	-	-	-	-
Libya	2008Q4 - 2009Q2	0	-	-	-	-	-	-	-
Libya	2017Q4	0	-	-	-	-	-	-	-
Madagascar	2009Q2	0	-	-	-	-	-	-	-
Malawi	0	0	-	-	-	-	-	-	-

Table A3 – continued

Countries: Malaysia to Pakistan

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Malaysia	1979Q1	0	-	0	0	-	-	0	0
Malaysia	1984Q1 - 1989Q1	0	-	1985 - 1988	1985 - 1988	1985 - 1988	-	1985	1985
Malaysia	1997Q4 - 2000Q2	1997 - 1999	-	1997 - 2001	1997 - 1999	1997 - 2001	-	1998	1997
Mali	1987Q2 - 1988Q1	1987 - 1991	-	-	1987 - 1989	1987 - 1989	-	-	-
Mali	1992Q3	0	-	-	0	0	-	-	-
Mauritania	0	1984	-	-	1984 - 1993	1984 - 1993	-	-	-
Mauritania	2009Q1	0	-	-	-	-	-	-	-
Mexico	1982Q4 - 1983Q1	1981 - 1985	-	1981 - 1982	1981 - 1991	1982	-	-	-
Mexico	1994Q1 - 1997Q4	1994 - 1996	1995:2 - 1998:1	1993 - 1997	1995 - 1999	1994 - 1997	-	1994	1994
Mexico	2009Q1 - 2011Q2	0	2008:2	0	-	-	-	-	0
Morocco	1983Q4 - 1985Q4	1980 - 1984	-	1983 - 1984	Early 1980s	-	-	-	-
Morocco	2010Q1 - 2010Q4	0	-	0	0	-	-	-	-
Myanmar	0	0	-	1996 - 1997	1996 - ?	-	-	-	-
Myanmar	2003Q2 - 2005Q4	0	-	2002 - 2005	-	-	-	-	-
Nepal	0	0	-	-	1988	1988 - 1991	-	-	-
Nepal	0	0	-	-	0	0	-	-	-
Netherlands	1969Q3	-	0	0	-	-	0	0	0
Netherlands	2007Q4 - 2013Q4	2008 - 2009	2008:1 - 2015:2	2008 - 2014	-	-	2008	-	2008
New Zealand	1987Q4 - 1991Q1	0	0	1987 - 1990	1987 - 1990	-	-	1987	1987
New Zealand	2007Q4 - 2009Q3	0	2007:2 - 2012:1	0	-	-	-	-	2007
Nicaragua	1978Q3 - 1979Q1	0	-	0	0	-	-	-	-
Nicaragua	0	1990 - 1993	-	1987 - 1996	Late 1980s - 1996	-	-	-	-
Nicaragua	2001Q2 - 2001Q3	2000 - 2001	-	2000 - 2001	-	-	-	-	-
Nicaragua	2009Q2 - 2011Q3	0	-	0	-	-	-	-	-
Nicaragua	2018Q3	-	-	-	-	-	-	-	-
Niger	1983Q1	1983 - 1985	-	-	1983 - ?	1983 - 1986	-	-	-
Niger	1989Q2	0	-	-	0	0	-	-	-
Niger	1992Q2 - 1996Q1	0	-	-	0	0	-	-	-
Nigeria	1992Q3 - 1995Q2	1991 - 1995	-	1992 - 1997	1990s	1991 - 1995	-	1991	-
Nigeria	2009Q3 - 2013Q1	2009 - 2012	-	2009 - 2014	-	-	-	-	-
Norway	1989Q1 - 1994Q2	1991 - 1993	1991:2 - 1994:1	1987 - 1993	1987 - 1993	1987 - 1993	1988	1987	1987
Norway	2007Q4 - 2009Q4	0	2007:2 - 2009:2	0	-	-	0	-	2007
Pakistan	1971Q2	0	-	-	-	-	-	0	-
Pakistan	2008Q4 - 2010Q3	0	-	-	-	-	-	-	-
Pakistan	2012Q2 - 2013Q2	0	-	-	-	-	-	-	-

Table A3 – continued

Countries: Panama to Sierra Leone

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Panama	1988Q1 - 1988Q4	1988 - 1989	-	1988 - 1989	1988 - 1989	1988 - 1989	-	-	-
Panama	1998Q4 - 1999Q1	0	-	0	0	0	-	-	-
Panama	2000Q4 - 2002Q2	0	-	0	-	0	-	-	-
Panama	2008Q1 - 2009Q3	0	-	0	-	-	-	-	-
Paraguay	1995Q3 - 2001Q1	1995	-	1995 - 1999	1995 - 1999	1995 - 1999	-	1995	-
Paraguay	2002Q2 - 2003Q2	0	-	2002	-	0	-	-	-
Paraguay	2008Q4 - 2010Q1	0	-	0	-	-	-	-	-
Peru	1967Q3 - 1968Q3	-	-	0	-	-	-	0	0
Peru	1983Q4 - 1984Q3	1983	-	1983 - 1990	1983 - 1990	1983 - 1990	-	1983	1093
Peru	1992Q3 - 1992Q4	0	-	0	0	0	-	0	0
Peru	1998Q3 - 2001Q1	0	-	1999	0	0	-	0	1999
Peru	2008Q4 - 2009Q3	0	-	0	-	-	-	-	0
Philippines	1981Q3 - 1987Q4	1983 - 1986	-	1981 - 1987	1981 - 1987	1981 - 1987	-	1981	1981
Philippines	1997Q4 - 2003Q3	1997 - 2001	-	1997 - 2001	1998 - 1999	1998 - 2002	-	1998	1997
Philippines	2009Q2	0	-	0	-	-	-	-	0
Portugal	1974Q3 - 1975Q1	0	0	0	-	-	-	-	0
Portugal	0	0	0	0	-	1986 - 1989	-	-	1986
Portugal	2001Q2 - 2003Q3	0	0	0	-	0	-	-	0
Portugal	2008Q4 - 2015Q3	2008 - 2012	2008:01 - 2017:2	2008 - 2014	-	-	-	-	2008
Romania	1996Q3 - 1996Q4	1998 - 1999	-	1990 - 1999	1990 - 1999	-	-	-	-
Romania	2008Q3 - 2009Q2	0	-	0	-	-	-	-	-
Romania	2014Q1 - 2014Q3	0	-	0	-	-	-	-	-
Russia	1995Q4	0	-	1995	1995	-	-	-	-
Russia	1998Q1 - 2001Q1	1998	-	1998	1998 - 1999	-	-	-	1998
Russia	2004Q3 - 2004Q4	0	-	0	-	-	-	-	0
Russia	2008Q2 - 2011Q4	2008 - 2009	-	2008 - 2013	-	-	-	-	2008
Russia	2014Q1 - 2014Q4	0	-	2014	-	-	-	-	-
Rwanda	1985Q1	0	-	-	-	-	-	-	-
Rwanda	0	0	-	-	1991 - ?	-	-	-	-
Rwanda	2009Q2 - 2010Q4	0	-	-	-	-	-	-	-
Senegal	1975Q4	0	-	-	0	-	-	-	-
Senegal	1988Q1 - 1990Q4	1988 - 1991	-	-	1988 - 1991	1983 - 1988	-	-	-
Sierra Leone	1979Q1	0	-	-	0	-	-	-	-
Sierra Leone	1987Q3 - 1990Q1	1990 - 1994	-	-	1990 - 1999	1990 - 1993	-	-	-

Table A3 – continued

Countries: Singapore to Thailand

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Singapore	0	0	-	1982	1982	-	-	1982	1982
Singapore	1985Q4 - 1986Q2	0	-	0	0	-	-	0	0
Singapore	2008Q4	0	-	0	-	-	-	-	0
South Africa	0	0	-	1977 - 1978	1977	-	-	1977	1977
South Africa	0	0	-	0	0	1985	-	1985	1985
South Africa	0	0	-	1989	1989 - ?	0	-	0	1989
South Africa	1998Q3 - 1998Q4	0	-	0	0	0	-	0	0
South Africa	2009Q1 - 2009Q3	0	-	0	-	-	-	-	0
Spain	1978Q2 - 1980Q3	1977 - 1981	0	1977 - 1985	1977 - 1985	-	1978	1977	1977
Spain	2007Q4 - 2014Q4	2008 - 2012	2008:01 - 2015:1	2008 - 2014	-	-	2008	-	2008
Sri Lanka	1985Q2	0	-	-	0	0	-	-	-
Sri Lanka	0	1989 - 1991	-	1989 - 1993	1989 - 1993	1989 - 1993	-	1989	-
Sri Lanka	1998Q4	0	-	0	0	0	-	0	-
Sudan	1967Q2 - 1967Q3	-	-	-	-	-	-	-	-
Sudan	1978Q1 - 1980Q3	0	-	-	-	-	-	-	-
Sudan	1987Q4	0	-	-	-	-	-	-	-
Sudan	2009Q2 - 2010Q2	0	-	-	-	-	-	-	-
Sudan	2018Q4	0	-	-	-	-	-	-	-
Sweden	1991Q1 - 1994Q1	1991 - 1995	1992:2 - 1993:1	1991 - 1994	1991 - 1994	1990 - 1993	1991	1991	1991
Sweden	2007Q4 - 2011Q1	2008 - 2009	2008:1 - 2010:2	2008 - 2010	-	-	2008	-	2008
Switzerland	1968Q3 - 1969Q1	-	0	-	-	-	0	0	0
Switzerland	1992Q2	0	0	-	-	-	0	0	1991
Switzerland	2007Q4 - 2010Q3	2008 - 2009	2007:2 - 2009:1	-	-	-	2008	-	2007
Switzerland	0	0	2012:1	-	-	-	-	-	-
Taiwan, Province of China	1983Q4 - 1984Q2	-	-	1983 - 1984	1983 - 1984	0	-	1983	-
Taiwan, Province of China	1993Q3	-	-	0	0	0	-	0	0
Taiwan, Province of China	1995Q4 - 1996Q1	-	-	1995	1995	0	-	1995	1995
Taiwan, Province of China	0	-	-	1997 - 1998	1997 - 1998	1997 - 1998	-	0	1997
Taiwan, Province of China	1999Q1 - 2003Q3	-	-	0	0	0	-	-	0
Taiwan, Province of China	2008Q4 - 2009Q2	-	-	0	-	-	-	-	0
Tanzania	1975Q3	0	-	-	0	-	-	-	-
Tanzania	0	1987 - 1988	-	-	Late 1980s	1988 - 1991	-	-	-
Thailand	1981Q3 - 1991Q3	1983	-	1983 - 1987	1983 - 1987	1983 - 1987	-	1983	1983
Thailand	1996Q2 - 2001Q3	1997 - 2000	-	1996 - 2000	1997 - 1999	1997 - 2002	-	1997	1996
Thailand	2008Q3 - 2009Q3	0	-	0	-	-	-	-	0

Table A3 – continued

Countries: Togo to Uruguay

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Togo	1980Q1 - 1981Q2	0	-	-	-	-	-	-	-
Togo	1992Q2 - 1994Q2	1993 - 1994	-	-	1993 - 1995	-	-	-	-
Tunisia	1987Q1 - 1987Q3	0	-	0	-	0	-	-	-
Tunisia	0	1991	-	1991 - 1995	-	1991 - 1995	-	-	-
Tunisia	2005Q4 - 2006Q1	0	-	0	-	-	-	-	-
Tunisia	2012Q1	0	-	0	-	-	-	-	-
Turkey	1982Q3 - 1984Q2	1982 - 1984	0	1982 - 1985	1982 - 1985	1982	-	1982	1982
Turkey	1987Q1	0	0	0	0	0	-	0	0
Turkey	0	0	0	1991	0	1991	-	1991	1991
Turkey	1994Q2 - 1994Q4	0	0	1994	1994	1994	-	1994	1994
Turkey	2001Q1 - 2003Q3	2000 - 2001	2001:1 - 2003:2	2000 - 2001	-	2000 - 2002	-	-	2000
Turkey	2008Q3 - 2009Q3	0	2008:2 - 2009:2	0	-	-	-	-	2008
Turkey	2018Q4	-	-	-	-	-	-	-	-
Uganda	1985Q2	0	-	-	0	0	-	-	-
Uganda	1987Q4 - 1991Q2	0	-	-	0	0	-	-	-
Uganda	0	1994	-	-	1994 - 1999	1994 - 1997	-	-	-
Uganda	2002Q1	0	-	-	-	0	-	-	-
Uganda	2009Q3 - 2009Q4	0	-	-	-	-	-	-	-
United Kingdom	0	0	0	1974 - 1976	1974 - 1976	-	1974	0	1974
United Kingdom	1984Q3 - 1985Q1	0	0	1984	1984	-	1984	0	1984
United Kingdom	0	0	0	1991	1991	-	1991	0	1991
United Kingdom	0	0	0	1995	1995	-	0	0	1995
United Kingdom	2007Q4 - 2013Q3	2007 - 2011	2007:2 - 2014:1	2007 - 2014	-	-	2007	-	2007
United Kingdom	2017Q2	0	0	-	-	-	-	-	-
United States	1988Q3 - 1992Q4	1988	1986:1, 1990:1 - 1992:1	1984 - 1991	1984 - 1991	1980 - 1992	1984	1984	1984
United States	1997Q1 - 1998Q4	0	1998:2	0	0	0	0	0	1998
United States	2007Q3 - 2012Q3	2007 - 2011	2007:1 - 2012:2	2007 - 2010	-	-	2007	-	2007
Uruguay	1971Q2	0	-	0	0	-	-	0	-
Uruguay	1982Q4 - 1983Q4	1981 - 1985	-	1981 - 1985	1981 - 1984	1981 - 1985	-	1981	-
Uruguay	1988Q4	0	-	0	0	0	-	0	-
Uruguay	2002Q3 - 2010Q1	2002 - 2005	-	2002 - 2005	-	2002	-	-	-

Table A3 – continued

Countries: Venezuela to Zimbabwe

Source	FSI	Laeven & Valencia	Romer & Romer	Reinhart & Rogoff	Caprio & Klingebiel	Demirguc-Kunt & Detragiache	Schularick & Taylor*	Bordo, Eichengreen, Klingebiel and Martinez-Peria*	Baron, Verner, & Xiong*
Country coverage:	110	165	24	81	93	94	14	56	46
frequency:	quarterly	annual	semi-annual	annual	annual	annual	annual	annual	annual
Time coverage:	1967-2018	1970-2017	1967-2017	1800-2014	late 1970s-1999	1980-2002	1870-2008	1880-1998	1870-2016
Venezuela	1973Q4 - 1975Q1	0	-	0	0	-	-	0	0
Venezuela	1982Q4 - 1985Q3	0	-	1978 - 1986	Late 1970s and 80s	0	-	1980	1978
Venezuela	1994Q1 - 1995Q4	1994 - 1998	-	1993 - 1996	1994 - 1999	1993 - 1997	-	1993	1993
Venezuela	2001Q3 - 2003Q1	0	-	0	-	0	-	-	0
Venezuela	0	0	-	2009 - 2010	-	-	-	-	2009
Venezuela	2018Q2	-	-	-	-	-	-	-	-
Vietnam	1995Q4	0	-	-	0	-	-	-	-
Vietnam	1997Q2 - 2000Q3	1997	-	-	1997 - 1999	-	-	-	-
Vietnam	2008Q4 - 2009Q1	0	-	-	-	-	-	-	-
Vietnam	2014Q1 - 2014Q4	0	-	-	-	-	-	-	-
Zambia	0	1995 - 1998	-	1995 - 1998	1995	-	-	-	-
Zambia	2004Q3	0	-	0	-	-	-	-	-
Zambia	2009Q3	0	-	0	-	-	-	-	-
Zambia	2018Q3	-	-	-	-	-	-	-	-
Zimbabwe	1998Q2 - 2006Q1	1995 - 1999	-	1995 - 2009	1995 - 1999	-	-	0	-
Zimbabwe	2014Q1 - 2018Q4	0	-	0	-	-	-	-	-

Notes: "*" indicates that only start date available. "-" indicates that it is not within the country and/or time coverage of the respective study. Laeven & Valencia column is based on table 1 and 2 of Laeven and Valencia (2020), Romer & Romer column is based on table 2 of the online appendix of Romer and Romer (2017), Reinhart & Rogoff column is based on the online reference of banking crisis of Reinhart and Rogoff (2009), Caprio & Klingebiel column is based on pages 32 to 48 of Caprio and Klingebiel (2003), Demirguc-Kunt & Detragiache column is based on table 2 of Demirguc-Kunt and Detragiache (2005), Schularick & Taylor is based on table A1 of the web appendix of Schularick and Taylor (2012), Bordo, Eichengreen, Klingebiel and Martinez-Peria is based on Appenx A of Bordo et al (2001), and Boron, Verner & Xiong column is based on Appendix Table 2 of Baron et al (2018).

Table A4. Impact of Change in FSI on Output—Non-linear Effects. P-value differences in responses

	K=0	K=1	K=2	K=3	K=4	K=5	K=6	K=7	K=8	K=9	K=10
Low vs. medium	0.612	0.0524	0.0157	0.0190	0.00730	0.0295	0.0201	0.0155	0.0241	0.0524	0.0622
Low vs. high	0.708	0.139	0.0782	0.0349	0.0266	0.0281	0.0159	0.0175	0.0238	0.0380	0.0362
Medium vs. high	0.333	0.815	0.921	0.556	0.606	0.619	0.552	0.534	0.529	0.461	0.496
	K=11	K=12	K=13	K=14	K=15	K=16	K=17	K=18	K=19	K=20	
Low vs. medium	0.0804	0.412	0.441	0.490	0.402	0.353	0.178	0.144	0.252	0.274	
Low vs. high	0.0651	0.147	0.183	0.249	0.236	0.165	0.149	0.0940	0.216	0.283	
Medium vs. high	0.492	0.345	0.450	0.488	0.538	0.507	0.700	0.659	0.822	0.979	

Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kG} I[F_{it} \in G\,] \cdot \Delta F_{i,t} + \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k,$ where I is an indicator function which assumes value 1 when the level of financial stress belongs to a specific bin (terciles) of the distribution, which we refer to as group G.

Table A5. External Financial Stress: Examples of Type of Discussion in EIU Reports

Country	Date	Example of what the EIU discuss
Afghanistan	2009Q4	Discussion related to the fallout from the Global Financial Crisis such as the impact of the credit crunch.
Albania	2009Q1 – 2010Q2	Discussion related to the fallout from the Global Financial Crisis such as: increased liquidity strains and measures to help mitigate the impact of the credit squeeze.
Argentina	1995Q1 – 1996Q3	Discussion related to the fallout from Mexico's Tequila Crisis such as: tight credit as banks are reluctant to lend, tightening of credit regulations by the Central Bank and the concentration of the banking sector.
	1998Q4 – 2000Q4	Discussion related to the impact of the crises in Asia, Russia and Brazil such as: tight liquidity, banks reluctant to lend and authorities adopting measures to prevent a run on bank deposits.
	2008Q4 – 2010Q2	Discussion related to the fallout from the Global Financial Crisis such as: a run on bank deposits, tight credit, and banks reluctant to lend.
Australia	2008Q1 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: firms falling victim of tightening in credit conditions, and measures to reignite lending.
Austria	2007Q4 – 2012Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight lending conditions in the interbank markets, and tighter bank lending policies, resulting from the problems of the sub-prime market in the US.
Belgium	2007Q4 – 2014Q1	Discussion related to the fallout from the Global Financial Crisis and Euro debt crisis such as: tightening of short-term credit market conditions for inter-bank lending and bulging of the yield curve in the intermediate credit range.
Benin	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: tight financial markets worldwide have made borrowing at commercial rates prohibitively expensive for Benin.
Brazil	2007Q4 – 2010Q2	Discussion related to the fallout from the Global Financial Crisis such as: Brazil's financial markets been strongly affected by the global credit crunch, constraint on access to financing, even to large companies, and many firms forced to accept less favorable conditions.
Bulgaria	2008Q4 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis such as: the crisis rocking bank balance sheets and leading to a sharp tightening in liquidity and central bank measure to free up the tightening inter-bank market.
Cambodia	2009Q4 – 2010Q1	Discussion related to domestic financial distress such as: credit is scarce, and banks are reluctant to lend.

Table A5 – Continued

Country	Date	Example of what the EIU discuss
Cameroon	2008Q4 – 2009Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight financial markets, and unwillingness of local banks to provide credit due to growing proportion of non-performing loans.
Canada	2007Q4 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: marked tightening in financial conditions, and local financial markets have been severely affected by the crisis and tight credit conditions.
Chile	2009Q1 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis such as: liquidity tight and commercial banks cautious, and borrower continue to have more restricted access to international credit lines.
China	2008Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight credit conditions and deteriorating external demand have also played a role.
Colombia	2008Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: domestic credit tightened due to global conditions.
Costa Rica	2008Q4 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: tight credit conditions, and measures by the Ministry of Finance in response to the escalation of the international financial crisis, which caused a spike in interest rates and squeezed credit to corporates and households.
Denmark	2007Q4 – 2014Q2	Discussion related to the fallout from the Global Financial Crisis such as: tighter lending conditions in the inter-bank markets, banks have curtailed lending to one another following losses, and measures in response to the global credit crunch such as seven-day secured lending facility to support liquidity in the money market.
Dominican Republic	2008Q3 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: tighter credit conditions.
Ecuador	2008Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: access to capital increasingly tight, and severe credit constraints.
El Salvador	2007Q4 – 2011Q3	Discussion related to the fallout from the Global Financial Crisis such as: high interest rates reflecting tighter international credit conditions and the custom by Salvadoran banks to fund themselves in the US market. An increase in inter-bank rate, reflecting tight liquidity among all of El Salvador's foreign-owned banks.
Ethiopia	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: tighter financial conditions.

Table A5 – Continued

Country	Date	Example of what the EIU discuss
Finland	2007Q4 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: tighter lending conditions in the inter-bank markets, and tightening liquidity condition as a result of global financial market turmoil.
France	2007Q4 – 2014Q1	Discussion related to the fallout from the Global Financial Crisis such as: tightening of credit conditions in the wake of financial turmoil, and credit squeeze has increased the cost of credit for French firms, which combined with a worsening global outlook, could put a damper on investment plans.
Gabon	2008Q4 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: domestic credit is likely to become tighter as commercial banks adopt more conservative lending strategy.
Germany	2007Q4 – 2014Q1	Discussion related to the fallout from the Global Financial Crisis such as: tighter credit conditions resulting from German banks having been quite badly hit by US sub-prime losses, and in response to the international squeeze in financial markets, German banks are likely to trim their new lending.
Greece	2008Q3 – 2010Q1	Discussion related to the fallout from the Global Financial Crisis such as: the global credit crunch has significantly limited the ability of companies to raise the necessary funds.
Guatemala	2008Q3 – 2010Q4	Discussion related to the fallout from the Global Financial Crisis such as: in response to a freeze in credit lines from international banks owing to the international financial crisis, the central bank eased the requirements on bank's accounting of reserves and established a temporary US-dollar fund facility for banks.
Haiti	2008Q3 – 2012Q4	Discussion related to the fallout from the Global Financial Crisis such as: adverse economic conditions could hamper commercial bank's willingness to extend loans to the private sector.
Honduras	2008Q4 – 2011Q2	Discussion related to the fallout from the Global Financial Crisis such as: the aggressive monetary easing been necessary to provide liquidity to the banking system and avoid a crisis in the payment system.
Hong Kong SAR	1997Q4 – 1999Q4	Discussion related to the fallout from the Asian Crisis such as: the financial crisis of Asia really began to affect Hong Kong with the Hong Kong Monetary Authority injecting funds to the monetary system to demonstrate determination to push down term inter-bank rates and avoid a politically sensitive rise in the prime rate lending rate.
	2008Q4 – 2010Q4	Discussion related to the fallout from the Global Financial Crisis such as: credit availability has tightened significantly in line with financial conditions across the world.

Table A5 – Continued

Country	Date	Example of what the EIU discuss
Hungary	2008Q4 – 2014Q3	Discussion related to the fallout from the Global Financial Crisis such as: the government has adopted a bank bai-out package to minimize risk.
India	2008Q4 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: the fallout from the global financial crisis has had an increasingly severe impact on India, causing the banking sector to experience a sudden liquidity crisis.
Indonesia	2008Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: concern over accessing finance as credit dries up.
Ireland	2008Q4 – 2017Q1	Discussion related to the fallout from the Global Financial Crisis and debt crisis such as: financial crisis resulting from the near collapse of the banking system and the fiscal crisis.
Israel	2008Q4	Discussion related to the fallout from the Global Financial Crisis: banking sector will be hurt by the global credit crunch.
Italy	2007Q4 – 2018Q4	Discussion related to the fallout from the Global Financial Crisis and debt crisis such as: expectation that Italy will avoid a major sovereign and banking debt crisis.
Jamaica	2008Q4 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis such as: the global financial crisis will lead to tighter borrowing conditions and wider spreads for markets with weaker fundamentals and large debt burdens such as Jamaica.
Japan	2008Q3 – 2010Q1	Discussion related to the fallout from the Global Financial Crisis such as: concerns about the economy and the global credit crunch are inhibiting the extension of credit to several industries, especially the real estate and construction groups.
Jordan	2009Q1 – 2012Q1	Discussion related to the fallout from the Global Financial Crisis such as: in an effort to protect the banking sector from the fallout from the global financial crisis, the prime minister, Nader al-Dahabi, announced that the government will guarantee all bank deposits until end-2009. Nevertheless, inter-bank rates have risen markedly.
Kenya	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: global financial markets are expected to remain tight, making it difficult for Kenya to raise funds.
Korea	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: banks faced constraints after the outbreak of the global financial crisis.

Table A5 – Continued

Country	Date	Example of what the EIU discuss
Lao P.D.R.	1998Q2 – 1998Q3	Discussion related to the fallout from the Asian Crisis such as: Laos has been hit hard by the regional financial crisis.
	2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: impact of the global credit crunch on the domestic credit.
Lebanon	2008Q4	Discussion related to the fallout from the Global Financial Crisis such as: domestic banks impacted by the global credit crunch.
Mauritania	2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: a credit squeeze has made it difficult for the country to access international capital markets.
Mexico	2009Q1 – 2011Q2	Discussion related to the fallout from the Global Financial Crisis such as: although the global downturn appeared easing, credit remained constrained.
Netherlands	2007Q4 – 2013Q4	Discussion related to the fallout from the Global Financial Crisis and Euro debt crisis such as: the slowing economy and financial crisis have forced the government to intervene massively in the Dutch financial system, in order to stabilise it amid ongoing dislocations. The Dutch state has taken over two banks and taken ownership stakes in three others, by providing capital injections, as well as moving to revive bank lending.
New Zealand	2007Q4 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: the high spread indicates that there is considerable tightness in inter-bank lending markets, stemming from concerns about bank's ability to repay their loans.
Nicaragua	2009Q2 – 2011Q3	Discussion related to the fallout from the Global Financial Crisis such as: as a result of the global credit crunch, the banking sector has seen its international credit lines disrupted.
Nigeria	2009Q3 – 2013Q1	Discussion related to domestic financial distress such as: the central bank explained that the unprecedented bailout had been necessary to prevent the collapse of the five banks, which could have triggered a systemic banking crisis. Between them the five banks had built up US$7.6 billion in bad loans, representing a staggering 40 percent of their total loan portfolio.
Norway	2007Q4 – 2009Q4	Discussion related to the fallout from the Global Financial Crisis such as: the authorities have undertaken a number of measures designed to reduce risk premiums in the money markets and improve bank access to funding, although Norway's financial sector has so far not been as hard hit as in some European countries.
Pakistan	2008Q4 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis such as: the global financial crisis has provoked a liquidity crunch in Pakistan.

Table A5 – Continued

Country	Date	Example of what the EIU discuss
Panama	1998Q4 – 1999Q1	Discussion about the impact of international market such as: private consumption will be dampened by scarce credit and higher interest rates as Panamanian banks are forced to adjust to tighter liquidity in world capital markets.
	2008Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: the government began negotiations with multilateral lenders, with the aim of securing funds for local banks facing restrictions on access to credit as a result of the seizure in the international financial markets. The moves came as some local businesses began to report difficulties accessing credit and the cancellation of previously agreed credit lines.
Paraguay	2008Q4 – 2010Q1	Discussion related to the fallout from the Global Financial Crisis such as: the central bank eased policy rates and reserve requirements in recent months to inject liquidity into the domestic financial system after the global financial crisis caused a seizure in local and foreign credit lines.
Peru	1967Q3 – 1968Q3	Discussion related to domestic financial distress such as: large withdrawals brought restriction of lending.
Philippines	1997Q4 – 2003Q3	Discussion related to the fallout from the Asian Crisis such as: another set of reforms introduced reflects a specific recent event: the country's first banking collapse since the regional crisis hit the Philippines. It fell victim to a run on deposits, after rumours that the head of its parent company, José Go, had committed suicide or left the country, and needed emergency loans from the central bank.
	2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: central bank measures to support the banking sector due to pressure from the financial crisis.
Portugal	2008Q4 – 2015Q3	Discussion related to the fallout from the Global Financial Crisis and Euro debt crisis such as: a €20 billion state guarantee offered to banks in need of funding. The three largest privately-owned banks, Banco Comercial Português, Banco Espírito Santo and Banco Portugues do Investimento have stated that they will apply for this support. Banco Privado Português, has seen its application for the guarantee denied by the government and was heading towards bankruptcy when a consortium of the major domestic banks, backed by government funds, apparently managed to rescue.
Republic of Congo	2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: the global economic crisis, the fall in commodity prices, and the credit crunch have negatively affected the mining sector.

Table A5 – Continued

Country	Date	Example of what the EIU discuss
Romania	2008Q3 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis and Euro debt crisis such as: restriction on consumer credit in a context of financial distress.
Russia	2008Q2 – 2011Q4	Discussion related to the fallout from the Global Financial Crisis such as: the authorities have begun to implement a US$200 billion financial rescue package.
Rwanda	2009Q2 – 2010Q4	Discussion related to the fallout from the Global Financial Crisis such as: the monetary authorities responded vigorously to the domestic liquidity squeeze that compromised lending to the private sector. The central bank reduced commercial bank reserve requirements, restricted the rollover of maturing treasury bills and created a new financing facility for banks.
Singapore	2008Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight credit conditions.
South Africa	1998Q3 – 1998Q4	Discussion related to the fallout from the emerging markets such as: contagion from the emerging-market crisis hit South Africa's financial markets. The release of various economic indicators, including problematic money supply and credit data, along with the spread of the emerging-market crisis to Russia, progressively weakened the rand.
	2009Q1 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: tight credit.
Spain	2007Q4 – 2014Q4	Discussion related to the fallout from the Global Financial Crisis and debt crisis such as: our central forecast is that either a domestic banking crisis or contagion from the euro area crisis will force Spain to access some form of emergency financial support from its euro zone partners in the coming months.
Sri Lanka	1998Q4	Discussion related to the fallout from the Russian crisis: outstanding export bills resulting from the Russian crisis have also tightened the liquidity position of several commercial banks.
Sudan	2009Q2 – 2010Q2	Discussion related to domestic financial distress such as: the central bank intervened to rescue Nile Commercial Bank from the risk of collapsing because of mounting non-performing loans. Nile Commercial is the largest lender in Southern Sudan.
Sweden	2007Q4 – 2011Q1	Discussion related to the fallout from the Global Financial Crisis: the government's financial stabilisation package was passed by parliament, which provides a framework for alleviating the impact of the global financial crisis on domestic banks. The plan introduces a government loan guarantee scheme for debt issued by the banks, establishes a stabilisation fund to deal with liquidity problems and allows the government to step in to provide equity injections (including the possibility of full nationalisation) for troubled financial institutions.

Table A5 – Continued

Country	Date	Example of what the EIU discuss
Switzerland	2007Q4 – 2010Q3	Discussion related to the fallout from the Global Financial Crisis: Credit Suisse, until lately a better survivor of the banking crisis than UBS, has announced job losses and cost-cutting, amid losses in October-November.
Taiwan	2008Q4 – 2009Q2	Discussion related to the fallout from the Global Financial Crisis such as: the central bank is worried that the credit crunch is reducing liquidity in money markets.
Thailand	2008Q3 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: financing constraints resulting from the stock market downturn and banking sector liquidity problems.
Turkey	2008Q3 – 2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: the global credit squeeze has made international financing more difficult and more costly than in the recent past.
Uganda	2009Q3 – 2009Q4	Discussion related to the fallout from the Global Financial Crisis such as: tight credit conditions.
United Kingdom	2007Q4 – 2013Q3	Discussion related to the fallout from the Global Financial Crisis such as: the UK experienced its first major bank run for over a century, as Northern Rock, the country's fifth-largest mortgage lender, came close to collapse.
Uruguay	2008Q4 – 2010Q1	Discussion related to the fallout from the Global Financial Crisis: credit crunch felt by domestic investors – more difficult to raise finance.
Vietnam	2008Q4 – 2009Q1	Discussion related to the fallout from the Global Financial Crisis such as: liquidity constraints.
Zambia	2009Q3	Discussion related to the fallout from the Global Financial Crisis such as: credit remains tight owing to the knock-on effects of the global downturn.

Table A6. Sample of 75 Countries by Geographical Region

Africa – AFR (3)
Botswana
Mauritius
South Africa

Middle East and Central Asia - MCD (11)
Bahrain
Egypt
Jordan
Kazakhstan
Kuwait
Oman
Pakistan
Qatar
Saudi Arabia
Tunisia
United Arab Emirates

Western Hemisphere - WHD (10)
Argentina
Brazil
Canada
Chile
Colombia
Jamaica
Mexico
Peru
Trinidad & Tobago
United States

Asia & Pacific APD (17)
Australia
Bangladesh
China
Hong Kong
India
Indonesia
Japan
Macau
Malaysia
New Zealand
Philippines
Singapore
South Korea
Sri Lanka
Taiwan
Thailand
Vietnam

Europe- EUR (34)	
Austria	Lithuania
Belgium	Luxembourg
Bulgaria	Malta
Croatia	Netherlands
Cyprus	Norway
Czech Republic	Poland
Estonia	Portugal
Finland	Romania
France	Russia
Germany	Serbia
Greece	Slovakia
Hungary	Spain
Iceland	Sweden
Ireland	Switzerland
Israel	Turkey
Italy	Ukraine
Latvia	United Kingdom

Table A7. Number of Firms and Observations by Country

Country	Number of firms	Obs.
United States	4,740	388,680
China	4,077	334,314
Japan	3,085	252,970
India	2,672	219,104
Canada	2,213	181,466
South Korea	1,747	143,254
Taiwan	1,693	138,826
Australia	1,356	111,192
Hong Kong	1,106	90,692
United Kingdom	870	71,340
Malaysia	771	63,222
Thailand	555	45,510
Sweden	525	43,050
Poland	522	42,804
Singapore	471	38,622
France	467	38,294
Germany	450	36,900
Vietnam	412	33,784
Indonesia	399	32,718
Israel	322	26,404
Pakistan	321	26,322
Turkey	280	22,960
Brazil	246	20,172
Italy	220	18,040
Sri Lanka	183	15,006
Bangladesh	178	14,596
South Africa	178	14,596
Russia	177	14,514
Switzerland	168	13,776
Philippines	157	12,874
Greece	155	12,710
Egypt	134	10,988
Norway	129	10,578
Chile	128	10,496
Spain	119	9,758
Finland	117	9,594
Saudi Arabia	114	9,348

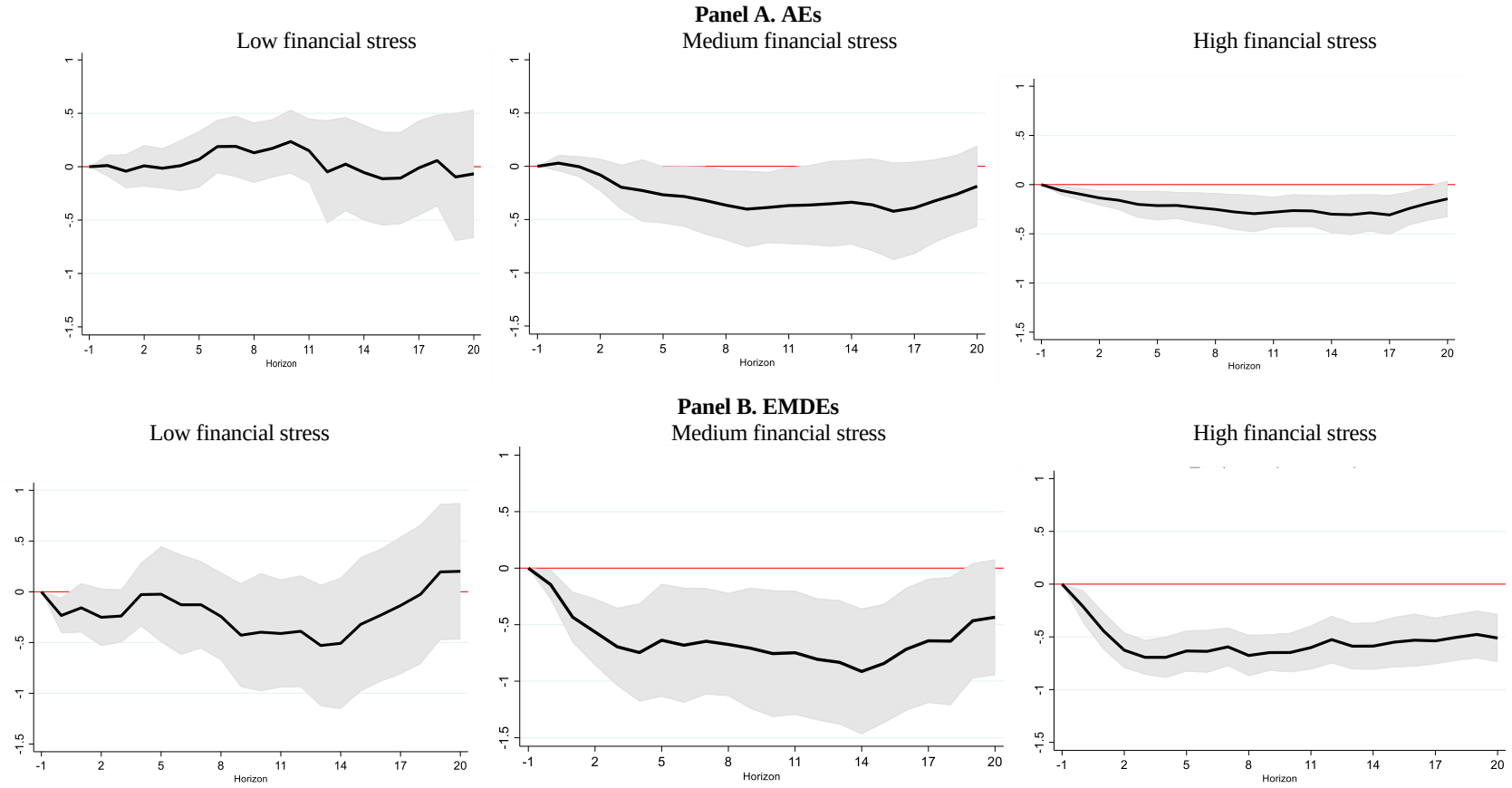
Table A7. Number of Firms and Observations by Country (continued)

Country	Number of firms	Obs.
Netherlands	105	8,610
New Zealand	105	8,610
Mexico	98	8,036
Peru	87	7,134
Jordan	83	6,806
Belgium	75	6,150
Ireland	71	5,822
Oman	71	5,822
Argentina	65	5,330
Romania	63	5,166
Kuwait	61	5,002
Croatia	57	4,674
Bulgaria	54	4,428
Colombia	49	4,018
Austria	45	3,690
Cyprus	45	3,690
United Arab Emirates	45	3,690
Mauritius	44	3,608
Luxembourg	39	3,198
Jamaica	37	3,034
Portugal	36	2,952
Tunisia	27	2,214
Lithuania	23	1,886
Qatar	21	1,722
Malta	20	1,640
Hungary	18	1,476
Bahrain	17	1,394
Kazakhstan	15	1,230
Estonia	14	1,148
Iceland	14	1,148
Latvia	14	1,148
Trinidad & Tobago	14	1,148
Serbia	12	984
Ukraine	11	902
Macau	10	820
Botswana	7	574
Czech Republic	6	492
Slovakia	6	492

Table A8. Number of Firms and Observations by Sector

Sector	Number of Firms	Obs.
Materials	5,433	445,506
Capital Goods	4,888	400,816
Technology Hardware and Equipment	2,286	187,452
Consumer Durables and Apparel	2,032	166,624
Software and Services	2,027	166,214
Pharmaceuticals and Biotechnology	1,833	150,306
Food, Beverage and Tobacco	1,800	147,600
Energy	1,714	140,548
Media and Entertainment	1,398	114,636
Consumer Services	1,315	107,830
Retailing	1,291	105,862
Health Care Equipment and Services	1,287	105,534
Professional Services	1,160	95,120
Transportation	933	76,506
Automobiles and Components	865	70,930
Utilities	854	70,028
Semiconductors	774	63,468
Telecommunication Services	407	33,374
Food and Staples Retailing	383	31,406
Household and Personal Products	361	29,602

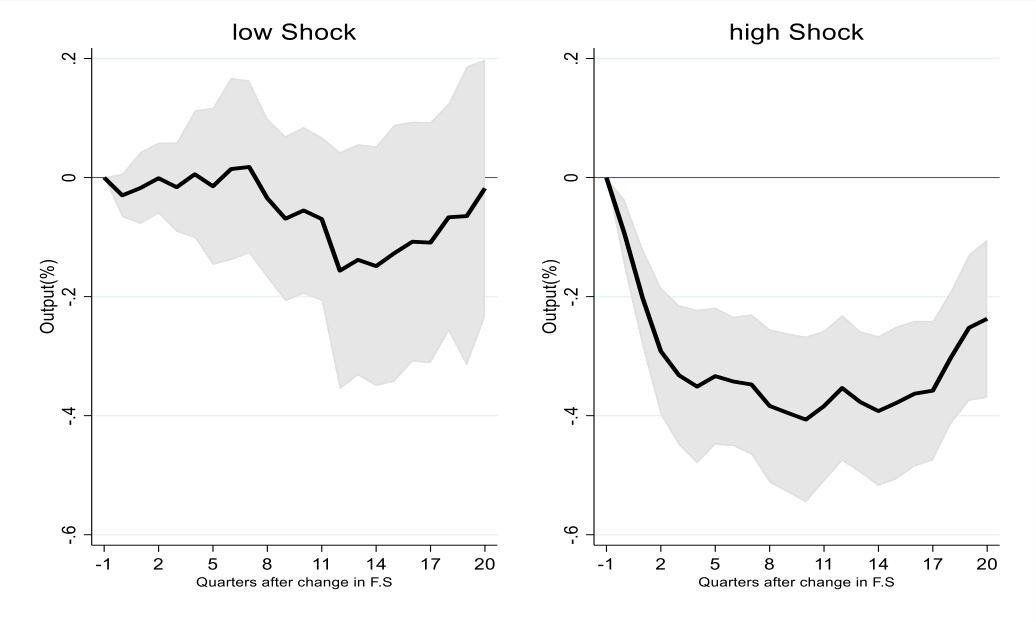
Figure A1. Impact of Change in FSI on Output—Non-linear Effects



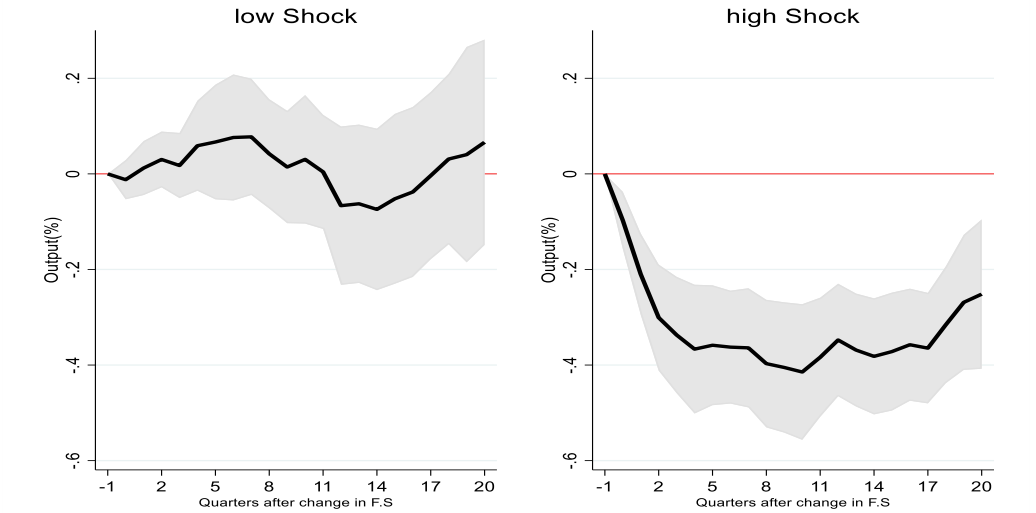
Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4, based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kG} I[F_{it} \in G\,] \cdot \Delta F_{i,t} + \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where I is an indicator function which assumes value 1 when the level of financial stress belongs to a specific bin (terciles) of the distribution, which we refer to as group G.

Figure A2. Impact of Change in FSI on Output—Non-linear Effects

Panel A. Dummy variable



Panel B. Smooth transition function



Notes: The graph shows the response and shaded areas denote 90 percent confidence bands. Time is indicated on the x-axis. Estimates are obtained using a sample of 49 countries over the period 1996q1-2018q4. Panel A is based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + \beta_0^{kH} D \cdot \Delta F_{i,t} + \beta_0^{kL}(1-D) \cdot \Delta F_{i,t-j} \sum_{j=1}^{2} \beta_j^k \Delta F_{i,t-j} + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, where i index countries, t refers to quarters, and k denotes the horizon (the quarter after the change in the financial stress indicator) being considered. y is the log of output; α_i are country fixed effects; γ_t are time fixed effects; and ΔF denotes the change in financial stress. D is a dummy variable which takes value 1 if the level of FSI is above the median of the distribution, and zero otherwise. The coefficients β^{kH} and β^{kL} capture the output impact of financial stress at horizon k in cases of low levels of FSI and high levels of FSI, respectively. An alternative specification is in Panel B based on $y_{i,t+k} = \alpha_i^k + \gamma_t^k + F(z_{it})[\beta_0^{kH} \Delta F_{i,t}] + (1 - F(z_{it}))\left[\beta_0^{kL} \Delta F_{i,t-j}\right] + \sum_{j=0}^{2} \theta_j^k y_{i,t-j} + \varepsilon_t^k$, with $F(z_{it}) = \frac{exp^{-\gamma zit}}{1+exp^{-\gamma zit}}$ where $\gamma = 1.5$.

Figure A3. Financial Stress Index vs. Other Measures

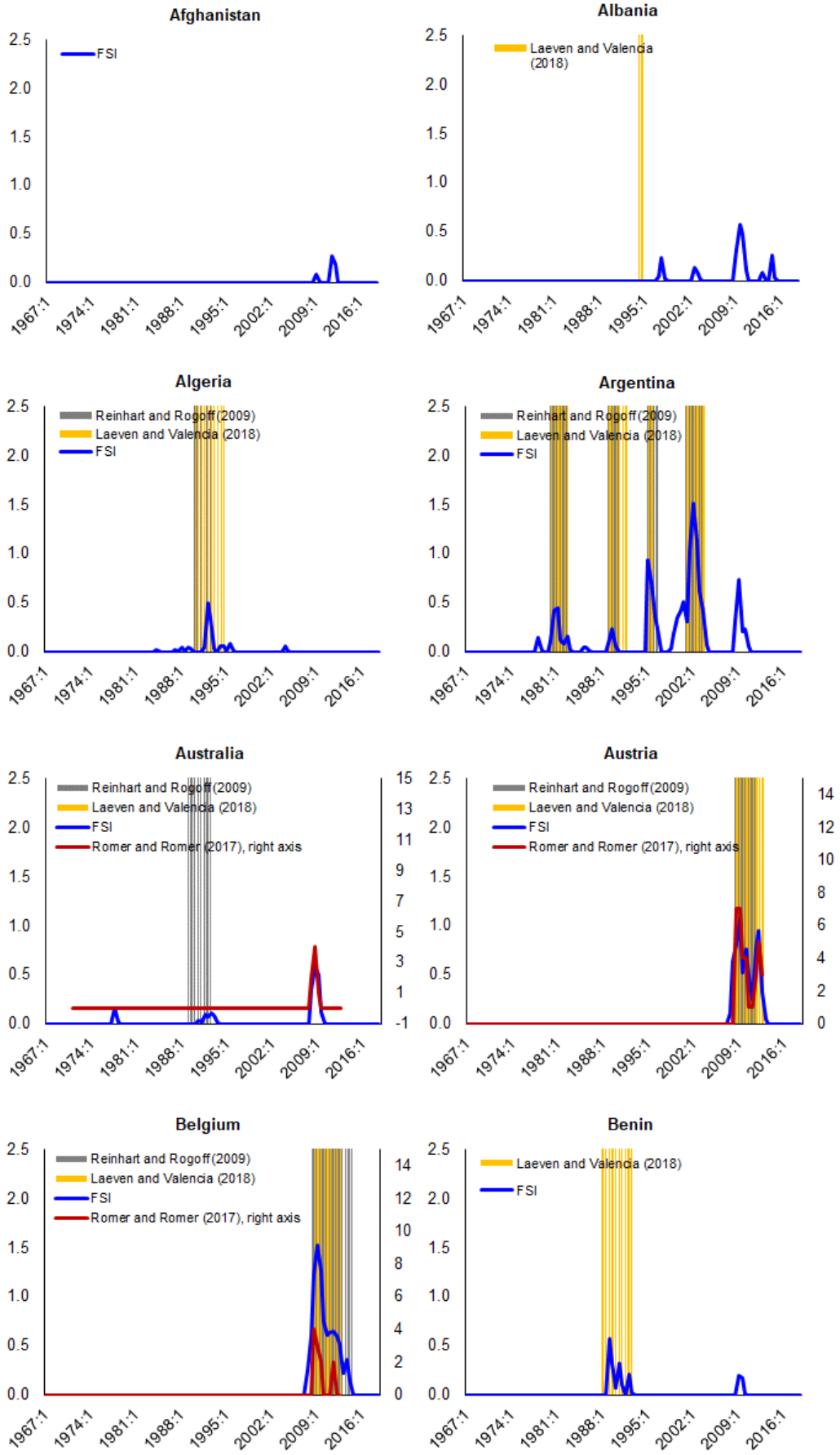


Figure A3 – Continued

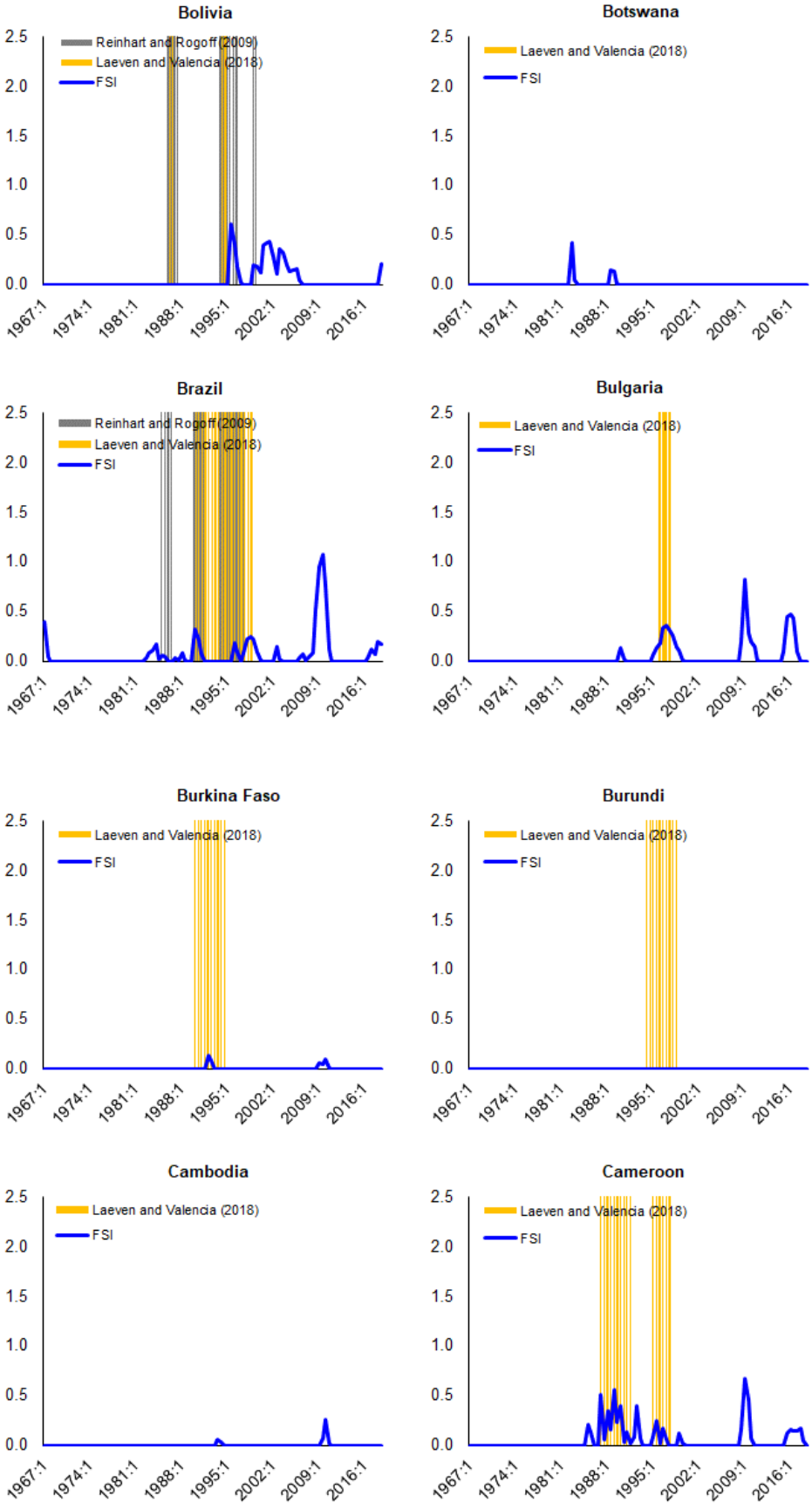


Figure A3 – Continued

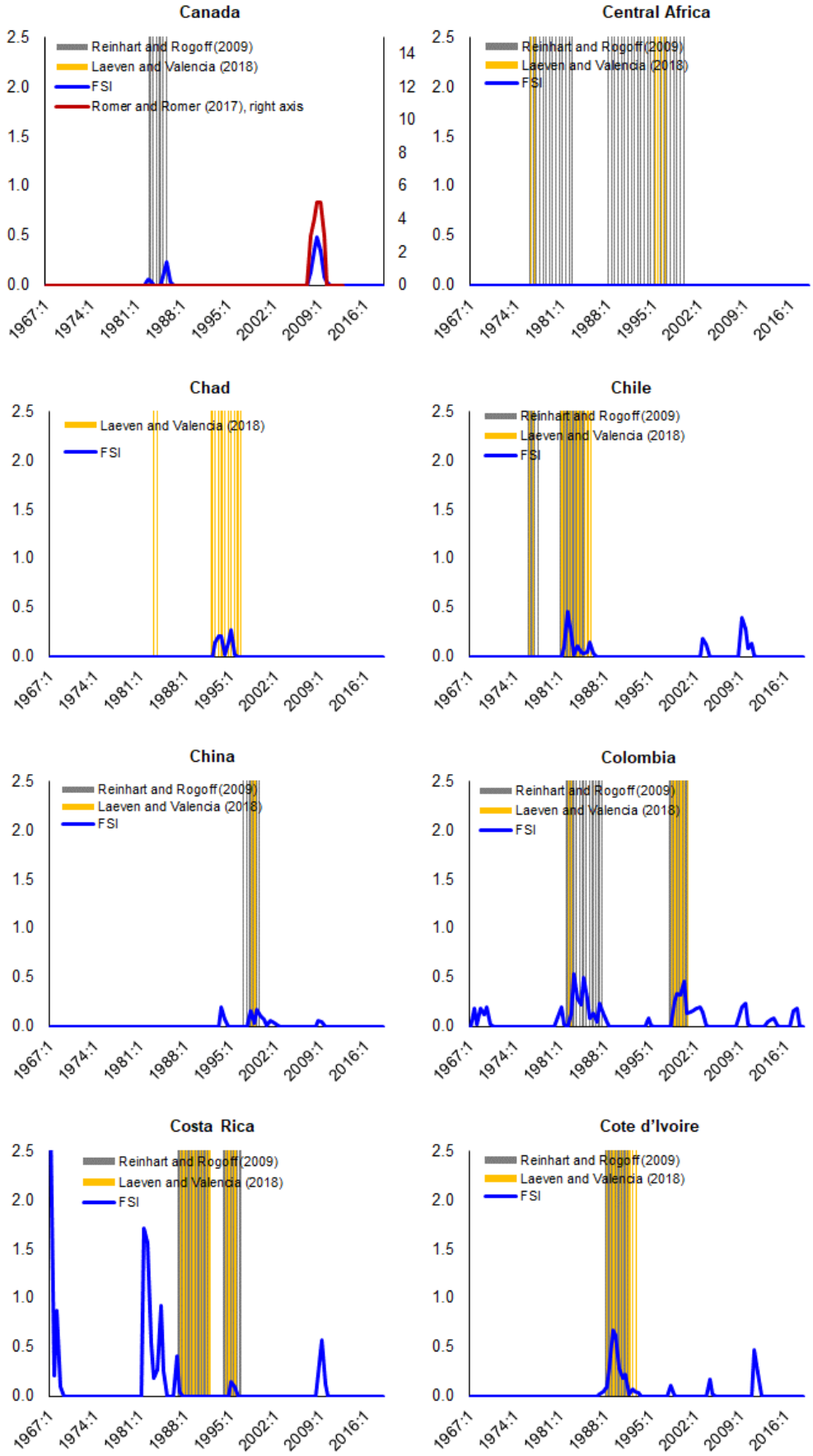


Figure A3 – Continued

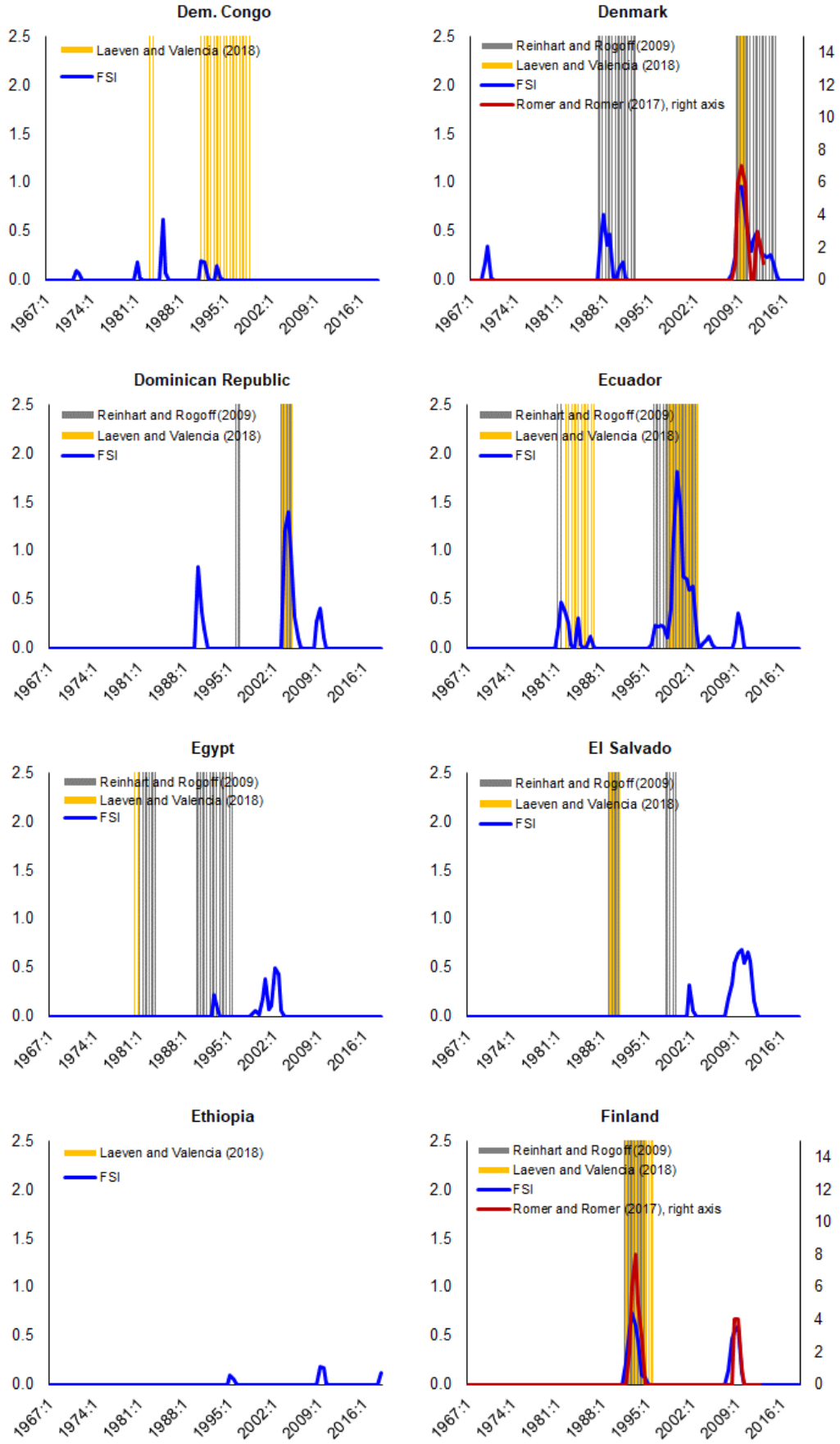


Figure A3 – Continued

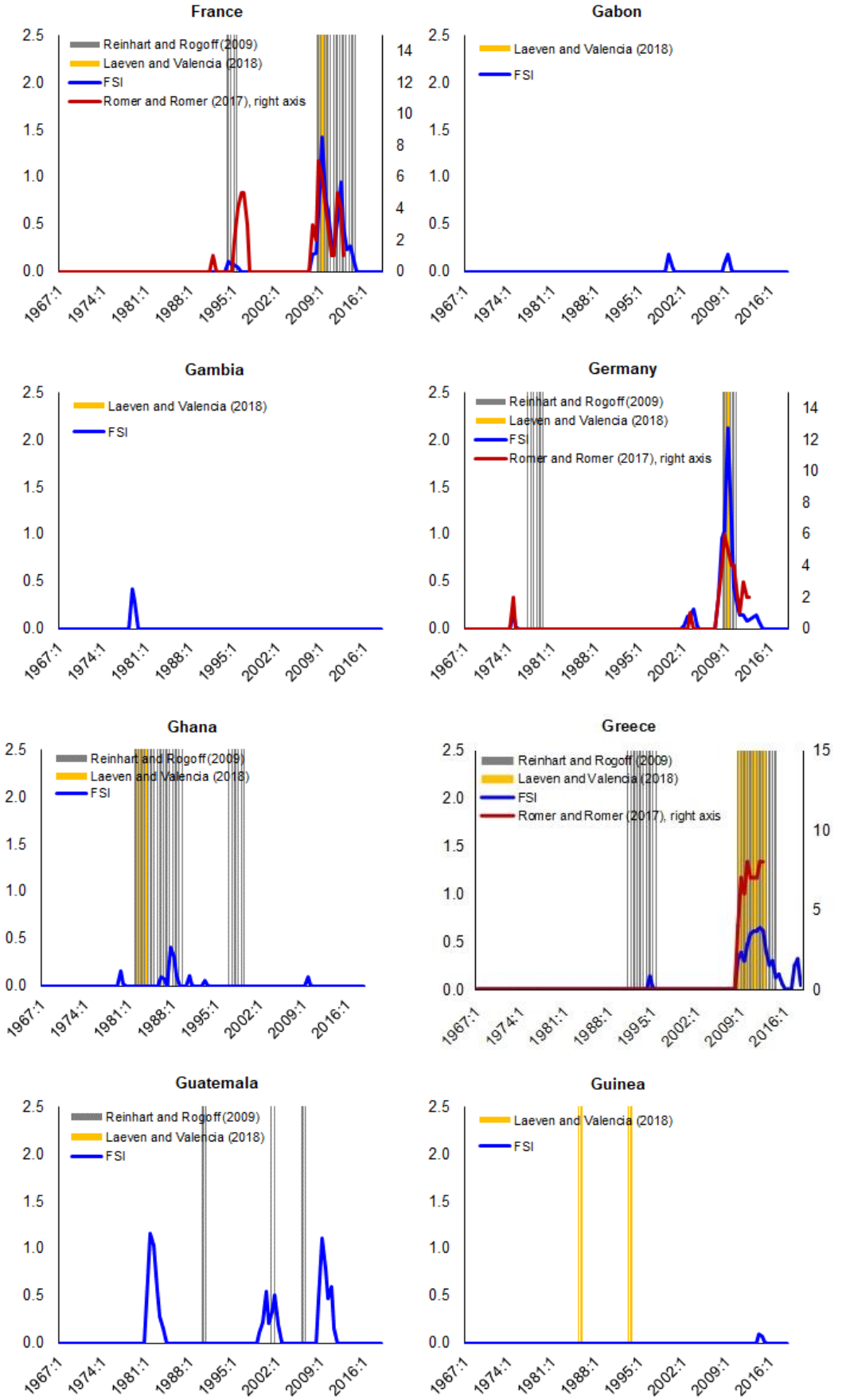


Figure A3 – Continued

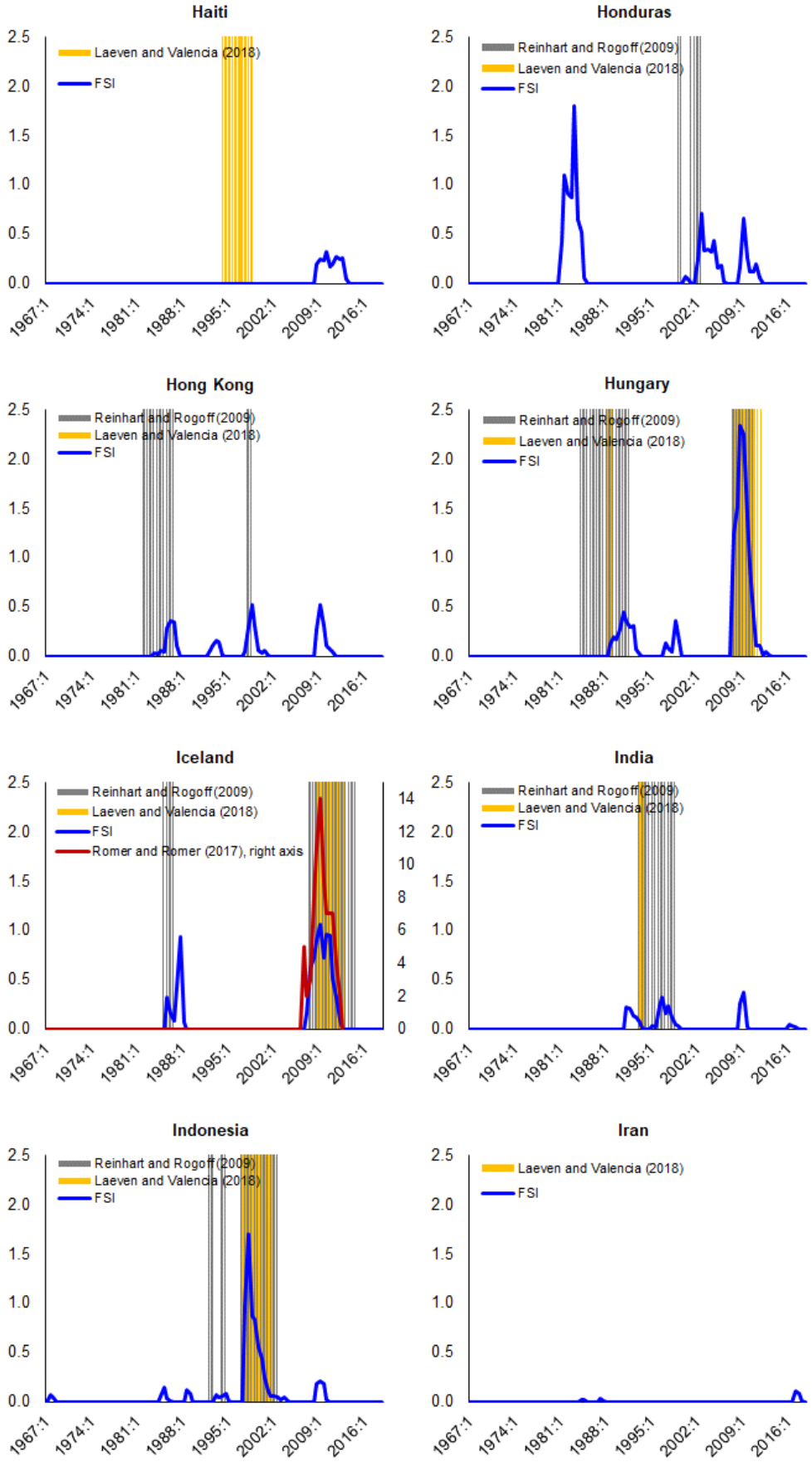


Figure A3 – Continued

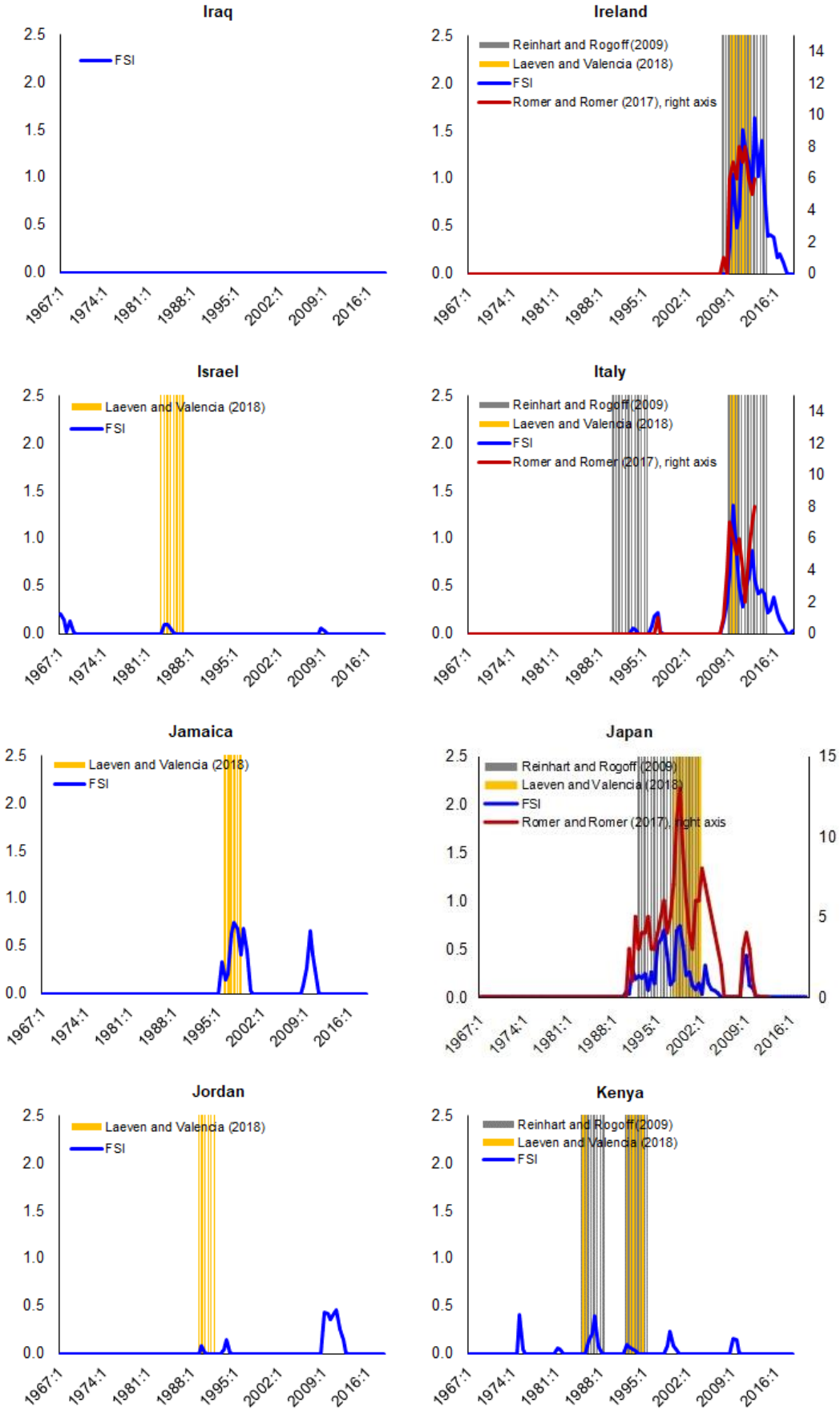


Figure A3 – Continued

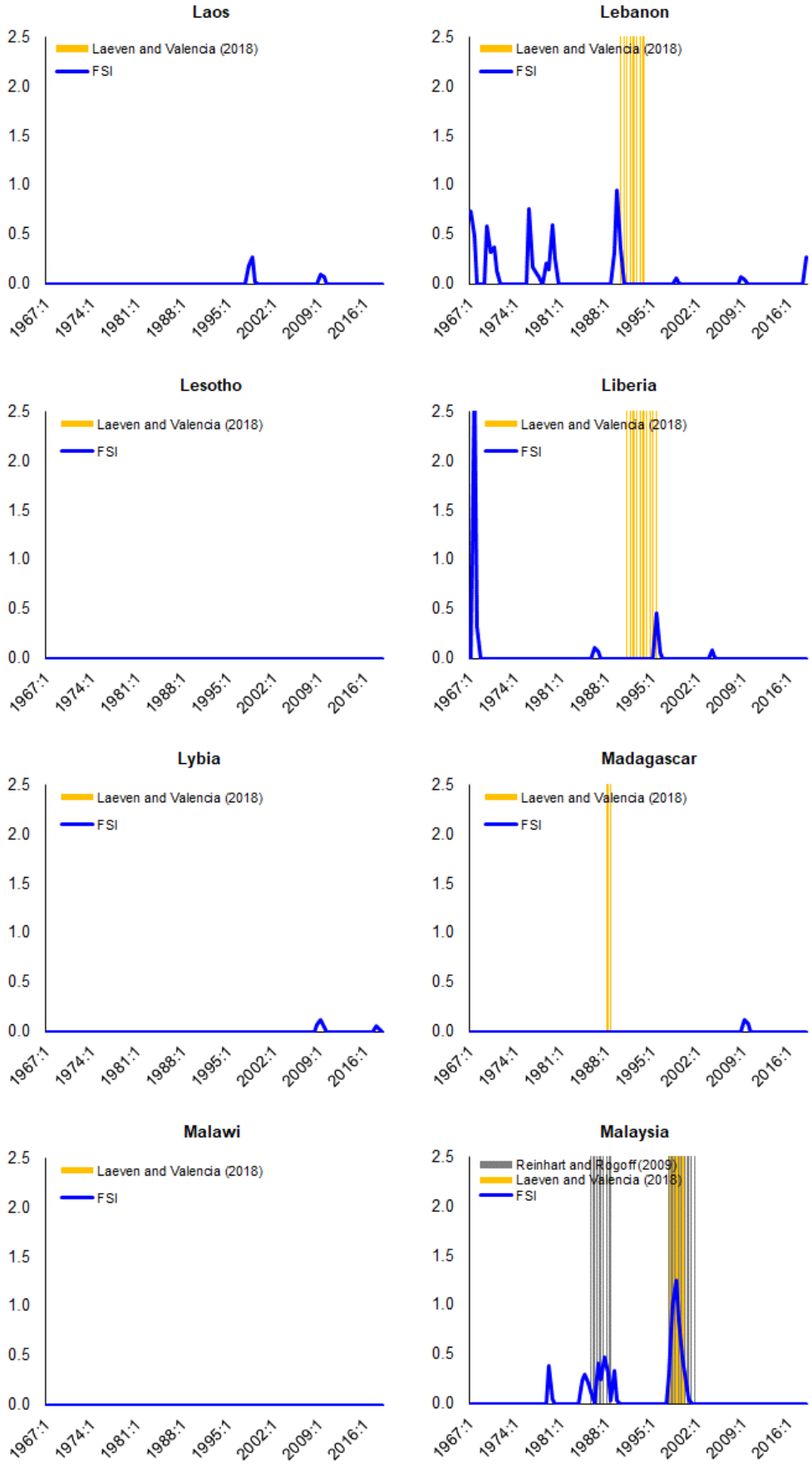


Figure A3 – Continued

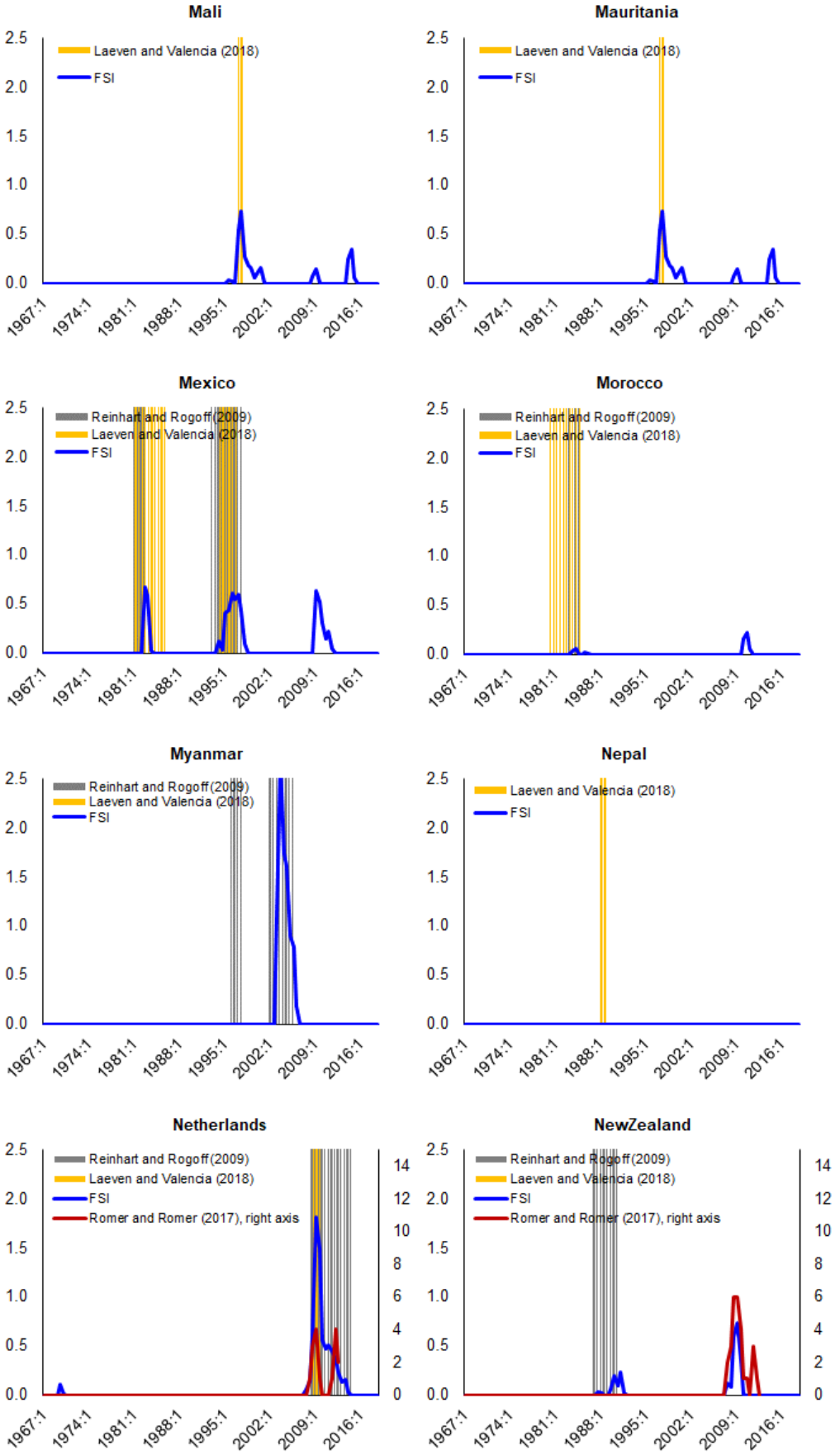


Figure A3 – Continued

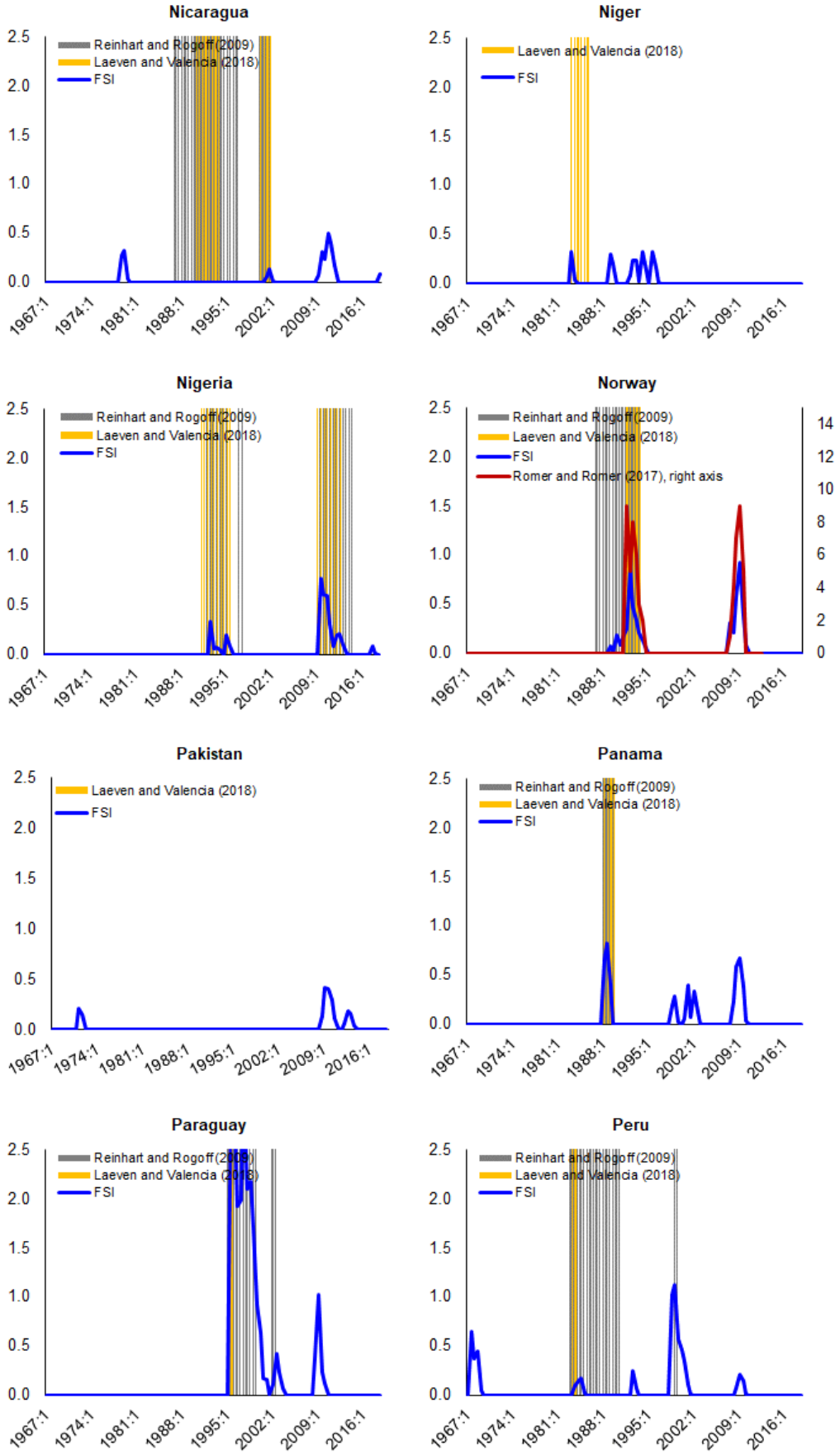


Figure A3 – Continued

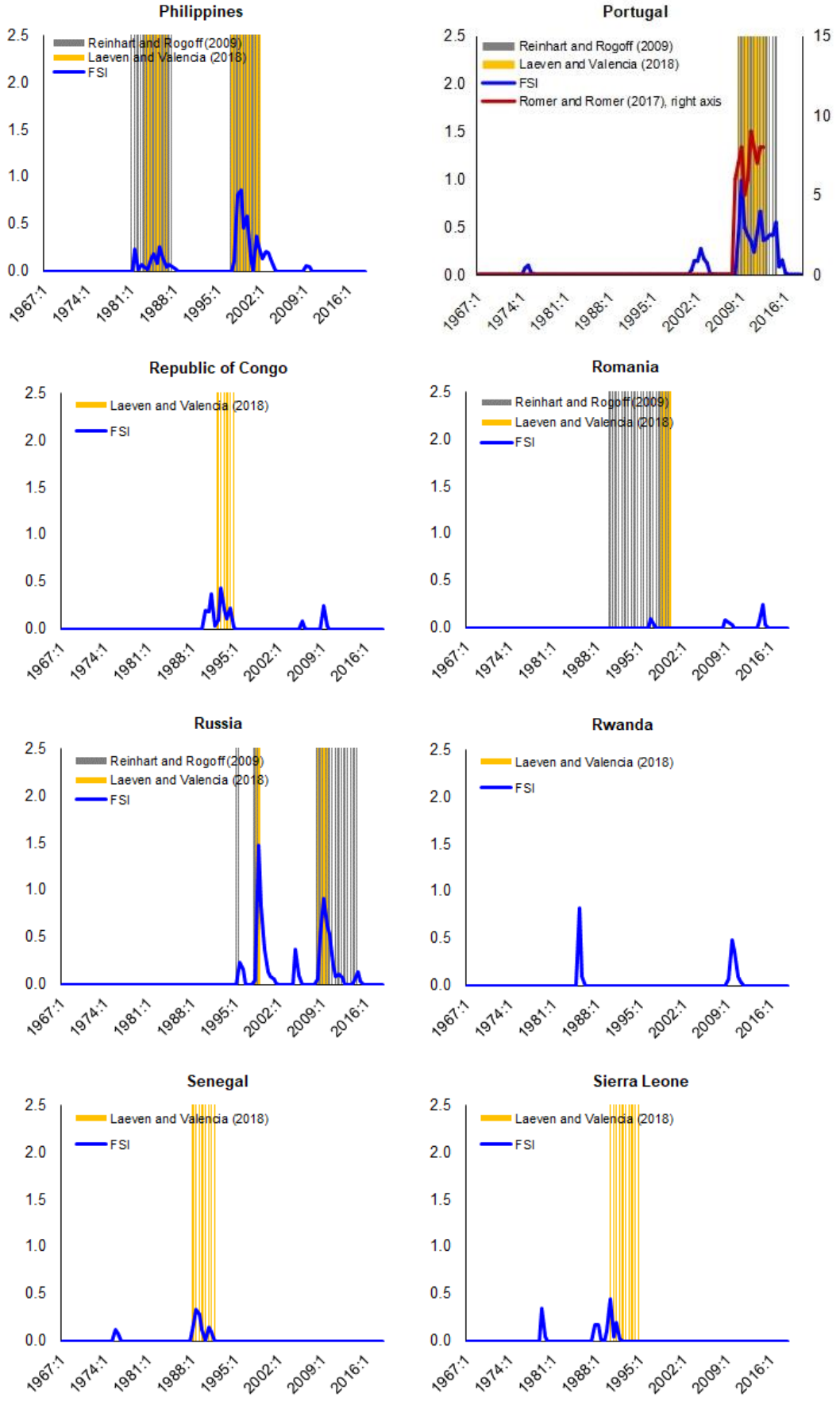


Figure A3 – Continued

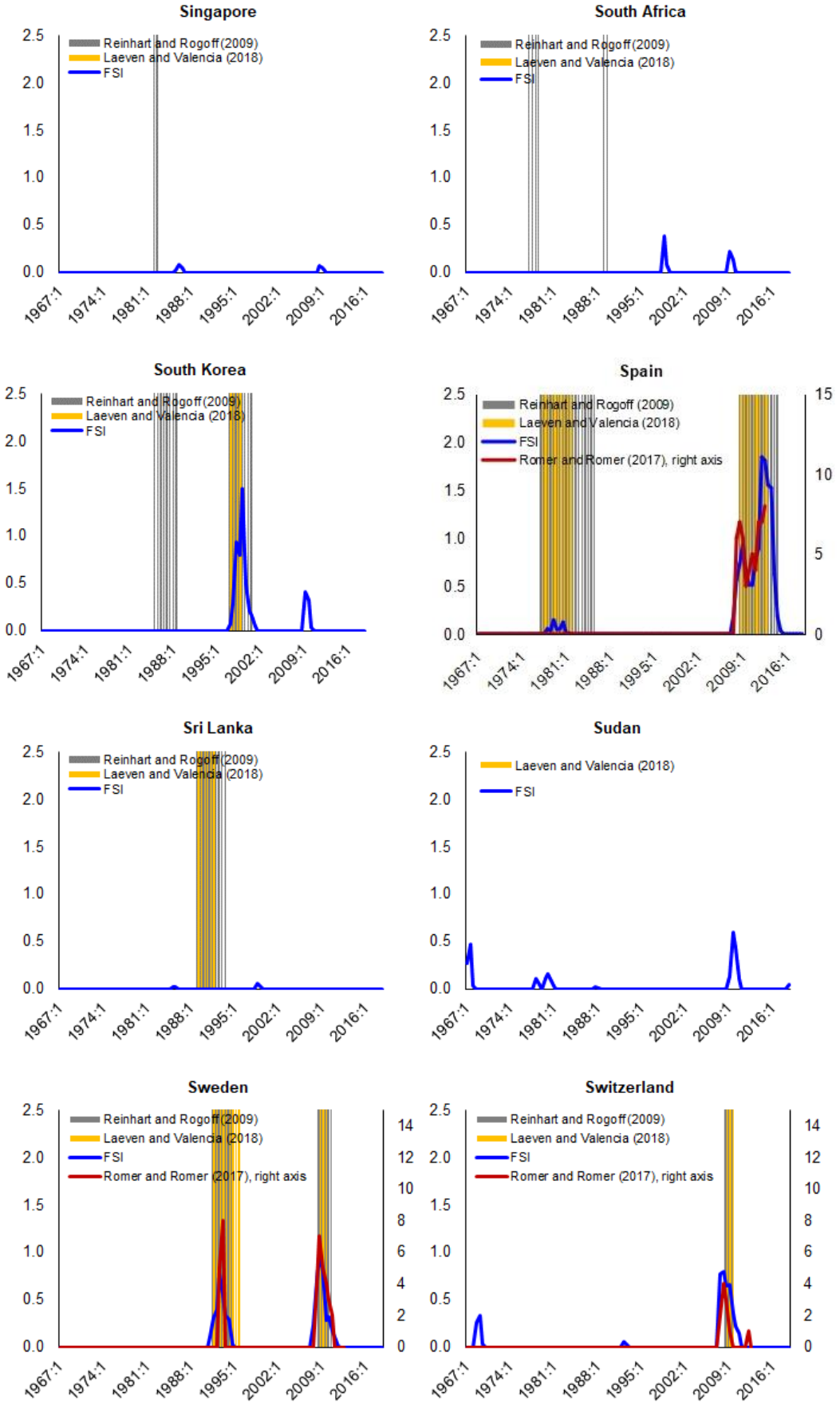


Figure A3 – Continued

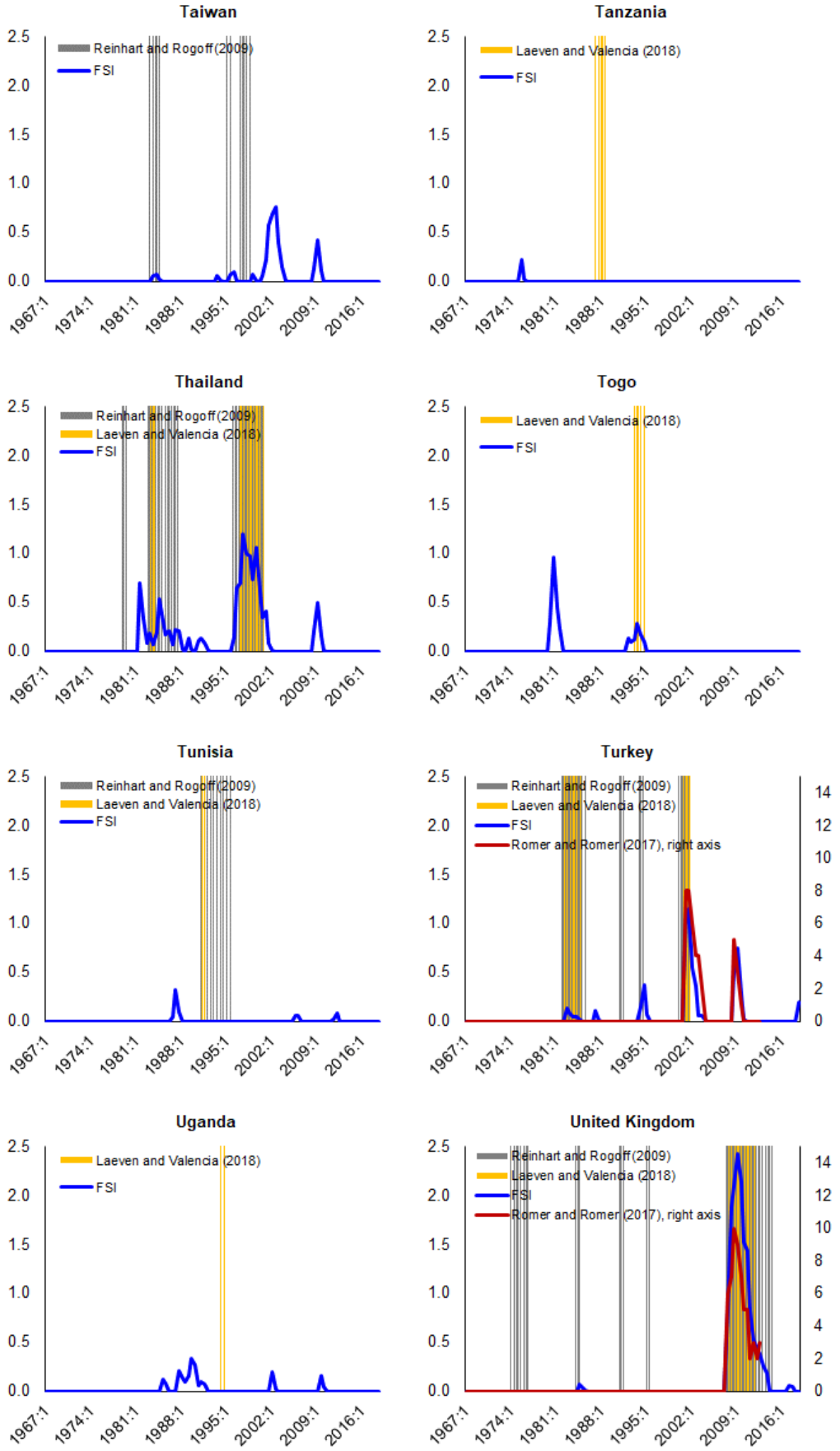
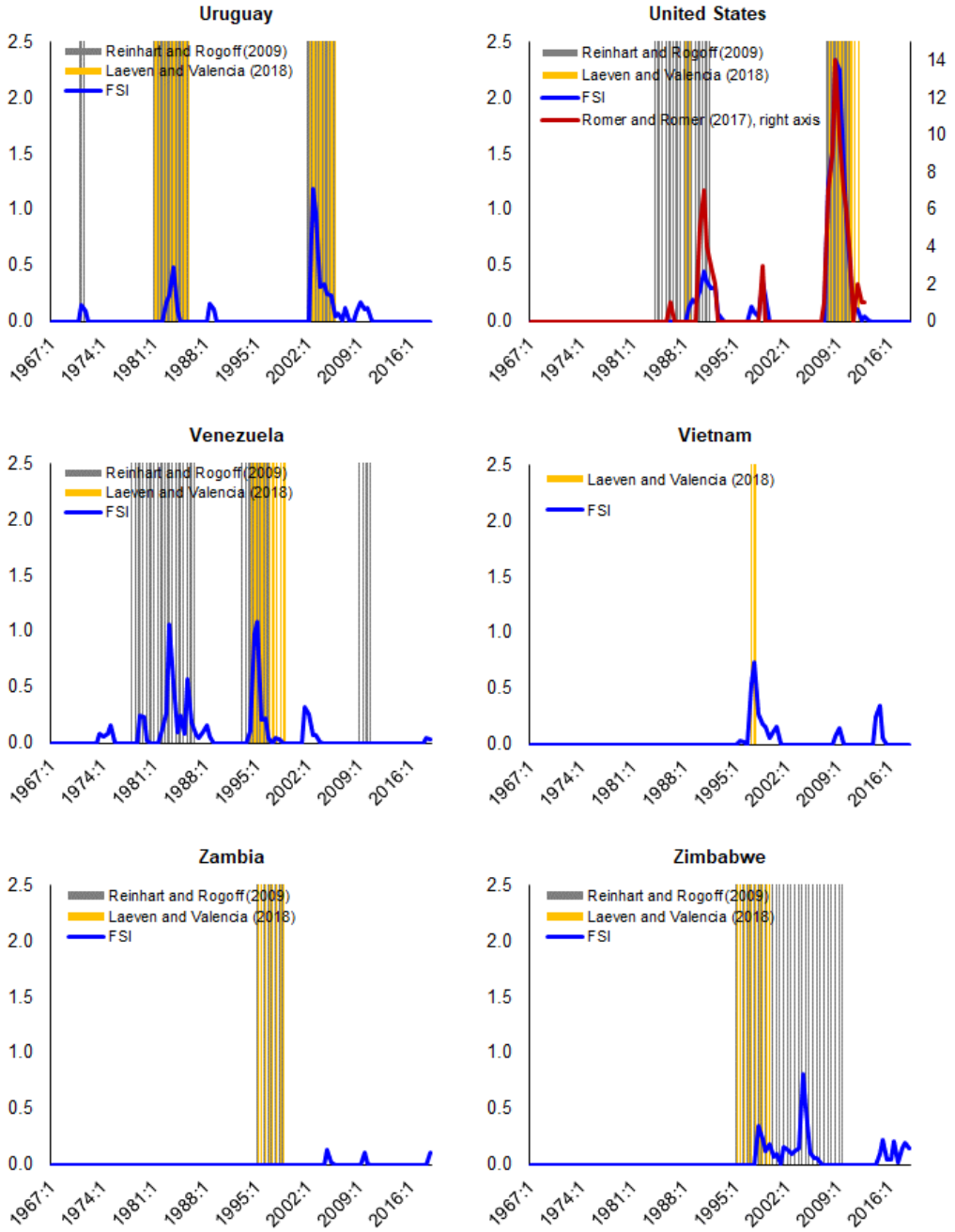


Figure A3 – Continued



PUBLICATIONS

Financial Stress and Economic Activity: Evidence from a New Worldwide Index

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