IMF Economic Review (2020) 68:307–361
https://doi.org/10.1057/s41308-020-00107-3

RESEARCH ARTICLE

Systemic Banking Crises Database II

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Published online: 30 January 2020

Abstract
This paper updates and expands the database on systemic banking crises presented in Laeven and Valencia (IMF Econ Rev 61(2):225–270, 2013a). The database draws on 151 systemic banking crisis episodes around the globe during 1970–2017 to include information on crisis dates, policy responses to resolve banking crises, and their fiscal and output costs. We provide new evidence that crises in high-income countries tend to last longer and be associated with higher output losses, lower fiscal costs, and more extensive use of bank guarantees and expansionary macro-policies than crises in low- and middle-income countries. We complement the banking crisis dates with sovereign debt and currency crises dates to find that sovereign debt and currency crises tend to coincide with or follow banking crises.

JEL Classification E50 · E60 · G20

1 Introduction

Systemic banking crises are highly disruptive events that lead to sustained declines in economic activity, financial intermediation, and ultimately in welfare. It is then no surprise that academics and policymakers devote significant efforts to develop models to attempt to predict crises and to design policies to resolve them and mitigate their economic impacts. But much of these efforts crucially depend on the proper identification of the dates when these crises occur. The use of an inappropriate crisis

Electronic supplementary material The online version of this article (https://doi.org/10.1057/s41308-020-00107-3) contains supplementary material, which is available to authorized users.

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dating measure may obscure a genuine relationship between a crisis event and other economic variables or create the appearance of a causal link when there is none.

To facilitate these efforts, this paper updates the comprehensive global database on systemic banking crises in Laeven and Valencia (2013a), which has become the standard reference for information on banking crises worldwide, to cover all episodes during the period 1970–2017. As in our previous versions of the database, we date systemic banking crises based on the intensity of the policy response to reduce the use of subjective criteria to identify crisis episodes. As in Laeven and Valencia (2013a), we further complement the database on banking crises events during the period 1970–2017 with dates of sovereign debt and currency crises during the same period. In total, we identify 151 banking crises, 236 currency crises, and 79 sovereign crises. We also include monthly crisis dates for a subset of all types of crises, thus innovating relative to Laeven and Valencia (2013a), where we only did so for banking crises.

The database also includes information about policy responses, fiscal costs, output losses, and other stylized facts about banking crises. When comparing banking crises episodes across countries of different income levels, we find significant differences. In terms of policy responses, we find that the use of financial intervention policies in high-income countries tends to be similar to that in low- and middle-income economies, except for guarantees on bank liabilities. The use of the latter has been relatively more common in high-income countries, arguably due to a higher quality of institutions or larger fiscal space, which rendered the guarantees relatively more credible. Moreover, we document more extensive use of expansionary monetary and fiscal policies in banking crisis episodes in high-income economies than in low- and middle-income ones. The availability of fiscal and monetary space allowed high-income countries to act countercyclically and mitigate the impact of the crisis on the real economy. In contrast, low- and middle-income countries may have faced binding borrowing constraints that forced them to act procyclically during crisis episodes.

We also find that direct fiscal costs of banking crises – defined as fiscal outlays directly related to government intervention measures in the financial sector – tend to be larger in low- and middle-income countries than in high-income countries. However, using a broader definition of fiscal costs that includes fiscal outlays not directly targeting the financial sector – measured as the increase in public debt-to-GDP ratios around banking crises – we find the exact opposite: An increase in public indebtedness tends to be more pronounced for high-income countries. This result follows from a combination of a greater ability of high-income countries to use fiscal stimulus during banking crises, which increases public debt, and more considerable output losses in high-income countries in the aftermath of banking crises.

The literature on banking crisis dating has attracted increased attention since the global financial crisis with notable contributions, including Reinhart and Rogoff (2009), Schularick and Taylor (2012), Romer and Romer (2017), and Baron et al. (2018). Several of these studies document similarities and differences in outcomes with our earlier versions of the database (Laeven and Valencia 2013a). Relative to these other papers, the main advantage of our database is the dating of banking crises for a large sample of countries and the documentation of policy responses during

such crises.[1] This distinction is important, particularly for drawing implications of banking crises beyond advanced economies and large emerging markets.

The remainder of the paper is organized as follows: Section 2 presents our definition of banking crises. Section 3 shows the resulting list of crises during the period 1970–2017. Section 4 complements our banking crises dates with those for currency and sovereign debt crises. Section 5 presents the policy responses, and Sect. 6 presents the crisis outcomes, including fiscal costs and output losses. Section 7 concludes.

2 Definition of a Crisis

We follow in this paper the same definition adopted in Laeven and Valencia (2013a), reproduced below for convenience, where we define a banking crisis as an event that meets two conditions:

1. Significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations).
2. Significant banking policy intervention measures in response to significant losses in the banking system.

We consider the first year when both criteria are met to be the year when the crisis became systemic. This approach ensures that we date the crisis at the early signs of significant problems in the banking system.

When the losses in the banking sector or liquidations are severe, we treat the first criterion as a sufficient condition to date a systemic banking crisis. We operationalize this definition by considering that losses are severe when either (1) a country's banking system exhibits significant losses resulting in a share of non-performing loans above 20% of total loans or bank closures of at least 20% of banking system assets or (2) fiscal restructuring costs of the banking sector are sufficiently high, exceeding 5% of GDP.[2] However, relying exclusively on the first criterion is problematic because it is not always straightforward to quantify the degree of financial distress in a banking system, particularly in low- and middle-income countries, and also because policy responses can mitigate losses. To address this problem, we also rely on the second criterion, if policy intervention meets the requirement of being significant. We consider policy interventions in the banking sector to be significant if at least three out of the following six measures have been used[3]:

[1] The studies by Schularick and Taylor (2012), Romer and Romer (2017), and Baron et al. (2018) cover only a comparatively small number of countries.

[2] Examples of such severity include Latvia's 1995 crisis, when banks totaling 40% of the financial system's assets were closed, and more recently, Moldova (2014) and Ukraine (2014).

[3] We express our measure of fiscal costs in terms of GDP. However, whenever available, we also report fiscal costs expressed in % of financial system assets.

1. deposit freezes and/or bank holidays;
2. significant bank nationalizations;
3. bank restructuring fiscal costs (at least 3% of GDP);
4. extensive liquidity support (at least 5% of deposits and liabilities to non-residents);
5. significant guarantees put in place; and
6. significant asset purchases (at least 5% of GDP);

The above categories cover all policy interventions that have been employed to resolve a banking crisis [see Honohan and Laeven (2005) and Laeven and Valencia (2008)]. We require the use of at least three of the above measures. It is worth noting that setting thresholds sufficiently high helps us avoid labeling a non-systemic event or the preemptive use of some of these policies as a systemic banking crisis.[4] For interventions that can be quantified more easily, such as liquidity support, asset purchases, and financial restructuring costs, we also adopt quantitative thresholds to define what significant intervention means.

The policy variables we used in our crisis definition are more specifically defined as follows:

- *Deposit freeze and bank holidays* indicates whether the government introduced restrictions on deposit withdrawals or a bank holiday. If implemented, we also collect information on the duration of the deposit freeze and bank holiday and the affected instruments.
- Significant nationalizations: takeovers by the government of systemically important financial institutions, including cases where the government takes a majority stake in the capital of such financial institutions.
- *Significant bank guarantees* a significant government guarantee on bank liabilities, indicating that the government has issued either full protection of liabilities or have extended guarantees to non-deposit liabilities of banks.[5] We do not consider actions that only raise the level of deposit insurance coverage.[6]
- *Liquidity support* it is measured as central bank claims on other depository institutions (from IFS) and liquidity support directly provided by the Treasury. We normalize this variable by the total deposits and bank liabilities to non-residents. We consider liquidity support to be extensive when this ratio exceeds 5% and more than doubles relative to its pre-crisis level.[7]

[4] Other researchers (e.g., Demirgüç-Kunt and Detragiache 1998) have used milder thresholds resulting in more crisis episodes. However, milder thresholds tend to increase the proportion of non-systemic events in the sample, while our focus is on systemic crises.

[5] Although we do not consider a quantitative threshold for this criterion, in all cases, guarantees involved significant financial sector commitments relative to the size of the corresponding economies.

[6] Laeven and Valencia (2013a) also present information on whether a previous explicit deposit insurance arrangement was in place at the time of the introduction of the blanket guarantee.

[7] This measure of liquidity would also capture the impact of currency swap lines among central banks, agreed during the global financial crisis, to the extent that they were used to inject liquidity in the financial sector.

- *Bank restructuring costs* defined as gross fiscal outlays directed to the restructuring of the financial sector, with the most important component being recapitalization costs. We consider restructuring costs to be significant if they exceed 3% of GDP, excluding liquidity assistance provided directly from the treasury. We focus on gross fiscal costs instead of the net because it takes time to record recoveries. However, wherever data on recoveries were available, we report also net fiscal costs.
- *Asset purchases* this variable refers to purchases of assets from financial institutions implemented by the central bank, the treasury, or a government entity (such as an asset management company). We define significant asset purchases as those exceeding 5% of GDP.

The logic for choosing this approach to date banking crises is to reduce the use of subjective criteria in identifying these events, which gives our database a clear advantage over existing databases such as Caprio and Klingebiel (1996) and Reinhart and Rogoff (2009). Moreover, the chosen thresholds for policy intervention help us focus only on systemic events, and to reduce subjectivity in the identification of crises further. And finally, it is a relatively simple definition that allows a consistent implementation across periods and countries of different income levels. In Laeven and Valencia (2013a), we showed that many episodes in our dataset could be replicated by a simple alternative definition based on credit and real GDP growth, particularly in high-income countries.

More recent studies have explored alternative crisis dating strategies, such as Romer and Romer (2017), who rely on a narrative approach to identify episodes of financial distress in 24 OECD countries; Baron et al. (2018), who identify crises in 46 countries by looking at significant declines in banks' stock prices; and Chaudron and de Haan (2014), who study four crises for which the timing sharply differs across databases. Chaudron and de Haan (2014) conclude that using the information on the number and size of bank failures allows determining the timing of banking crises more precisely. Their dates for these four episodes correspond closely with ours. More generally, all these studies note significant similarities with our crisis dating to the extent that the samples overlap. However, our approach allows for more comprehensive coverage of countries.

We also complement the database of banking crisis dates with currency and sovereign crises dates. We follow the same definitions employed in Laeven and Valencia (2008, 2013a), which in turn build on Frankel and Rose's (1996) approach. We define a currency crisis as a "sharp" nominal depreciation of the currency vis-a-vis the US dollar. We consider two thresholds for depreciation to meet this definition: (1) a year-on-year depreciation of at least 30%, and (2) of at least 10 percentage points higher than the rate of depreciation observed in the year before.[8] Using

[8] We use the end-of-period official nominal bilateral exchange rates from the IMF's World Economic Outlook (WEO) database. For countries that meet the currency crisis criteria for several consecutive years, we use the first year of each 5-year window to identify the crisis. While our approach resembles that of Frankel and Rose (1996), our thresholds are not identical to theirs.

this definition, we identify 236 currency crises during the period 1970–2017.[9] We choose bilateral exchange rates because we are interested in the loss of value relative to a reserve currency. Admittedly, the identified episodes can vary with the thresholds, as noted in Laeven and Valencia (2013a). However, it is a simple definition that can be implemented easily across countries.

We also date episodes of sovereign debt default and restructuring by relying on information from Beim and Calomiris (2001), World Bank (2002), Sturzenegger and Zettelmeyer (2006), IMF Staff reports, Cruces and Trebesch (2013), and reports from rating agencies and the media. The compiled data on sovereign debt crises reported in our database include the year of sovereign default to private creditors and/or restructuring. If the government restructured its debt without a suspension of payments, we would record the sovereign crisis year as the year of the restructuring. Using this approach, we identify 79 episodes of sovereign debt crises during 1970–2017, 12 of which took place since 2007.

As in previous releases of this database, we include higher frequency dating for banking crises where it is possible to identify the starting month. In this release, we also do so for currency and sovereign debt crisis episodes. Therefore, Table 1 includes also the month corresponding to the start of the crisis for the subset of crisis episodes where information is available.

3 Banking Crises Episodes During 1970–2017

Our definition identifies 151 banking crises since 1970, of which 4 episodes started since 2011: Cyprus (2011), Guinea-Bissau (2014), Moldova (2014), and Ukraine (2014). We include the complete dataset in the accompanying data file with the main variables reported in the appendix. The "additional details" tab of the accompanying data file contains additional information on each banking crisis episode, such as on the dates and duration of deposit freezes, bank holidays, and blanket guarantees; the type of liquidity support; whether there was an IMF program, etc. The banking crisis dates – years for all cases, and year and month whenever feasible – include borderline systemic crises, defined as cases where our definition is close to being met. Most countries have experienced at least one systemic banking crisis during 1970–2017, with many going through multiple episodes (Fig. 1). However, only three countries experienced more than two systemic banking crises during the past 48 years: Argentina (4 in total), the Democratic Republic of Congo (3), and Ukraine (3).

Following the World Bank's historical income classification, we group episodes according to the income level of the affected country at the start of the crisis (Fig. 2). Figure 2 shows that systemic banking crises are rarely single-country events, with waves of crises visible in the picture, starting with the episodes in Latin America in the early 1980s, the crises in the aftermath of the breakup of the

[9] As in Laeven and Valencia (2013a), we exclude from the list currency crises that occur in countries that were early in the process of transition toward market economies.

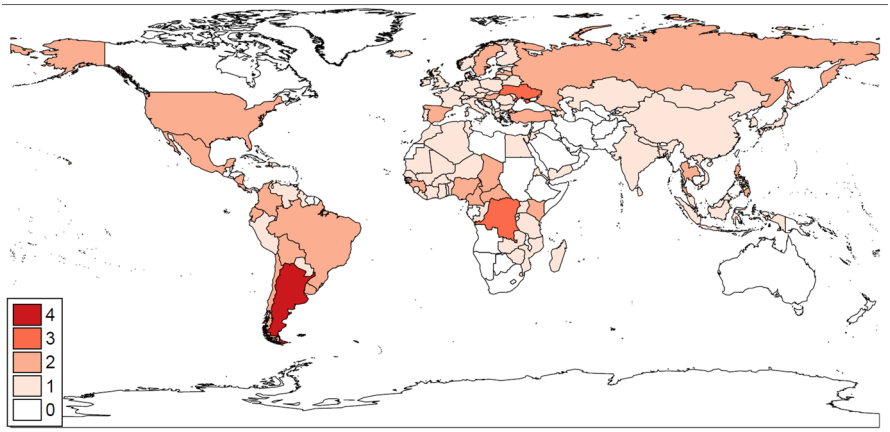


Fig. 1 Frequency of systemic banking crises around the world, 1970–2017. *Source*: Authors' calculations

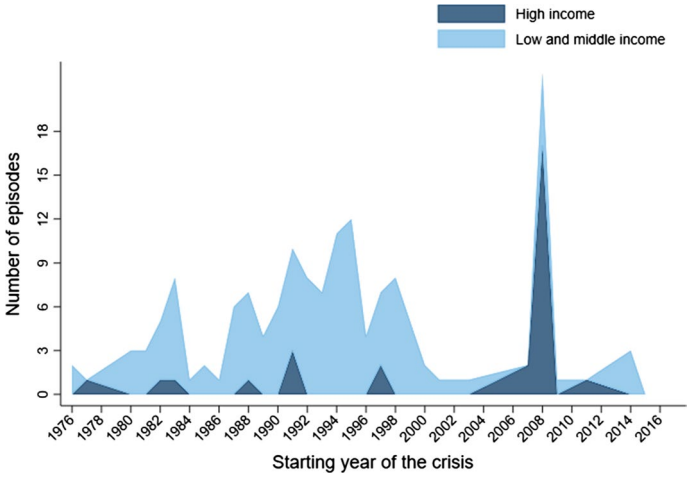


Fig. 2 Systemic banking crises episodes by income level, 1976–2017. *Source*: Authors' calculations

Soviet Union, the Tequila Crisis, the Asian crisis, and more recently the global financial crisis. The mid-2000s was unusual in terms of the low incidence of crises, which was disrupted by the global financial crisis. Since then, some episodes have taken place in low- and middle-income countries, but in general, we are facing again a period of relative calm in what pertains to systemic banking crises. The figure also shows that the late eighties and nineties included some episodes in high-income countries, reflecting the savings and loan crisis in the USA, the crises in the Nordic countries in the early 1990s, and the one in Japan in the late 1990s. However, before the 2008 global financial crises, banking crises had predominantly been a low- and middle-income country phenomenon, at least since 1970. As noted by Reinhart and Rogoff (2009), the global financial crisis made it clear that "financial crises are an equal opportunity menace" for countries of any income level.

4 Crises Sequencing

To assess the sequencing of crisis, we use the dates on sovereign and currency crises compiled in this paper. Figure 3 shows the frequency of currency and sovereign debt crises episodes by year and income level.

Currency crises are a rare phenomenon among high-income countries, including during the global financial crisis, in part due to the reserve currency status of some of these economies. The global financial crisis brought about sovereign debt crises in high-income countries, Greece with its 2012 restructuring and the 2015 default to the IMF, and Cyprus with the 2013 debt exchange.

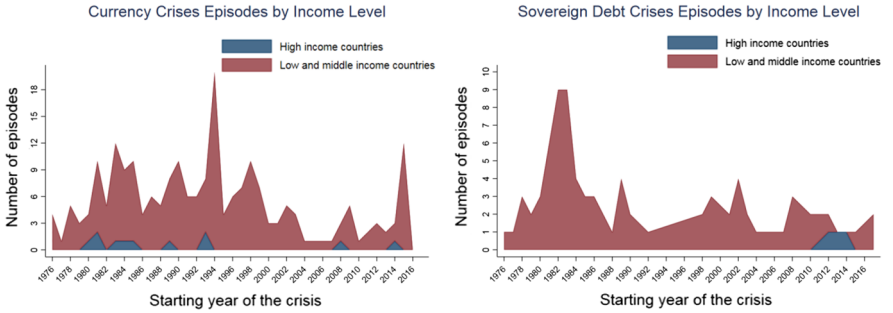
Banking and sovereign debt crises can coincide, either because a considerable shock hits the entire economy, or because there are sizeable spillovers from the public to the banking sector (i.e., through banks' sovereign exposures) or from the banking to the public sector (i.e., through sovereign bailouts of banks) (IMF 2014; Dell'Ariccia et al. 2018). And analogous connections can be drawn between banking and currency crises: for instance, when a sharp depreciation of the currency wipes out banks' capital due to significant open foreign exchange positions of their own or their borrowers or when significant bank failures lead depositors to seek shelter in foreign assets, simultaneously provoking a run on the currency.

Figure 4 shows the incidence of banking, currency, and sovereign debt crises over the sample period covered in our database. We find that all three types of crises, not just banking crises, come in waves. The number of sovereign debt crises peaked in the mid-1980s, driven predominantly by Latin America, with recent episodes including both high and low- and middle-income economies. The frequency of currency crises peaked in the mid-1990s and saw surges around the global financial crisis. Their incidence increased in 2015 due to the significant currency depreciation in many commodity-exporter countries triggered by a decline in commodity prices (Kohlscheen et al. 2017). The figure also reports standalone crises and those that coincided with other types of crises.[10] In total, we document 11 triple crises (i.e., simultaneous banking, currency, and sovereign debt crises in a given country) over the period 1970–2017. Among twin crises, the currency/banking and currency/debt crisis pairs tend to be more common than the banking/debt crisis pair.

In Fig. 4, we show a matrix with transition probabilities that a banking, currency, or sovereign crisis in any given year becomes a crisis of some other time in any of the subsequent 3 years.

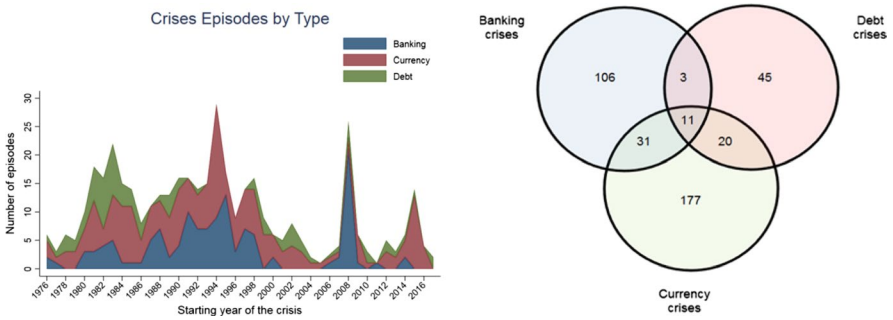
To better identify a crisis sequencing pattern, we show in Fig. 5 the incidence of currency and sovereign debt crises along a time scale (in years) in countries that experienced a banking crisis in year T. We do this with annual (left panel) and monthly crisis dates. A more evident pattern now emerges. Currency and sovereign

[10] We define a twin crisis in year T as a banking crisis in year T, combined with a currency (sovereign debt) crisis during the period $[T-1, T+1]$, and we define a triple crisis in year t as a banking crisis in year T, combined with a currency crisis during the period $[T-1, T+1]$ and a sovereign debt crisis during the period $[T-1, T+1]$. Identifying the overlap between banking (currency) and sovereign crises follows the same approach, with t the year of a banking (currency) crisis.



(a) Currency Crises Episodes by Income Level **(b)** Sovereign Debt Crises Episodes by Income Level

Fig. 3 Currency and sovereign debt crises episodes by income level. *Note*: We distinguish high-income countries from low- and middle-income countries based on the level of GNI per capita in US$ in the year in which the banking crisis episode started. We assign the classification by comparing such level of GNI per capita to the income thresholds defined by the World Bank for that same year. *Source*: Authors' calculations



(a) Crisis Episodes by Type **(b)** Incidence of Single, Twin, and Triple Crises

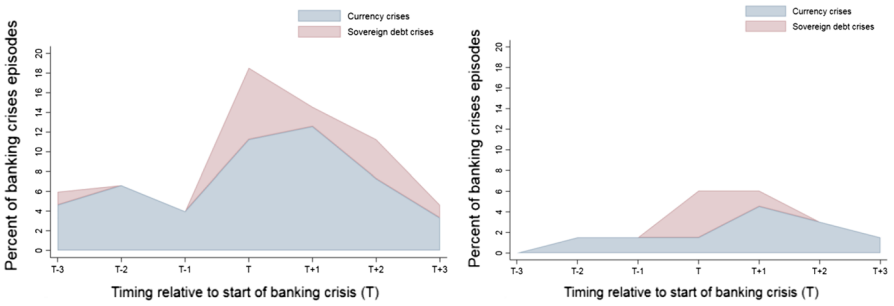
	Crisis type at time [T+1, T+3]		
Crisis type at time T	Banking	Currency	Sovereign
Banking		0.225	0.073
Currency	0.089		0.068
Sovereign	0.026	0.169	

Note: To calculate the transition probabilities, we abstract from the differentiation between single, twin, and triple crises and instead treat each crisis at each point in time as an isolated event.

(c) Transition Frequency between Crisis Types

Fig. 4 Financial crises by type. *Source*: Authors' calculations

debt crises, on average, tend to coincide or follow banking crises, with currency crises peaking at 1 year after the beginning of the banking crisis. The number of episodes is smaller in our monthly crisis database, but the pattern is similar to the one using annual dates. This pattern is in line with findings in earlier studies that have examined the causes as well as the sequencing of crises (e.g., Kaminsky and



(a) Sequencing of Crisis (Annually) **(b)** Sequencing of Crisis (Monthly)

Fig. 5 Sequencing of crises. *Note*: The figure is constructed by selecting banking crisis episodes and plotting the percentage of them that were followed, coincided, or were preceded by a sovereign or currency crisis, with T denoting the start of the banking crisis. *Source*: Authors' calculations

Reinhart 1999; Fratzscher et al. 2011; Reinhart and Rogoff 2011; Gourinchas and Obstfeld 2012). Although they covered different sample periods and relied on different definitions of crises, the similarity in conclusion is quite apparent: It is common for banking crises to happen at the same time or precede currency and sovereign debt crises. This pattern provides a clear rationale for our emphasis on banking crises. The systemic crises in Ukraine and some European countries are prominent examples of recent systemic crises that evolved into different types of crises. In addition to the information contained in our database, we refer the reader to the following studies and reports for further details on each crisis: Bakker and Klingen (2012) and Åslund (2009) for Ukraine; and Lane (2012), Shambaugh (2012), Mody and Sandri (2012), and Obstfeld (2013) for the European crisis.

5 Policy Response to Banking Crises

To complement our crisis dating database, we collect information on policy responses deployed during these episodes and directed toward containing or resolving a banking crisis. While our focus is predominantly on financial sector policy interventions, we also look at crude measures of monetary and fiscal policy to offer a broad perspective on policy responses during banking crises.

5.1 Financial Sector Interventions During Crises

Initially, a country's policy response to bank distress typically includes the deployment of liquidity support to the banking sector, particularly in response to bank runs. The provision of extensive liquidity support during systemic banking

crises is pervasive in our sample. We measure liquidity support as the ratio of central bank claims on the financial sector to deposits and foreign liabilities.[11] We report two measures of liquidity support: the peak of this ratio, labeled as peak liquidity support in Table 2 in the appendix, and the change between the maximum and the average of the ratio during the year before the start of the crisis, labeled as liquidity support. The median peak liquidity support ratio reaches 20.2%, with 100 out of 151 episodes recording a positive value of up to 28%. However, the median peak liquidity at 12% for high-income countries is less than half of the 21% recorded for low- and middle-income countries. The second measure, liquidity support, shows up with a median of 10.8%, with 95 out of 151 episodes exhibiting a positive value of up to 16%. Again, the median value for high-income countries at 6.4% is less than half of the 14.8% corresponding to low- and middle-income countries.

While both high and low- and middle-income countries have relied extensively on liquidity support when hit by a crisis, Laeven and Valencia (2010), Claessens et al. (2011), and Stone et al. (2011) have noted the broader array of instruments used by high-income countries when experiencing a crisis, including through the coordinated deployment of central bank swap facilities during the global financial crisis. These studies have also pointed out that low- and middle-income countries tend to rely on liquidity provision as a containment tool for much longer than high-income countries, on average, before introducing bank recapitalization and restructuring measures. Weaker institutions, including non-independent central banks and regulators, in some low- and middle-income countries, particularly in the 1980s and 1990s, may have led to the prolonged reliance on liquidity support and delayed recognition of banks solvency problems. Bank recapitalization measures, such as the Troubled Asset Relief Program (TARP) in the USA, were deployed much quicker during the global financial crises, compared to episodes before the global financial crisis (predominantly in low- and middle-income countries). The more prolonged reliance on liquidity support in low- and middle-income economies may explain why it tended to be higher in these episodes than in high-income countries.

During the early stages of banking crises, and often in combination with liquidity support, governments have also resorted to limited or full guarantees on some or most bank liabilities, to help stem bank runs and alleviate liquidity pressures on these entities. They typically buy policymakers time to develop more comprehensive resolution and restructuring plans. Laeven and Valencia (2012) examine the experience of 42 crisis episodes, of which 14 made use of explicit guarantees on bank liabilities and find that these guarantees do help to reduce liquidity pressures on banks. Altogether, governments used blanket guarantees in 34 crisis episodes, of which 19 cases corresponded to high-income countries, mostly during the 2008 global financial crisis. Guarantees are often left in place for many years and are only gradually removed. The blanket guarantees announced in Mexico in 1993 and Malaysia in 1998 were entirely removed only in 2003 and 2005, respectively. At the end-2016, European Union governments collectively still had 120 billion euros in

[11] We exclude domestic non-deposit liabilities from the denominator of this ratio because information on such liabilities is not readily available on a gross basis.

outstanding guarantees issued in support of the financial system, according to the European Commission's 2017 State Aid Scoreboard. While this amount represents a sharp decline from its peak of 835 billion euros in 2009, it remains non-trivial.

In cases where liquidity pressures have been significant, countries have, in some cases, resorted to administrative measures, suspending the convertibility of deposits into cash and restricting foreign payments. These "deposit freezes" have often been preceded by bank holidays – the temporary closure of banks – usually by design as banks need some time to adapt their IT systems and procedures to the new regime. However, the incidence of bank holidays and deposit freezes is much lower. We report the use of deposit freezes in only 8 episodes. The most recent cases include Cyprus in 2013, Ukraine in 2014, and Greece in 2015. In Cyprus, restrictions on domestic payments were removed in May 2014, while those on external payments remained in place until April 2015. For Ukraine, cash withdrawals from local currency bank accounts were lifted in September 2016 and those from FX accounts in August 2017, although some restrictions on FX transactions remained in place as of early 2018. Similarly, in Greece, the restrictions on deposits have been gradually relaxed since their introduction in July 2015, but there were restrictions still in place as of early 2018, including a monthly limit on cash withdrawals and limits on cross-border bank transfers.

We report 6 bank holidays, with Cyprus and Greece being the only recent cases. In 5 of the 6 cases, the bank holiday was in place for a length between 4 and 8 days. The exception is Greece, where the bank holiday was in place for 21 days. In all the 6 reported instances, the bank holiday preceded a deposit freeze.

The above policies are intended to contain liquidity pressures. However, banks experiencing significant drains in liquidity often see a deterioration in their capital position as they are forced into asset disposals at fire-sale prices to meet liquidity needs. Compounded by a decline in asset quality as financially weakened borrowers fall delinquent on their loans, additional measures are often needed to restore the solvency of affected banks. These may include private or public recapitalization of viable institutions, resolution of insolvent ones, and even outright nationalization. The literature includes many studies looking into the appropriateness and effectiveness of these tools in situations of severe financial distress. There is theoretical research showing that in those circumstances recapitalizing banks with public money can increase welfare (e.g., Philippon and Schnabl 2013; Sandri and Valencia 2013) and there is empirical evidence suggesting that recapitalizing banks with public money can alleviate the real effects of banking crises (e.g., Homar and van Wijnbergen 2017; Giannetti and Simonov 2013; Laeven and Valencia 2013a, b). Implementation, however, may take many forms (Laeven and Valencia 2008; Claessens et al. 2014).

Bank recapitalization is used in most crises, and it is also the most important component of direct fiscal costs from government intervention in the financial sector. Government capital injections, often encompassing a combination of preferred and common equity, have also been accompanied by conditions or restrictions, for instance, requiring board seats for government representatives, and limiting or prohibiting dividend payments (Laeven and Valencia 2008). These recapitalizations can often lead governments to own a majority share of a bank's capital, in which cases

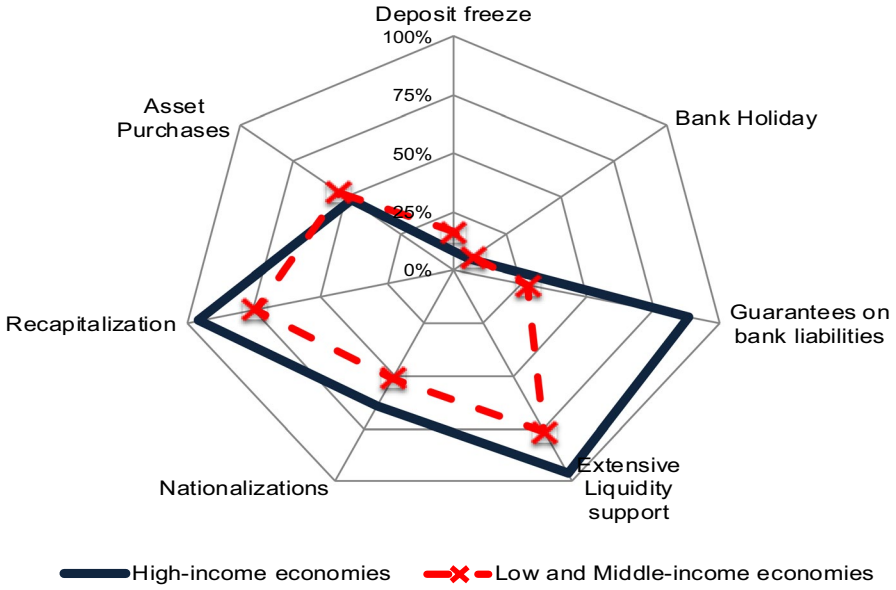
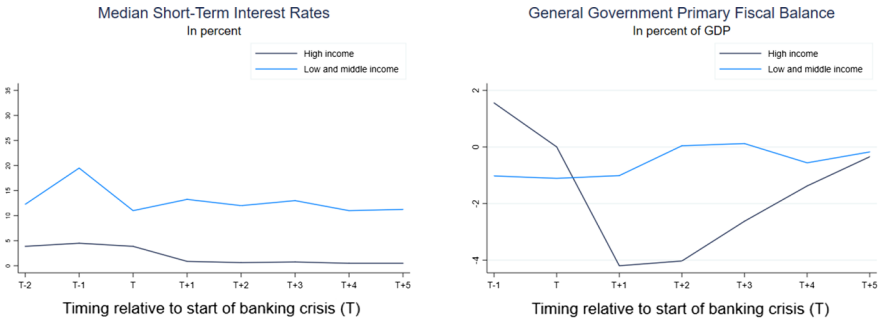


Fig. 6 Containment and resolution policies. *Source*: Authors' calculations



(a) Median Short-Term Interest Rates **(b)** Government Primary Fiscal Balance (% of GDP)

Fig. 7 Short-term interest rates and fiscal balances around banking crises. *Source*: World Economic Outlook, IMF, IFS, and authors' calculations

we classify the intervention as a nationalization, together with outright nationalization cases. Finally, we also report if the treasury or the central bank engaged in asset purchases to support the banking system and whether the government created an asset management company to administer or resolve these assets.

Figure 6 shows the differences in financial policy mix to resolve banking crises between high-income and low- and middle-income economies. The picture makes it clear that countries of both income groups resort broadly to the same types of policies to resolve systemic banking crises, except for guarantees. Significant guarantees on bank liabilities are more common among high-income countries, arguably

because of generally better institutions or fiscal space that make the guarantees more credible. However, as noted in Claessens et al. (2011), guarantees during the global financial crises were, on average, less comprehensive (i.e., more targeted) than in countries of lower-income levels. In those countries, governments tended to announce blanket guarantees of banks' liabilities. In many cases, governments introduced limited protection of deposits after a banking crisis (Laeven and Valencia 2013a, b). The absence of these schemes in many episodes in low- and middle-income countries may have prompted policymakers to announce comprehensive guarantees of bank liabilities.

5.2 Macro-Policies

In addition to using financial sector intervention measures to resolve banking crises, policymakers often use monetary and fiscal policy to mitigate their economic consequences. But there is a difference among high-income and low- and middle-income countries in the use of these tools.

We trace the median evolution of short-term interest rates around systemic banking crises to gauge whether countries tended to ease or tighten monetary policy. Figure 7 shows that in high-income countries, short-term interest rates declined to a median level very close to zero in the year after the start of the crisis, from a median of about 5%. In contrast, the median short-term interest rate increases in low- and middle-income countries, reflecting the often-limited space to conduct countercyclical monetary policy at times of heightened financial distress in these countries.[12] Concerns about sharp currency depreciation and the resulting impact on private balance sheets exposed to exchange rate risk often force these countries to raise interest rates, ultimately leading also to a sharper deterioration in banks' asset quality.

A similar outcome emerges when comparing the evolution of primary fiscal balances. While the median primary balance tends to deteriorate sharply in high-income countries, it improves in low- and middle-income countries. The countries in the latter group tend to adopt a procyclical fiscal policy as they face limited financing options in those circumstances.

6 Crisis Outcomes

We collect and report data on the following outcomes for banking crises: (1) the direct fiscal costs, measured as fiscal outlays linked to government intervention policies in the banking system; (2) a broader measure of fiscal costs, determined by the increase in public debt; (3) peak non-performing loans (NPLs); (4) crisis duration,

[12] Laeven and Valencia (2013a) also report the increase in reserve money across episodes, which also captures the use of unconventional monetary policy, to conclude the greater use of monetary policy in high-income countries. We have streamlined the accompanying data file to facilitate use and to include only variables where the updating was feasible. Therefore, we exclude a few variables from the current release, but the reader can still find them in Laeven and Valencia (2013a).

measured in number of years between the start and end of the crisis; and (5) output losses.

6.1 Fiscal Costs of Banking Crises

We measure the fiscal costs of banking crises as the sum of all fiscal outlays directly linked to government interventions to stabilize the banking system since the start of the crisis. These interventions include capital injections in financial institutions, operating costs of agencies or entities such as asset management companies, exercised public guarantees, and any other fiscal cost directly attributable to the rescue of financial institutions.

In reporting the fiscal costs of a banking crisis episode, we normalize the outlays by the nominal gross domestic product of the year in which they are incurred and sum them up. We also report these fiscal costs in percent of financial system assets, where we measure the latter as of the year before the start of the banking crisis. In reporting fiscal costs, we do not include government guarantees of bank liabilities or assets because they do not represent an outlay,[13] although they are critical if one wanted to measure the total ex ante risk taken by the public sector during the early stages of a banking crisis. Our ex post analysis focuses on the actual financial costs of a banking crisis episode.[14] Data on fiscal costs are collected from official country publications, supranational agencies, and IMF staff reports.[15]

We collect recoveries of government outlays for a subset of episodes using the same data sources from which we collect fiscal costs. Data on recoveries allow us to report the net fiscal cost (i.e., outlays minus recoveries) of a banking crisis episode. We define recoveries as proceeds from sales of financial assets – acquired to resolve a banking crisis – revenues from fees on guarantees, dividends, interest, and any other cash inflow for the government that can be directly attributable to unwinding financial sector intervention measures. Our definition of recoveries means that we exclude unrealized capital gains on assets that are still on the government balance sheet, which implies that over a longer horizon, recoveries can exceed what we report in our database.[16]

The histograms in Fig. 8 show substantial variation in the fiscal costs of systemic banking crisis episodes, both in high-income and low- and middle-income

[13] Our calculation of fiscal costs also excludes deferred tax assets (i.e., for Spain, these deferred tax assets amounted to €70 billion as of end-2016 according to IMF 2017).

[14] We report the fiscal costs in % of GDP, where nominal fiscal costs, expressed first in domestic currency, are divided by the nominal GDP of the corresponding year when the outlays took place.

[15] We take the fiscal costs and recoveries from Laeven and Valencia (2013a). For episodes starting in 2007 or later, we updated the fiscal costs and recoveries using official national publications. For European countries, whenever national sources did not publish information on these costs, we took data from the European commission scoreboard and Eurostat (http://ec.europa.eu/eurostat/web/government-finance-statistics/excessive-deficit/supplemtary-tables-financial-crisis).

[16] A case in point is Iceland, where we report net fiscal costs for 3.3% of GDP, which excludes bank equity held by the government valued at approximately 12% of GDP in 2016. This exclusion explains the bulk of the difference between our estimates of the net fiscal costs and the -9% of GDP reported in the 2016 IMF Article IV Staff Report.

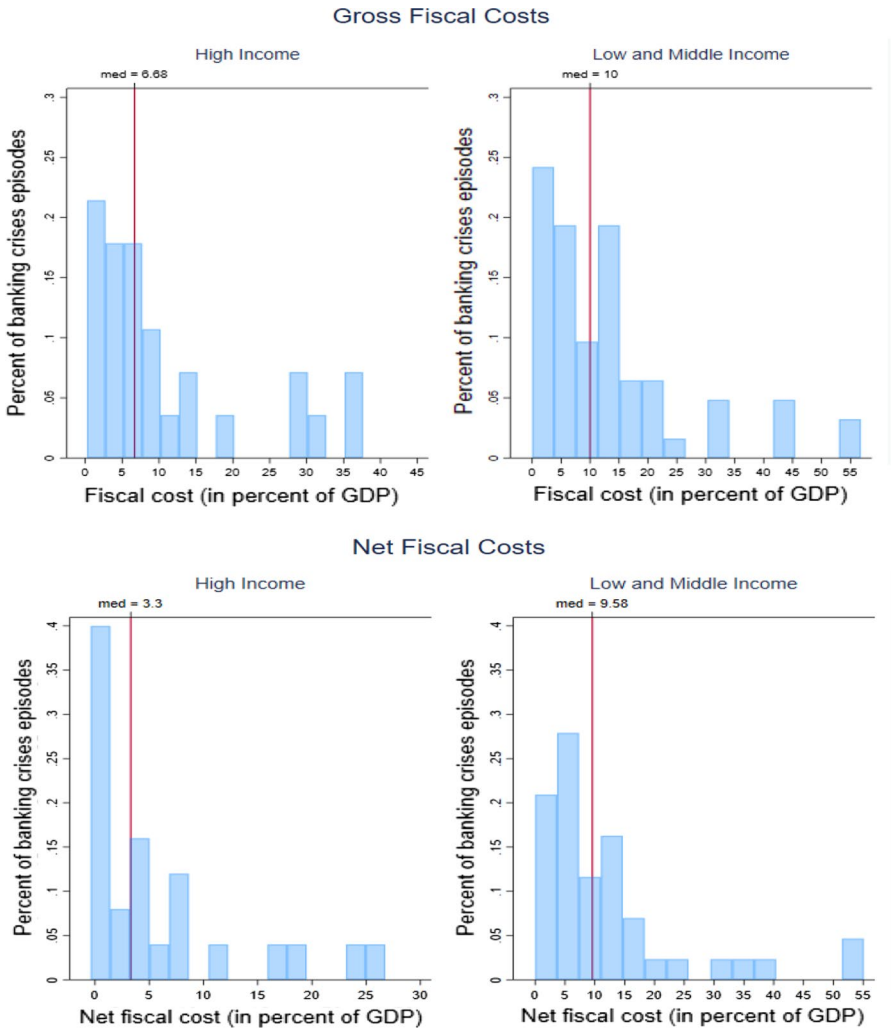


Fig. 8 Gross and net fiscal costs of banking crises. *Note*: Fiscal costs correspond to government outlays directly linked to policies to stabilize the financial system. Net fiscal costs refer to fiscal costs minus recoveries whenever there were available data on them. Samples differ as we collect recoveries for a subset of episodes. Source: Authors' calculations

economies. Still, the median cost for crises in high-income countries is 6.7% of GDP and 10% of GDP for low- and middle-income countries. The difference in fiscal costs between the two groups of countries increases to slightly above 6 percentage points of GDP after subtracting recoveries: The median net fiscal cost reaches 3.3% of GDP for high-income countries and 9.6% of GDP for low- and middle-income countries.

The difference in fiscal costs between the two groups of countries becomes even more pronounced when fiscal costs are measured relative to the size of the financial system, as shown in Fig. 9.[17] Relative to the size of financial systems, banking crises appear to have been much costlier in terms of direct fiscal costs in low- to middle-income economies. But these differences may also be the outcome of the greater reliance on macroeconomic policy tools, as noted in the previous section, which reduces the burden on financial sector policies to resolve the crisis.[18]

The use of fiscal space also leads to more significant increases in public debt – our broader measure of fiscal costs of banking crises – in high-income countries compared to low- and middle-income countries. Discretionary fiscal policy and automatic stabilizers affect this broader measure of fiscal costs of crises directly. These factors play a much smaller role in driving up public debt after a banking crisis in low- and middle-income countries. The median increase in public debt, measured over the period $[T-1, T+3]$, where T is the starting year of the banking crisis, reaches 21.1% of GDP in high-income countries compared to 16.4% of GDP in low- and middle-income countries (Fig. 10).[19]

6.2 Peak Non-performing Loans

The sharper deterioration in the asset quality of banks in low- and middle-income countries can be noted by looking at the peak non-performing loans (NPLs) across crisis episodes. Figure 11 shows the distribution of peak NPLs in the two groups of countries. In both income groups, there is quite a bit of dispersion in the distribution, although, in about 70% of crises in high-income countries, NPLs never surpassed 20% of total loans. The median peak NPL among crises in countries within this income bracket slightly exceeds 11%. In contrast, the median peak NPL reaches 30% among crisis episodes in low- and middle-income economies. While cross-country differences in the definition of NPLs make it challenging to compare levels

[17] For most countries, the financial system assets data are taken from the World Bank's Financial Structure database and consist of domestic claims on the private sector by banks and non-bank financial institutions. In the case of European Union countries, for which cross-border claims can be sizeable, we instead use data from the European Central Bank (ECB) on the consolidated assets of financial institutions (excluding the Eurosystem and other national central banks), after netting out the aggregated balance sheet positions between financial institutions. Moreover, in the case of Iceland, where cross-border claims are also sizable, we use the assets of monetary and other financial institutions obtained from its national central bank.

[18] A handful of episodes appear with fiscal costs of more than 100% of financial system assets. This anomaly is the outcome of hyperinflation since we take financial system assets as of the year preceding the banking crisis and fiscal outlays as of the year when they are incurred.

[19] We approximate the increase in public debt by computing the difference between pre- and post-crisis debt projections. For crises starting in 2007 or later, we use as pre-crisis projected debt increase, between $T-1$ and $T+3$, reported in the World Economic Outlook (WEO) issued in the fall of the year before the crisis start date (T) while the post-crisis actual debt increase, again over $T-1$ and $T+3$, is based on data from the Fall 2017 WEO. The ratios to GDP are computed using the latest GDP series. For past episodes, we report the actual change in debt.

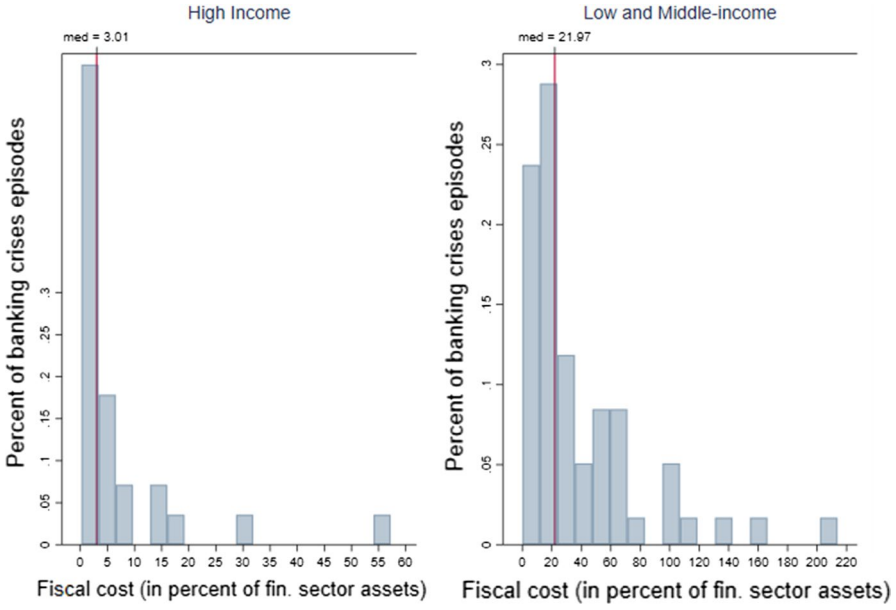


Fig. 9 Fiscal costs in percent of financial system assets. *Source*: Authors' calculations

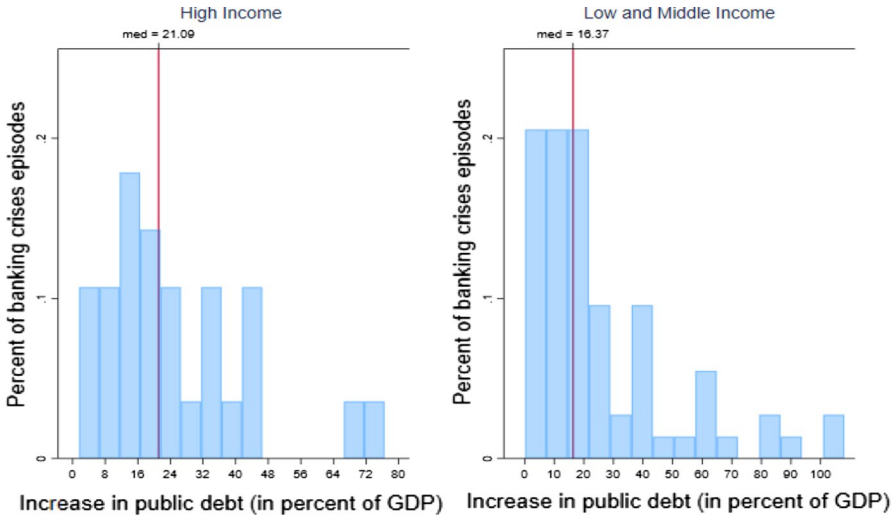


Fig. 10 Increases in public debt around banking crises. *Source*: Authors' calculations

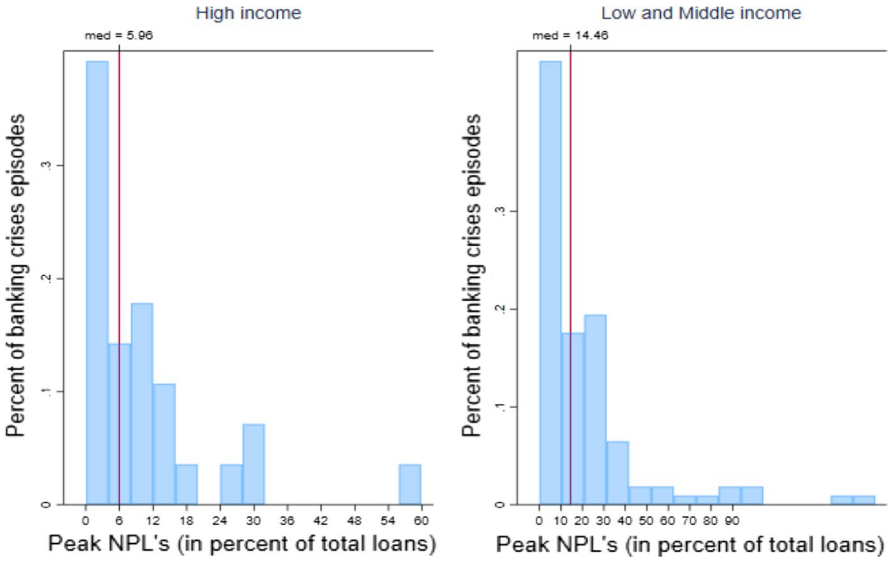


Fig. 11 Peak NPLs in banking crises episodes. *Source*: Authors' calculations

of NPLs across countries directly, the systematic and sizable gap between the two groups is unlikely to be entirely driven by differences in definitions.

6.3 Systemic Banking Crisis Duration

Following the same definition as in Laeven and Valencia (2013a, b), we also report end dates for each crisis episode, defined as the year before both real GDP growth and real credit growth are positive for at least two consecutive years.[20] The rationale for identifying the end of a banking crisis through this approach hinges on the notion that a deterioration in bank solvency can disrupt the supply of credit (e.g., Bernanke and Gertler 1987; Van Den Heuvel 2006; Valencia 2014; Abbassi et al. 2016), and these disruptions to the supply of credit can have real effects (e.g., Peek and Rosengren 1997; Ashcraft 2005; Kroszner et al. 2007; Dell'Ariccia et al. 2008; Alfaro et al. 2017). Therefore, we look for evidence of a reversal in the adverse effects of a banking crisis.

In all cases, we truncate the duration of a crisis at 5 years, starting from the first year of the crisis. The rationale for this truncation is twofold: First, our metric uses on credit stocks, not flows (new lending), and stocks are affected by write-offs and

[20] In computing end dates, we use bank credit to the private sector (in national currency) from IFS (line 22d). Bank credit series is deflated using CPI from WEO. GDP in constant prices (in national currency) also comes from the WEO. When credit data are not available, we determine the end date as the first year before GDP growth is positive for at least 2 years. When the definition is met in the first year of the crisis, then we set the crisis end year equal to the starting year.

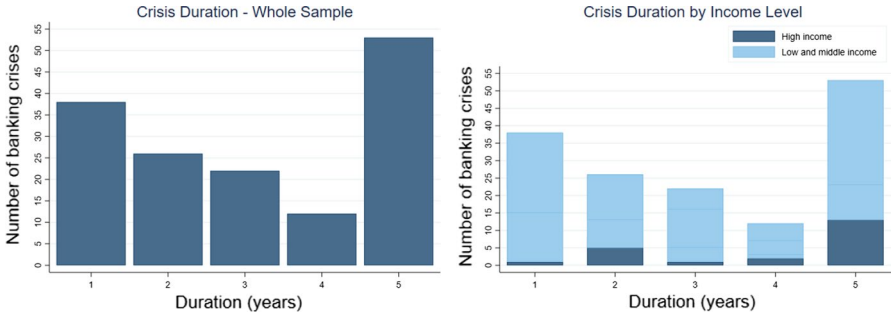


Fig. 12 Banking crises duration. *Source*: Authors' calculations

restructurings. Therefore, a potential measurement error in the recovery of new lending could bias upwards the duration of the crisis episode. Second, as the length of time increases, our simple metric may start picking up the impact of other shocks. Therefore, whenever we report a crisis lasting 5 years, it should be read as 5 years or more. Figure 12 shows the distribution of the estimated duration of the banking crisis episodes. The chart on the left shows that according to our definition of end dates, about two-thirds of crises ended in less than 5 years. But these aggregate statistics mask some significant differences among countries of different income levels. More than half of the episodes we recorded in high-income countries experienced crises that were quite persistent, lasting 5 years or more. In contrast, most crises in low- and middle-income countries lasted 4 years or less.

Crisis severity may be an essential factor explaining these differences in duration as many crises in high-income countries corresponded to the global financial crisis. At the same time, larger financial systems and institutions in these countries add a layer of complexity to the resolution of the crisis, which could help explain the long duration of crises. Finally, the ability of high-income countries to rely also on monetary and fiscal policy to mitigate the real effects of banking crises may also discourage more active bank restructuring, which could ultimately prolong the duration of a crisis (Claessens et al. 2011).

6.4 Output Losses

We report output losses associated with banking crises episodes, computed as deviations of actual GDP from its trend.[21] The output losses are reported in cumulative terms over $[T, T+3]$, with T denoting the starting year of the crisis, and expressed in percent of 1 year's trend GDP. It is important to note that these losses should not be

[21] We calculate output losses as the cumulative sum of the differences between actual and trend real GDP over the period $[T, T+3]$, expressed as a percentage of trend real GDP, with T the starting year of the crisis. We compute trend real GDP using an HP filter (with $\lambda = 100$) to the log of real GDP series over the period $[T-20, T-1]$ or the longest available series as long it includes at least 4 pre-crisis observations. We extrapolate real GDP using the trend growth rate over the same period. Real GDP data come from the fall 2017 WEO.

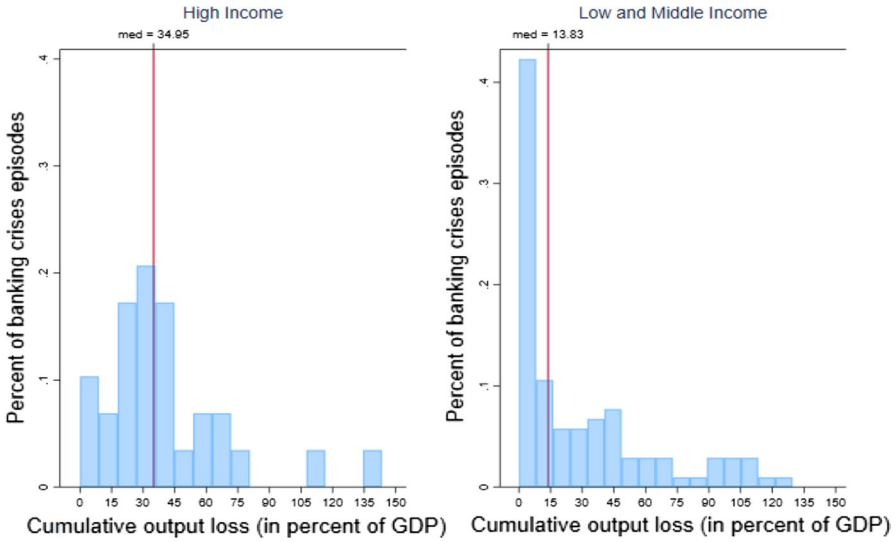


Fig. 13 Output losses around banking crises. *Source*: Authors' calculations

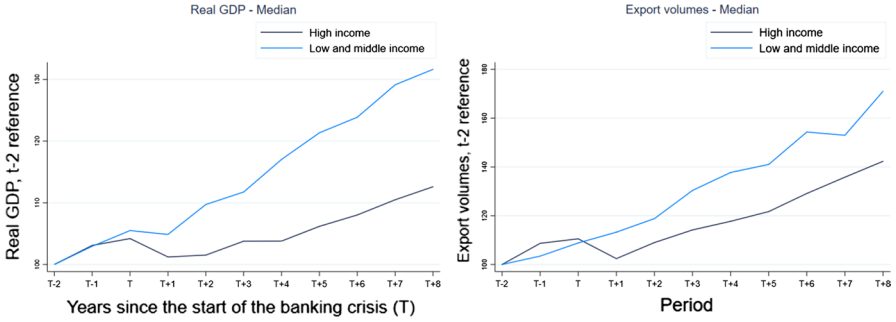


Fig. 14 Output and export volume paths around banking crises. *Source*: Authors' calculations

interpreted as solely stemming from banking crises, as they may include the impact of other shocks happening around crises. They show what happens to output in the aftermath of a banking crisis. While admittedly, the level of output losses is sensitive to how we calculate the trend, Laeven and Valencia (2013a, b) showed that the ranking of crises is robust to using alternative sample periods when computing the

trend. Therefore, the metric is primarily adequate to capture the relative size and heterogeneity of output losses across crises.

Figure 13 shows that the output losses in high-income countries tend to be much larger than those in low- and middle-income countries. As with the earlier result on crisis duration, the more considerable output losses in high-income countries could reflect larger and deeper financial systems, whose disruption has stronger effects on the real economy.

The evolution of output in the aftermath of the banking crises suggests that these episodes tend to be followed by a very persistent decline in the level of real output, as highlighted in Fig. 14. This stylized fact is consistent with new and old empirical work assessing the real consequences of banking crises which have highlighted the persistent real effects of these episodes (see, for instance, Cerra and Saxena 2008, 2017; Abiad et al. 2014; Jorda et al. 2015; Romer and Romer 2017, 2018).[22] However, this persistence in the decline of output in the aftermath of banking crises appears to be much more pronounced, on average, in high-income countries than in low- and middle-income countries, as suggested by Fig. 14.[23] Aslam et al. (forthcoming) look at the recovery in the aftermath of banking crises and find that output remains below trend for longer in advanced economies than in emerging economies, consistent with the simple stylized fact presented here.

In addition to differences in the size of financial systems between high- and low- and middle-income countries, one additional element that could explain the difference in output paths in the aftermath of crises is the evolution of export volumes. Consistent with the slowdown in trade volumes documented in IMF (2016), Fig. 14 shows a sluggish evolution in export volumes in the aftermath of banking crises in high-income countries, comprising mostly episodes during the global financial crisis. In contrast, the median path among crisis episodes in low- and middle-income countries does not show a slowdown. Countries in this income group, comprising events mostly before the global financial crisis, often benefited from a boost from external demand that resulted in a faster recovery in the aftermath of the banking crisis.

7 Conclusions

A decade since the start of the global financial crisis has allowed sufficient time for some crisis episodes to end. However, many countries still have important legacy issues in terms of permanent output losses, elevated levels of public debt, policy support yet to be fully unwound, and significant government ownership of financial assets. While these crisis episodes have enriched our experience, much remains to

[22] Cerra and Saxena (2017) argue that on average, all types of recessions, not just those associated with financial and political crises, lead to permanent output losses.

[23] This conclusion is different than the one in Mishkin (1996), written before the global financial crisis, which affected mostly advanced countries with intensity and global proportion not seen since the Great Depression.

be learned regarding how to predict banking crises, how to prevent them, and how best to resolve them. An essential prerequisite to make progress in such an ambitious endeavor is the availability of high-quality data on banking crises. Therefore, this paper provides a comprehensive database on systemic banking crises during the period 1970–2017, reflecting updates to outcomes from banking crises reported in our earlier releases (Laeven and Valencia 2008, 2010, 2013a) and new events that occurred since then.

We hope that these data will assist academics and policymakers in improving our understanding of the causes and consequences of banking crises, and how best to resolve them. While only a few countries have experienced a crisis in recent years, this period may be the lull before the storm.

Acknowledgements The authors thank Linda Tesar (the Editor), two anonymous referees, Sergei Antoshin, Ashok Bhatia, Raymond Chaudron, Luis Cortavarria-Checkley, Ingimundur Friðriksson, Vikram Haksar, Samba Mbaye, Aiko Mineshima, Herimandimby Razafindramanana, Mohamed Sidi Bouna, and Jón Þ. Sigurgeirsson for insightful comments and Eugenia Menaguale, Sandra Daudignon, and Carl-Wolfram Horn for outstanding research assistance. The views expressed in this paper are those of the authors and do not reflect the views of the ECB, the Eurosystem, the IMF, the IMF Executive Board, or IMF Management.

Appendix

See Tables 1, 2, and 3.

Table 1 Crisis dates

Country	Banking	Currency	Sovereign	Sovereign (restructuring)
Albania	1994	Jan-1997	1990	1992
Algeria	1990	Nov-1988, Apr-1994		
Angola		Mar-1991, Mar-1996, Sep-2015	1988	1992
Argentina	Mar-1980, Dec-1989, Jan-1995, Nov-01	Mar-1975, Apr-1981, May-1987, Jan-2002, Dec-2013	Dec-1989, Nov-2001, Jul-2014, 1982	1993, 2005, 2016
Armenia	1994			
Australia				
Austria	Sep-2008			
Azerbaijan	1995	Feb-2015		
Bangladesh	1987	Jan-1976		
Barbados				
Belarus	1995	Jan-1997, Feb-2009, Jan-2015		
Belgium	Sep-2008			
Belize			Feb-2007, Sep-2012, Mar-2017	2007, 2013, 2017
Benin	1988	Jan-1994		
Bhutan				
Bolivia	1986, Nov-1994	Jan-1973, 1981	1980	1992
Bosnia and Herzegovina	1992			
Botswana		Oct-1984		
Brazil	Feb-90, Dec-94	Apr-1976, Jan-1982, Jun-1987, Mar-1992, Jan-1999, Mar-2015	Feb-1983	1994
Brunei				
Bulgaria	Jan-1996	Apr-96	1990	1994
Burkina Faso	1990	Jan-1994		
Burundi	1994			
Cambodia		1971, Oct-1992		

Table 1 (continued)

Country	Banking	Currency	Sovereign	Sovereign (restructuring)
Cameroon	1987, 1995	Jan-1994	1989	1992
Canada				
Cape Verde	1993			
Central African Rep.	1976, 1995	Jan-1994		
Chad	1983, 1992	Jan-1994		
Chile	1976, Nov-1981	Jan-1972, Sep-1982	Nov-1983	1990
China, P.R.	1998			
Colombia	Jul-1982, Jun-1998	May-1985		
Comoros		Jan-1994		
Congo, Dem. Rep. of	1983, 1991, 1994	Mar-1976, Sep-1983, Jan-1989, Jan-1994, Jan-1999, Jan-1909, Dec-1916	1976	1989
Congo, Rep. of	1992	Jan-1994	1986	1992
Costa Rica	1987, 1994	Jan-1981, Feb-1991	1981	1990
Côte d'Ivoire	1988	Jan-1994	Apr-2010	1997, 2010
Croatia	Mar-1998			
Cyprus	Jun-2011		Jul-2013	2013
Czech Republic	Jun-1996			
Denmark	Sep-2008			
Djibouti	1991			
Dominica			2002	2004
Dominican Republic	Apr-2003	Jan-1985, Aug-1990, Feb-2003	1982, 2003	1994, 2005
Ecuador	1982, Aug-1998	May-1982, Jan-1999	1982, Sep-1999, Dec-2008	1995, 2000, 2009
Egypt	1980	Jan-1979, Jan-1990, Nov-2016	1984	1992
El Salvador	1989	Jan-1986		

Table 1 (continued)

Country	Banking	Currency	Sovereign	Sovereign (restructuring)
Equatorial Guinea	1983	1980, Jan-1994		
Eritrea	1993			
Estonia	Nov-1992	1992		
Ethiopia		Jan-1993		
Fiji		Jan-1998		
Finland	Sep-1991	Mar-1993		
France	Sep-2008			
Gabon		Jan-1994	1986, 2002	1994
Gambia, The		Jan-1985, Jan-2003	1986	1988
Georgia	1991	1992, Jan-1999		
Germany	Sep-2008			
Ghana	Jan-1982	Aug-1978, Oct-1983, Jan-1993, Jan-2000, Jan-2009, Feb-2014		
Greece	Sep-2008	Jan-1983	Dec-2012	2012
Grenada			Dec-2004	2005, 2015
Guatemala		Jun-1986		
Guinea	1985, 1993	1982, Jan-2005	1985	1992
Guinea-Bissau	1995, 2014	1980, Jan-1994		
Guyana	1993	Jan-1987	1982	1992
Haiti	1994	Jan-1992, Jan-2003		
Honduras		Mar-1990	1981	1992
China, P.R.: Hong Kong				
Hungary	1991, Sep-2008			
Iceland	Sep-2008	Jan-1975, Jan-1981, Jan-1989, Aug-2008		

Table 1 (continued)

Country	Banking	Currency	Sovereign	Sovereign (restructuring)
India	1993			
Indonesia	Nov-1997	Jan-1979, Jan-1998	1999	2002
Iran, I.R. of		1985, Mar-1993, 2000, Jul-2013	1992	1994
Ireland	Sep-2008			
Israel	1983	Jan-1975, Jan-1980, Jan-1985		
Italy	Sep-2008	Apr-1981		
Jamaica	Dec-1996	May-1978, Nov-1983, May-1991	Sep-1978, Feb-2010	2013
Japan	Nov-1997			
Jordan	1989	Jan-1989	1989	1993
Kazakhstan	Sep-2008	Apr-1999, Aug-2015		
Kenya	1985, 1992	Mar-1993		
Korea	Aug-1997	Jan-1998		
Kuwait	1982			
Kyrgyz Republic	1995	Jan-1997		
Lao People's Dem. Rep.		Apr-1972, May-1978, Jan-1986, Aug-1997		
Latvia	Apr-1995, Sep-2008	1992		
Lebanon	1990	Jan-1984, Aug-1990		
Lesotho		Jan-1985, Nov-2015		
Liberia	1991		1980	
Libya		Jan-2002		
Lithuania	Dec-1995	1992		
Luxembourg	Sep-2008			
Macedonia	1993			

Table 1 (continued)

Country	Banking	Currency	Sovereign	Sovereign (restructuring)
Madagascar	1988	May-1984, May-1994, Mar-2004	Nov-1981	1992
Malawi		Mar-1994, May-2012	1982	1988
Malaysia	Jul-1997	Jan-1998		
Maldives		Jan-1975		
Mali	1987	Jan-1994		
Mauritania	1984	Jan-1993		
Mauritius				
Mexico	1981, Dec-1994	Jan-1977, Feb-1982, Jan-1995	1982	1990
Moldova	Nov-2014	Jan-1999	Jun-2002	2002
Mongolia	Sep-2008	1990, Jan-1997		
Morocco	1980	May-1981	1983	1990
Mozambique	1987	Jan-1987, Aug-2015	1984	1991
Myanmar		May-1975, 1990, 1996, 2001, 2007, Apr-2012		
Namibia		Jul-1984, Nov-2015		
Nepal	1988	1984, Jan-1992		
Netherlands	Sep-2008			
New Caledonia		1981		
New Zealand		Jul-1984		
Nicaragua	1990, Aug-2000	Apr-1979, Feb-1985, Nov-1990	Dec-1980, Jul-2003, Jun-2008	1995
Niger	1983	Jan-1994	1983	1991
Nigeria	1991, Aug-2009	1983, Jan-1989, 1997, Jun-2016	Jul-1983	1992
Norway	Oct-1991			
Pakistan		May-1972	Jul-1999	

Table 1 (continued)

Country	Banking	Currency	Sovereign	Sovereign (restructuring)
Panama	1988		1983	1996
Papua New Guinea		Apr-1995		
Paraguay	May-1995	Jun-1984, Mar-1989, Jan-2002	1982	1992
Peru	1983	Jun-1976, Jan-1981, Jan-1988	1978	1996
Philippines	1983, Jul-1997	Oct-1983, Jan-1998	1983	1992
Poland	1992		1981	1994
Portugal	Sep-2008	Jan-1983		
Romania	1998	Jan-1996	Dec-1982	1987
Russia	Aug-1998, Sep-2008	Aug-1998, Oct-2014	Aug-1998	2000
Rwanda		Jan-1991		
St. Kitts and Nevis				2012
São Tomé and Principe	1992	Jul-1987, Jan-1992, Jan-1997		
Senegal	1988	Jan-1994	1981	1996
Serbia, Republic of		Dec-2000		
Seychelles		Jan-2008	Oct-2008	2009
Sierra Leone	1990	Jul-1983, Jan-1989, Jan-1998	1977	1995
Singapore				
Slovak Republic	1998			
Slovenia	1992, Sep-2008			
South Africa		Jul-1984, Nov-2015	1985	1993
South Sudan		Dec-2015		
Spain	1977, Sep-2008	Jan-1983		
Sri Lanka	1989	Jan-1978		
Sudan		Nov-1981, Jan-1988, 1993, 2012	1979	1985

Table 1 (continued)

Country	Banking	Currency	Sovereign	Sovereign (restructuring)
Suriname		1990, Jan-1995, Jan-2001, Mar-2016		
Swaziland	1995	Jan-1985, Nov-2015		
Sweden	Sep-1991, Sep-2008	Feb-1993		
Switzerland	Sep-2008			
Syrian Arab Republic		Jan-1988		
Tajikistan		Jun-1999, Oct-2015		
Tanzania	1987	Jan-1985, 1990	1984	1992
Thailand	1983, Jul-1997	Jan-1998		
Togo	1993	Jan-1994	1979	1997
Trinidad and Tobago		Jan-1986	Dec-1989	1989
Tunisia	1991			
Turkey	1982, Nov-2000	Mar-1978, Jan-1984, Feb-1991, Apr-1996, Mar-2001	1978	1982
Turkmenistan		2008		
Uganda	1994	1980, Jan-1988	1981	1993
Ukraine	Aug-1998, Sep-2008, Feb-2014	Sep-1998, Jan-2009, Mar-2014	Sep-1998, Oct-2015	1999, 2015
UK	Sep-2007			
USA	1988, Dec-2007			
Uruguay	1981, Jan-2002	Mar-1972, Jan-1983, Jan-1990, Jun-2002	Jul-1983, Sep-2002	1991, 2003
Uzbekistan		2000		
Venezuela	Jan-1994	Feb-1984, Mar-1989, May-1994, Feb-2002, 2010	1982, Nov-2017	1990
Vietnam	Nov-1997	Jul-1972, Jul-1981, Oct-1987	1985	1997
Yemen	1996	1985, Mar-1995		

Table 1 (continued)

Country	Banking	Currency	Sovereign	Sovereign (restructuring)
Yugoslavia, SFR			1983	1988
Zambia	1995	Jan-1983, May-1989, Jan-1996, Jan-2009, Aug-2015	1983	1994
Zimbabwe	1995	Jan-1983, Jul-1991, Jan-1998, Mar-2003		

Table 2 Banking crises resolution and outcomes. *Source*: WEO, IFS, IMF Staff reports, IMF Financial Soundness Indicators, Laeven and Valencia (2013a), and authors' calculation

Country	Crisis dates		Output loss[a]	Fiscal costs[b]			Liquidity provision		Peak NPLs[d]	Increase in public debt[e]
	Start	End	% of trend GDP	% of GDP	Net, % of GDP	% of financial sector assets	Peak[c]	Liquidity support[c]		
Albania	1994	1994	–	–	–	–	7.6	–	26.8	–
Algeria	1990	1994[g]	41.4	–	–	–	37.6	29.9	30.0	19.1
Argentina	1980	1982[f]	58.2	55.1	55.1	213.9	64.6	62.2	9.0	33.1
Argentina	1989	1991	12.6	6.0	6.0	21.6	151.6	135.7	27.0	−21.3
Argentina[h]	1995	1995	0.0	2.0	2.0	8.6	71.4	63.0	17.0	8.7
Argentina	2001	2003	71.0	9.6	9.6	28.1	22.9	22.6	20.1	81.9
Armenia[d]	1994	1994[f]	–	–	–	–	41.4	23.0	–	–
Austria	2008	2012[g]	19.2	5.2	1.6	1.6	10.0	6.4	4.1	19.8
Azerbaijan	1995	1995[f]	–	–	–	–	127.6	84.5	–	0.9
Bangladesh	1987	1987	0.0	–	–	–	26.0	2.8	20.0	3.5
Belarus	1995	1995	–	–	–	–	35.8	–	–	−16.5
Belgium	2008	2012[g]	15.7	6.2	0.5	1.6	13.7	9.7	4.2	22.2
Benin	1988	1992[g]	14.9	17.0	–	64.3	99.6	48.6	80.0	5.7
Bolivia	1986	1986	49.2	–	–	–	57.5	25.9	30.0	−107.3
Bolivia	1994	1994	0.0	6.0	2.7	15.2	31.9	12.9	6.2	−19.2
Bosnia and Herzegovina	1992	1996[g]	–	–	–	–	–	–	–	–
Brazil[h]	1990	1994[g]	62.3	0.0	0.0	0.0	11.3	10.7	–	−22.6
Brazil	1994	1998	0.0	13.2	10.2	28.6	20.1	17.6	16.0	−33.8
Bulgaria	1996	1997	59.5	14.0	13.9	21.4	17.3	9.9	75.0	−30.1
Burkina Faso	1990	1994	–	–	–	–	9.4	4.5	16.0	8.9
Burundi	1994	1998[g]	121.2	–	–	–	23.4	18.3	25.0	10.9
Cameroon	1987	1991[g]	105.5	–	–	–	59.1	40.9	65.0	18.0
Cameroon	1995	1997	8.1	–	–	–	12.3	6.2	30.0	−1.1

Table 2 (continued)

Country	Crisis dates		Output loss[a]	Fiscal costs[b]			Liquidity provision		Peak NPLs[d]	Increase in public debt[e]
	Start	End	% of trend GDP	% of GDP	Net, % of GDP	% of financial sector assets	Peak[c]	Liquidity support[c]		
Cape Verde	1993	1993	0.0	–	–	–	4.0	–	30.0	18.2
Central African Rep	1976	1976	0.0	–	–	–	90.8	10.5	–	−4.8
Central African Rep	1995	1996	9.0	–	–	–	24.8	20.9	40.0	−16.3
Chad	1983	1983	0.0	–	–	–	199.3	41.3	–	−7.2
Chad	1992	1996[g]	0.0	–	–	–	120.9	41.4	35.0	27.1
Chile	1976	1976	19.9	–	–	–	32.2	23.6	–	−69.5
Chile	1981	1985[g]	8.6	42.9	16.8	134.3	61.2	52.7	35.6	87.9
China, Mainland	1998	1998	19.4	18.0	–	19.5	62.0	7.2	20.0	11.2
Colombia	1982	1982	47.0	5.0	5.0	16.5	21.1	7.7	4.1	16.6
Colombia	1998	2000	43.4	6.3	2.5	15.9	5.1	4.3	14.0	15.4
Congo, Dem Rep	1983	1983	1.4	–	–	–	20.0	18.9	–	39.5
Congo, Dem Rep	1991	1994[g]	129.5	–	–	–	44.7	30.2	–	42.2
Congo, Dem Rep	1994	1998[g]	79.0	–	–	–	77.3	77.1	75.0	39.3
Congo, Rep	1992	1994	47.4	–	–	–	30.7	16.6	–	103.5
Costa Rica	1987	1991	0.0	–	–	–	20.2	6.1	–	−27.5
Costa Rica	1994	1995	0.0	–	–	–	15.2	6.3	32.0	4.8
Cote d'Ivoire	1988	1992[g]	45.0	25.0	25.0	63.6	76.9	22.5	50.0	13.6
Croatia	1998	1999	–	6.9	6.9	15.0	3.2	3.1	10.5	14.1
Czech Republic[h]	1996	2000[g]	–	6.8	5.8	9.6	12.7	4.2	18.0	1.8
Cyprus	2011	2015[g]	76.5	18.0	18.0	2.6	20.3	14.1	47.8	21.3
Denmark	2008	2009	35.0	5.9	2.4	3.1	17.7	9.7	5.95	32.8
Djibouti	1991	1995[g]	42.6	–	–	–	5.2	3.2	–	–
Dominican Rep	2003	2004	12.5	22.0	20.8	63.7	43.4	38.1	9.0	16.5
Ecuador	1982	1986[g]	98.2	–	–	–	146.7	100.0	–	24.4

Table 2 (continued)

Country	Crisis dates		Output loss[a]	Fiscal costs[b]			Liquidity provision		Peak NPLs[d]	Increase in public debt[e]
	Start	End	% of trend GDP	% of GDP	Net, % of GDP	% of financial sector assets	Peak[c]	Liquidity support[c]		
Ecuador	1998	2002	25.4	21.7	16.3	76.8	26.0	22.5	40.0	9.1
Egypt	1980	1980	0.9	–	–	–	66.7	22.7	–	−4.2
El Salvador	1989	1990	0.0	–	–	–	51.6	11.5	37.0	−29.6
Equatorial Guinea	1983	1983[f]	0.0	–	–	–	75.8	–	–	–
Eritrea	1993	1993[f]	–	–	–	–	–	–	–	–
Estonia	1992	1994	–	1.9	1.6	–	30.9	–	7.0	–
Finland	1991	1995	69.6	12.8	11.1	15.5	12.0	5.5	13.0	43.6
France[h]	2008	2009	23.3	1.3	1.1	0.3	9.6	8.2	4.5	15.9
Georgia	1991	1995[g]	–	–	–	–	–	–	33.0	–
Germany	2008	2009	12.3	2.7	0.7	0.9	12.9	4.0	3.7	16.2
Ghana	1982	1983	45.3	6.0	6.0	105.8	0.2	0.1	35.0	15.5
Greece	2008	2012[g]	64.9	28.7	17.1	17.1	61.7	59.8	37.1	43.9
Guinea	1985	1985[f]	0.0	3.0	–	–	–	–	–	–
Guinea	1993	1993	0.0	–	–	–	14.6	3.9	45.0	6.7
Guinea-Bissau	1995	1998	29.6	–	–	–	137.3	39.2	45.0	108.1
Guinea-Bissau	2014	ongoing	0.0	–	–	–	33.4	22.4	25.7	3.2
Guyana	1993	1993	0.0	–	–	–	1.8	1.7	–	−241.0
Haiti	1994	1998	37.5	–	–	–	4.8	–	–	−119.4
Hungary	1991	1995[g]	0.0	10.0	–	21.3	47.0	4.6	23.0	19.6
Hungary[h]	2008	2012[g]	37.3	2.9	0.1	4.1	2.3	2.2	17.3	3.8
Iceland	2008	2012[g]	34.5	37.6	3.3	14.3	33.8	28.1	61.2	67.9
India	1993	1993	0.0	–	–	–	4.3	3.6	20.0	−7.7
Indonesia	1997	2001[g]	69.0	56.8	52.2	105.4	23.1	17.2	32.5	67.6
Ireland	2008	2012[g]	107.7	37.6	26.8	4.5	18.1	15.4	25.7	76.5

Table 2 (continued)

Country	Crisis dates		Output loss[a]	Fiscal costs[b]			Liquidity provision		Peak NPLs[d]	Increase in public debt[e]
	Start	End	% of trend GDP	% of GDP	Net, % of GDP	% of financial sector assets	Peak[c]	Liquidity support[c]		
Israel	1983	1986	42.7	30.0	–	30.9	5.3	–	–	–
Italy	2008	2009	32.2	0.7	0.7	0.3	19.4	17.8	18.0	8.6
Jamaica	1996	1998	37.8	43.9	39.0	161.4	0.4	0.3	28.9	2.9
Japan	1997	2001[g]	45.0	8.6	8.5	3.2	2.4	1.6	35.0	41.7
Jordan	1989	1991	106.4	10.0	–	12.5	20.7	16.1	–	−61.0
Kazakhstan[h]	2008	2008	0.0	3.7	3.7	7.5	6.6	5.3	37.7	6.5
Kenya	1985	1985	23.7	–	–	–	2.0	1.9	–	11.0
Kenya	1992	1994	50.3	–	–	–	25.2	24.3	–	12.1
Korea	1997	1998	57.6	31.2	23.2	57.2	27.4	11.9	35.0	9.9
Kuwait	1982	1985	143.4	–	–	–	9.6	2.9	40.0	16.2
Kyrgyz Rep	1995	1999[g]	–	–	–	–	286.1	51.8	85.0	42.9
Latvia	1995	1996	–	3.0	3.0	10.1	9.2	5.5	20.0	0.4
Latvia	2008	2012[g]	93.9	8.1	3.9	11.0	3.6	3.4	15.9	27.6
Lebanon	1990	1993	102.2	–	–	–	4.4	2.8	–	–
Liberia	1991	1995[g]	–	–	–	–	85.2	84.2	–	–
Lithuania	1995	1996	–	3.1	2.9	18.8	27.5	18.9	32.2	10.8
Luxembourg	2008	2012[g]	43.3	7.2	5.0	0.2	6.0	1.1	1.7	12.7
Macedonia, FYR	1993	1995	0.0	32.0	–	–	22.3	–	70.0	–
Madagascar	1988	1988	0.0	–	–	–	20.2	19.4	25.0	−25.8
Malaysia	1997	1999	31.4	16.4	5.1	12.7	9.7	8.8	30.0	0.2
Mali	1987	1991[g]	0.0	–	–	–	50.5	14.8	75.0	−11.3
Mauritania	1984	1984	7.5	15.0	–	53.2	48.4	27.7	70.0	–
Mexico	1981	1985[g]	26.6	–	–	–	5.3	2.6	–	22.6
Mexico	1994	1996	13.7	19.3	18.0	54.9	16.8	15.8	18.9	16.4

Table 2 (continued)

Country	Crisis dates		Output loss[a]	Fiscal costs[b]			Liquidity provision		Peak NPLs[d]	Increase in public debt[e]
	Start	End	% of trend GDP	% of GDP	Net, % of GDP	% of financial sector assets	Peak[c]	Liquidity support[c]		
Moldova	2014	ongoing		11.7	11.7	26.1	24.7	24.0	16.4	19.5
Mongolia	2008	2009	0.0	5.1	5.1	15.3	34.5	33.2	20.0	−5.0
Morocco	1980	1984[g]	21.9	–	–	–	22.1	8.6	–	35.6
Mozambique	1987	1991[g]	0.0	–	–	–	4.2	4.2	–	60.9
Nepal	1988	1988	0.0	–	–	–	14.6	3.8	29.0	11.7
Netherlands	2008	2009	26.1	14.3	5.1	4.0	5.5	3.5	3.2	24.9
Nicaragua	1990	1993	11.4	–	–	–	195.1	156.5	50.0	−31.0
Nicaragua	2000	2001	0.0	13.6	12.6	45.7	21.8	20.9	12.7	14.9
Niger	1983	1985	97.2	–	–	–	45.6	14.1	50.0	25.9
Nigeria	1991	1995[g]	0.0	–	–	–	6.6	5.4	77.0	63.3
Nigeria	2009	2012	14.0	11.8	11.8	32.2	49.6	32.9	30.1	8.4
Norway	1991	1993	5.1	2.7	0.6	2.8	16.9	4.2	16.4	19.2
Panama	1988	1989	85.0	12.9	–	24.4	3.6	3.2	–	−2.6
Paraguay	1995	1995	15.3	12.9	10.0	54.9	27.3	23.8	8.1	−1.2
Peru	1983	1983[f]	55.2	–	–	–	16.8	9.7	–	14.3
Philippines	1983	1986	91.7	3.0	–	5.9	19.4	1.5	19.0	44.8
Philippines	1997	2001[g]	0.0	13.2	13.2	22.5	1.4	0.7	20.0	10.4
Poland	1992	1994	0.0	3.5	–	13.7	45.9	8.7	24.0	−21.6
Portugal	2008	2012[g]	35.0	11.1	7.6	4.4	25.7	24.7	12.9	38.5
Romania	1998	1999[f]	0.0	6.5	–	34.3	129.1	–	30.0	–
Russia	1998	1998[f]	–	6.0	6.0	0.3	23.7	21.1	40.0	−7.1
Russia[h]	2008	2009	0.0	2.3	2.3	6.4	24.2	23.3	9.6	6.1
São Tomé & Príncipe	1992	1992[f]	1.9	–	–	–	–	–	90.0	−706.3
Senegal	1988	1991	5.6	17.0	–	64.2	74.7	6.6	50.0	−14.2

Table 2 (continued)

Country	Crisis dates		Output loss[a]	Fiscal costs[b]			Liquidity provision		Peak NPLs[d]	Increase in public debt[e]
	Start	End	% of trend GDP	% of GDP	Net, % of GDP	% of financial sector assets	Peak[c]	Liquidity support[c]		
Sierra Leone	1990	1994[g]	34.5	–	–	–	0.0	0.0	45.0	62.9
Slovak Rep	1998	2002[g]	0.0	–	–	–	13.0	4.8	35.0	15.4
Slovenia	1992	1992	–	14.6	–	38.1	10.0	–	3.6	–
Slovenia	2008	2012[g]	39.1	9.9	8.4	8.0	14.2	14.0	18.0	20.9
Spain	1977	1981[g]	58.5	7.7	–	8.6	7.6	3.5	5.8	3.8
Spain	2008	2012[g]	38.8	5.4	4.8	2.0	33.5	31.3	9.4	31.8
Sri Lanka	1989	1991	19.6	5.0	5.0	22.0	8.0	2.0	35.0	−5.5
Swaziland	1995	1999[g]	45.7	–	–	–	3.6	3.2	–	2.5
Sweden	1991	1995	32.9	3.6	0.2	3.0	3.1	0.2	13.0	36.2
Sweden[h]	2008	2009	25.5	0.2	0.0	0.2	11.1	11.0	2.0	12.8
Switzerland[h]	2008	2009	0.0	1.1	−0.4	0.7	4.6	3.3	0.5	1.6
Tanzania	1987	1988	0.0	10.0	–	53.9	100.9	97.6	70.0	64.6
Thailand	1983	1983	24.8	0.7	–	1.3	8.5	2.0	–	15.7
Thailand	1997	2000	109.3	43.8	34.8	30.6	5.1	4.4	33.0	42.1
Togo	1993	1994	38.8	–	–	–	6.2	1.7	–	23.8
Tunisia	1991	1991	1.3	3.0	–	5.0	31.5	15.1	–	4.2
Turkey	1982	1984	35.0	2.5	–	11.7	71.7	29.3	–	12.3
Turkey	2000	2001	37.6	32.0	30.7	107.2	20.5	15.2	27.6	15.3
Uganda	1994	1994	0.0	–	–	–	7.6	3.9	–	−26.9
Ukraine	1998	1999	0.0	0.0	0.0	0.0	19.1	3.3	62.4	6.0
Ukraine	2008	2010	0.0	4.5	4.5	10.1	16.4	15.8	15.5	26.5
Ukraine	2014	ongoing	93.2	13.9	13.9	17.2	14.0	4.4	55.1	53.4
UK	2007	2011[g]	25.3	8.8	3.8	5.8	3.4	2.5	4.0	27.0
USA[h]	1988	1988	0.0	3.7	–	2.7	0.1	0.1	4.1	10.5

Table 2 (continued)

Country	Crisis dates		Output loss[a]	Fiscal costs[b]			Liquidity provision		Peak NPLs[d]	Increase in public debt[e]
	Start	End	% of trend GDP	% of GDP	Net, % of GDP	% of financial sector assets	Peak[c]	Liquidity support[c]		
USA	2007	2011	30.0	4.5	0.6	2.2	4.7	4.7	5.0	21.9
Uruguay	1981	1985[g]	38.1	31.2	–	101.2	24.6	18.5	–	83.3
Uruguay	2002	2005	66.1	20.0	10.8	35.7	12.8	7.9	36.3	37.0
Venezuela	1994	1998[g]	1.2	15.0	12.5	60.8	2.9	1.6	24.0	−23.0
Vietnam	1997	1997	0.0	10.0	10.0	54.3	64.9	24.8	35.0	−52.7
Yemen	1996	1996	16.4	–	–	–	0.8	0.7	–	−56.7
Zambia	1995	1998	31.1	1.4	–	14.7	27.9	24.9	–	36.2
Zimbabwe	1995	1999[g]	10.4	–	–	–	8.6	5.0	–	20.9

[a]In percent of GDP. We compute output losses as the cumulative sum of the differences between actual and trend real GDP over the period $[T, T+3]$, expressed in percent of trend real GDP, with T denoting the starting year of the crisis. The trend is computed by applying an HP filter ($\lambda = 100$) to the GDP series over $[T-20, T-1]$. We do not report output losses for crises in transition economies that took place during the period of transition to market economies

[b]Fiscal costs refer to outlays directly related to the restructuring of the financial sector

[c]We measure liquidity as the ratio of central bank claims on deposit money banks (line 12 in IFS) and liquidity support from the Treasury to total deposits and liabilities to non-residents. We compute total deposits as the sum of demand deposits (line 24), other deposits (line 25), and liabilities to non-residents (line 26)

[d]In percent of total loans

[e]In percent of GDP. For episodes starting in 2007 and later, we measure the increase in public debt as the change in debt projections, over $[T-1, T+3]$, relative to the pre-crisis debt projections, where T is the starting year of the crisis

[f]Credit data are missing. For these countries, end dates are based on GDP growth only

[g]We truncate the duration of crises at 5 years, starting with the first crisis year

[h]Borderline cases

Table 3 Banking crises policy responses. *Source*: Laeven and Valencia (2013a), and authors' calculations

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Argentina	Mar-80								Y	N		1983
Argentina	Dec-89	28-Dec-1989	120	1-Jan-1990	4				N	N		1990
Argentina	Jan-95								N	N	0.28	1995
Argentina	Nov-01	3-Dec-2001	12	31-Dec-2001	5				Y	N	9.58	2000
Austria	Sep-08					Dec-08		Unlimited coverage to depositors, banks, and non-bank bonds	Y	N	3.96	
Belgium	Sep-08					Oct-08		Deposit-like insurance instruments. Interbank loans and short-term debt. Specific guarantees for Dexia	Y	N	5.80	
Bolivia	Nov-94								N	Y	0.95	
Brazil	Feb-90	1-Mar-1990	29						N	N	0.00	1989
Brazil	Dec-94								N	N	4.98	

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Bulgaria	Jan-96								Y	Y	2.31	1996
Chile	Nov-81								N	Y	34.33	1983
Colombia	Jul-82								Y	N	1.87	
Colombia	Jun-98								Y	Y	4.26	
Cote d'Ivoire	1988								N	Y	Small	1985
Croatia	Mar-98								Y	Y	3.20	
Czech Republic	Jun-96					Jun-96	18	Depositors, except shareholders up to CZK4m (at the 18 banks under restructuring) and CZK0 1 m everywhere else	N	Y	0.98	
Cyprus	Jun-11	28-Mar-2013	14	18-Mar-2013	8				Y	Y	18.90	2013
Denmark	Sep-08					Feb-09		Deposits and unsecured claims of PCA banks	Y	N	2.80	

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Dominican Republic	Apr-03								N	Y	0.00	2004
Ecuador	Aug-98	12-Mar-1999	6	8-Mar-1999	5	Dec-98	37	All creditors except for subordinated debt and related parties	Y	Y	1.90	2000
Estonia	Nov-92								Y	Y	1.26	1993
Finland	Sep-91					Feb-93	70	All creditors except for shareholders	Y	Y	8.63	
France	Sep-08					Oct-08			N	N	1.00	
Germany	Sep-08					Oct-08		Unlimited coverage of household deposits	Y	Y	1.80	
Ghana	Jan-82								N	Y	6.00	
Greece	Sep-08	20-Jul-2015	49	29-Jun-2015	21	Oct-08			N	Y	25.40	2010, 2012
Hungary	Sep-08					Oct-08		Unlimited protection to depositors of small banks	N	N	0.23	2008

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Iceland	Sep-08					Oct-08		Unlimited coverage to domestic deposits	Y	N	24.30	2008
Indonesia	Nov-97					Jan-98	78	All liabilities of domestic banks (excluding shareholders' capital, subordinated debt, and related-parties deposits)	Y	Y	37.30	1998
Ireland	Sep-08					Sep-08		Unlimited coverage to most liabilities of 10 banks	Y	Y	37.13	2010
Italy	Sep-08					Nov-08		State guarantee for new bank liabilities	N	N	0.30	

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Jamaica	Dec-96					Feb-97	11	Depositors' funds in licensed deposit-taking institutions, pension funds managed by authorized institutions, and policyholders funds in insurance companies	Y	Y	13.90	
Japan	Nov-97					Nov-97	89	All deposits, including interbank deposits	Y	Y	6.61	
Kazakhstan	Sep-08								N	N	2.40	

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Korea	Aug-97					Nov-97	37	All liabilities (excluding shareholders' capital and subordinated debt) of banks, securities companies, insurance companies, merchant banks, mutual savings and finance companies, and credit unions. We also include overseas branches	Y	Y	19.31	1998
Latvia	Apr-95								N	N	0.00	1993

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Latvia	Sep-08	1-Dec-2008	6			Dec-08		Guarantees on Parex syndicated loans	Y	N	3.10	2009
Lithuania	Dec-95								Y	Y	1.70	
Luxembourg	Sep-08					Oct-08		Guarantees on Dexia's debt	Y	N	7.70	
Malaysia	Jul-97					Jan-98	91	Deposits only of commercial banks, finance companies, and merchant banks, including overseas branches of domestic banking institutions	Y	Y	16.40	
Mexico	Dec-94					Dec-93	109	All bank liabilities except subordinated debt	Y	Y	3.80	1995

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Moldova	Nov-14								N	N	0.00	
Mongolia	Sep-08							Unlimited coverage to all deposits.	Y	N	4.20	2009
Netherlands	Sep-08					Oct-08		Interbank loans of solvent banks	Y	N	6.30	
Nicaragua	Aug-00					Jan-01	14	All deposit liabilities except for related parties	N	Y	0.00	
Nigeria	Aug-09					Oct-09		Guarantees on all interbank transactions, foreign credit lines, and pension deposits	Y	Y	11.80	
Norway	Oct-91								Y	N	2.61	

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Paraguay	May-95					Jul-95	11	The announcement included the backing of all deposits, but no explicit breakdown was given	N	N	1.22	
Philippines	Jul-97								N	N	0.20	1998
Portugal	Sep-08					Oct-08		Debt issued by credit institutions	N	N	0.00	2011
Russia	Aug-98								Y	Y	0.00	1999
Russia	Sep-08					Nov-08		Interbank borrowing for qualifying banks	N	N	2.30	

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Slovenia	Sep-08					Dec-08		Unlimited protection for all deposits by individuals and small enterprises until end-2010, and capped at €100,000 after that	N	N	0.80	
Spain	Sep-08					Oct-08			N	Y	2.00	
Sri Lanka	Jun-05								N	N	3.60	
Sweden	Sep-91					Sep-92	46	All liabilities, except for shareholders	Y	Y	1.85	
Sweden	Sep-08					Oct-08		Medium-term debt of banks and mortgage institutions	N	N	0.20	
Switzerland	Sep-08								N	Y	1.10	

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Thailand	Jul-97					Aug-97	89	Deposits, contingent, and foreign liabilities (excluding shareholders' capital and subordinated debt) of banks and finance companies. Directors' and related persons' deposits and/or claims were not covered unless it could be proven that the transactions were at arms' length	Y	Y	18.80	1998

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Turkey	Nov-00					Dec-00	43	All liabilities (including contingent) of domestically incorporated banks except for owners' deposits, deposits linked to criminal activities, subordinated debt, and equity	Y	Y	24.50	2000
Ukraine	Aug-98								N	N	0.00	1995
Ukraine	Sep-08								Y	N	4.50	2009, 2010
Ukraine	Feb-14	1-Mar-2014	40						Y	N	7.20	2014

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
UK	Sep-07					Oct-08		Guarantee on short-to-medium-term debt; blanket guarantee on Northern Rock and Bradford and Bingley wholesale deposits	Y	Y	5.00	
USA	Dec-07					Oct-08		Money market funds (capped at US$50 billion); full guarantee on transaction deposits; newly issued senior unsecured debt	Y	Y	3.60	
Uruguay	Jan-02	5-Aug-2002	36	30-Apr-2002	5				Y	Y	6.18	1996
Venezuela	Jan-94								Y	N	5.59	1996

Table 3 (continued)

Country	Start[a]	Deposit freeze		Bank holiday		Guarantees on bank liabilities			Bank nationalization	Asset purchase	Bank recapitalization	IMF program
		Date	Duration (in months)	Date	Duration (in days)	Start	Duration (in months)	Coverage			In percent of GDP	
Vietnam	Nov-97								N	Y	5.00	

[a]Where feasible, the date include the month of the crisis

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