

## Resolving Systemic Financial Crises: Policies and Institutions

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**Abstract:** We analyze the role of institutions in resolving systemic banking crises for a broad sample of countries. Banking crises are fiscally costly, especially when policies like substantial liquidity support, explicit government guarantees on financial institutions' liabilities, and forbearance from prudential regulations are used. Higher fiscal outlays do not, however, accelerate the recovery from a crisis. Better institutions—less corruption, improved law and order, legal system, and bureaucracy—do. We find these results to be relatively robust to estimation techniques, including controlling for the effects of a poor institutional environment on the likelihood of financial crisis and the size of fiscal costs. Our results suggest that countries should use strict policies to resolve a crisis and use the crisis as an opportunity to implement medium-term structural reforms, which will also help avoid future systemic crises.

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## **Introduction**

A systemic crisis is a situation where an economy faces large-scale banking and corporate distress within a short period. It is typically characterized by large-scale defaults, sharp increases in nonperforming loans, and often a general economic slowdown. Importantly, large fiscal costs are often incurred to resolve the crisis. There have been many systemic financial crises: Caprio, Klingebiel, Laeven and Noguera (2004) identify 93 countries that experienced a systemic financial crisis between 1980 and 2002. Crises also appear to have become more common and deeper in the 1990s and early 2000s relative to earlier periods (Bordo et al. 2001). Country examples during the 1990s include the Nordic countries in the early 1990s, Mexico in 1994–95, East Asian countries after 1997, Argentina in 2001, and Turkey in 2001–02.

A systemic crisis involves complicated coordination problems. The fate of an individual corporation or financial institution and the best course of action for its owners and managers will depend on the actions of many others and the general economic outlook. Because of these coordination problems, as well as a lack of capital and the importance of the financial system to economic growth, governments often take the lead in systemic restructuring, especially of the banking system. In the process, governments often incur large fiscal costs, presumably with the objective to accelerate the recovery from the crisis. A complicating factor is that a crisis is typically aggravated by institutional weaknesses, many of which likely contributed to the emergence of the crisis in the first place. Bankruptcy and restructuring frameworks are often deficient. Disclosure and accounting rules for financial institutions and corporations may be weak. Equity and creditor rights may be poorly defined or weakly enforced. And the judiciary

system is often inefficient. The government itself may face credibility problems as it may be partly to blame for the crisis, and, in general, faces time consistency problems. And corruption may be large.

This short discussion already shows that resolving systemic crises and accelerating recovery is not easy. Opinions differ widely on what constitutes best or even good practice. Many approaches have been proposed and tried to resolve systemic crises more efficiently. Sometimes, contradictory policy recommendations have been made in the midst of a crisis, as happened notably in case of East Asia, but also elsewhere. Part of these differences may arise because objectives of the policy advice have varied. Some have focused on reducing the fiscal costs of financial crises, others on limiting the economic costs in terms of lost output and on accelerating restructuring, while again others have focused on achieving long-term, structural reforms. But trade-offs may arise between these objectives. Governments may, for example, through certain policies consciously incur large fiscal outlays in resolving a banking crisis, with the objective to accelerate recovery. Or structural reforms may only be politically feasible in the context of a severe crisis with large output losses and high fiscal costs.

Empirical research supporting particular policy views or clarifying the role of institutional factors remains limited. Most research has focused on individual cases, making it difficult to generalize. Cross-country analysis can help shed light on how fiscal outlays relate to the speed of recovery and how this may vary with the institutional environment of countries. This can help prioritize policies as policies that increase the fiscal outlays of resolving a crisis may or may not accelerate the economic recovery depending on the institutional environment of the country. So far, there has been limited

cross-country analysis on how fiscal outlays and recovery relate. The main paper to date is Honohan and Klingebiel (2003). They find that accommodative policy measures, such as substantial liquidity support, explicit government guarantee on financial institutions' liabilities and forbearance from prudential regulations, tend to be fiscally costly and that these particular policies do not accelerate the speed of recovery. However, the authors focus less on the institutional frameworks within which these policies take place. It might well be that the effectiveness of fiscal outlays depends on the institutional environment, or even that the importance of the institutional environment dominates the effectiveness of any fiscal outlays.

We are interested in examining what combination of fiscal outlays, policy choices and institutional frameworks have proven to be the most effective in terms of resolving a systemic crisis. Specifically, we investigate how fiscal outlays associated with resolving a systemic crisis relate to economic output losses and how this relationship depends on a country's policy choices and institutional characteristics. We try to answer these questions using a country-level database on fiscal outlays and output losses for 29 countries with systemic banking crises.

We confirm that the size of fiscal cost is related to the extent to which countries adopt accommodative policies, in particular explicit government guarantees on financial institutions' liabilities and forbearance from prudential regulations. When examining whether fiscal outlays produce faster recovery, we find that output losses are reduced by fiscal outlays and that none of the specific policy measures we study positively affects this relationship. Rather the opposite, we find that some of the policy measures in fact appear to worsen the effects of fiscal outlays on economic recovery. On the other hand,

we find that better institutional development—general quality of institutions, less corruption, and a more efficient judicial system—is uniformly positively associated with faster recovery. These measures of institutional development are also important determinants of the fiscal outlays. These results suggest that countries should adopt strict policies to resolve a crisis and that they furthermore should use the crisis as an opportunity to implement medium-term structural reforms, which will also help avoid future systemic crises. Our empirical analysis provides a starting point to disentangle what elements of the institutional framework are most important to accelerate recovering from a crisis. Calculating such “returns” from institutional improvements may help guide policy makers in setting priorities for reform.

The paper itself is structured as follows. Section 1 briefly reviews the related literature, describes some of the main debates regarding systemic crisis resolution, and develops the main hypotheses. The section also reviews the key policy measures for resolving a financial crisis that are associated with fiscal outlays. Section 2 provides a description of the data and the empirical methodology used. Section 3 provides the results of the regressions that explain the policy determinants of fiscal outlays and explain the speed of recovery, relative to the fiscal outlays. Section 4 concludes.

## **1. Literature Review and Key Policy Measures**

We start with a definition of a systemic crisis. Under our definition, in a systemic crisis, a country’s corporate and financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time. As a result, non-performing loans increase sharply and all or most of the aggregate

banking system capital is exhausted. This situation may be accompanied by depressed asset prices (such as equity and real estate prices) on the heels of run-ups before the crisis, sharp increases in real interest rates, and a slowdown or reversal in capital flows. In countries with longer-term structural problems—such as early on in many transition economies—a systemic crisis may not be accompanied by such changes in asset prices and capital flows, partly because run-ups in prices and capital flows may not have occurred.<sup>1</sup>

In reviewing the literature on systemic crises, especially for emerging markets, it is useful to differentiate between three phases of systemic restructuring (see also Chapter 2). During the first phase, which can be called the containment phase, the financial crisis is still unfolding. During this phase, governments tend to implement policies aimed at restoring public confidence to minimize the repercussions on the real sector of the loss of confidence by depositors and other investors in the financial system. The second phase involves the actual financial, and to a lesser extent operational, restructuring of financial institutions and corporations. The third phase involves structural reforms, including changes in laws and regulations, and other institutional reforms, the privatization of any nationalized financial institutions and corporations, and so on. In this chapter we discuss mainly the containment phase, and to a certain extent the restructuring phase. We do not include the third phase in our analysis and refer the reader to the more general literature on financial sector development (e.g., World Bank 2002, and Levine 2004).

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<sup>1</sup> Note that this definition of a systemic crisis excludes situations of systemic stress or heightened risks, such as the 1987 US stock markets crash, the uncertainty surrounding the Y2K turnover, or the events of September 11, 2001 which paralyzed payments and clearing systems. During these periods, central banks in many countries were involved in large-scale liquidity support as the banking systems were under (expected) stress, but the stress situations were short-lived and largely limited to the financial sectors.

During the late 1980s and early 1990s, most research on systemic crisis resolution focused on single crises, making it difficult to generalize. Sheng (1996) was the first attempt to distill lessons from several banking crises. He stated that a comprehensive and credible plan could avoid a small crisis from becoming a systemic crisis, minimize adverse effects if a crisis nevertheless occurred, and limit overall losses. Caprio and Klingebiel (1996) expanded on those lessons studying 26 crises and Dziobek and Pazarbasioglu (1998) analyzed the experiences of 24 countries that faced crises in the 1980s and early 1990s. Also studying a cross-section of crises, Lindgren, Garcia, and Saal (1997) analyzed in particular the linkages between macroeconomic policy and bank soundness, reviewing the causes and consequences of banking sector problems and discussing how the banking system can be strengthened, nationally and internationally.

The main lesson from these efforts is that managing a financial crisis is much different in emerging markets than in industrial countries because emerging markets have weaker institutions, crises are often larger, and other initial circumstances differ. As a result, best practices from industrial countries do not easily transfer to developing countries. Another key lesson is that there appear to be tradeoffs between various policies, both in terms of individual objectives as well as between objectives (such as containing fiscal costs, speeding recovery, and preventing a recurrence of a crisis).

Cross-country research efforts focusing on the speed and shape of general economic recovery from a financial crisis is more plentiful, but most often does not distinguish or analyze specific (financial sector) policies, beyond the provision of international liquidity support or the presence of a (structural) adjustment program. It also often does not focus specifically on banking crises, but also includes currency and

other crises.<sup>2</sup> Two recent papers, Eichengreen and Rose (2003) and Lee and Park (2003), find a V-shaped recovery to be the norm in currency crises and find no discernable impact of crises on longer-term growth. Others do find, however, a more protracted recovery and some long-term costs in terms of output growth, particularly for crises in emerging markets and for the more recent crises.<sup>3</sup> In terms of adjustment programs, Lee and Park (2003) find that an IMF program is associated with much sharper V-shaped recovery from a financial crisis, but not with better post-crisis recovery, suggesting that liquidity issues are paramount in crises, whereas structural reforms, as presumably encouraged by the IMF, mattered less. Analyzing the impact of IMF and World Bank programs in both crisis and non-crisis situations, Easterly (2003) finds no effects of the presence of a structural adjustment program on the average rate of growth of countries. Hutchinson (2003) even finds that, in general, participation in IMF programs is associated with a reduction in GDP growth, which may, however, reflect reverse causality. He finds specifically that participation in IMF programs associated with balance-of-payments crises does not mitigate output losses, concluding that “the cure of an IMF program may be worse than the disease.”

From these analyses, one could conclude that crises are typically liquidity crises and that policy (choices), as reflected in the presence of an IMF or World Bank program, matter little in crisis resolution or may even make matters worse. One caveat is that these analyses did not investigate banking crises specifically, and many currency crises are not also banking crises. For banking crises only, the literature on the speed of recovery is

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<sup>2</sup> Most banking crises are twin crises, i.e., also currency crises, but most currency crises are not also banking crises.

<sup>3</sup> For a review of the evidence on the causes and effects of currency crises see Goldstein, Kaminsky, and Reinhart (2000). They also summarize the findings of eight other studies (in their Table 7.4).

more limited. Goldstein, Kaminsky and Reinhart (2000) document the more protracted nature of the recovery from a banking crisis compared to a currency crisis. For their sample of 76 currency crises and 26 banking crises, output takes on average almost twice as long to recover from a banking crisis than from a currency crisis (18 versus 10 months). Imports recover only after 29 months for a banking crisis compared to after 18 months for a currency crisis. Banking crises appear thus more deleterious than currency crises, and do not seem to fit the V-shaped recovery pattern. Rojas-Suarez and Weisbrod (1996) examine the resolution of several banking crises in Latin America. They highlight the sluggishness of the banking resolution process in many episodes. Still these studies, as most others on currency and other financial crises, do not study the effects of specific policy measures, and as such do not shed light on the question which policy measures are most successful in accelerating economic recovery in the aftermath of a crisis, and on the importance of the quality of the institutional environment.

In terms of cross-country studies investigating specific financial sector restructuring policies, the main effort to date has been Honohan and Klingebiel (2003). They show that much of the variation in the fiscal cost of 40 crises in industrial and developing economies in 1980–97 can be explained by government approaches to resolving crises. They find that governments that provided open-ended liquidity support and blanket deposit guarantees and engaged in repeated, incomplete recapitalizations tended to incur much higher costs in resolving financial crises.<sup>4</sup> They also find no obvious trade-off between fiscal costs and subsequent economic growth (or overall output losses). Countries that used policies such as open-ended liquidity support, blanket

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<sup>4</sup> This view is challenged by another study, Hoggarth, Reis, and Saporta (2002), which do not find a statistically significant relationship between fiscal costs and lender of last resort use when controlling for a number of other factors, including whether there was also a currency crisis at the same time.

guarantees, and forbearance did not recover faster. Rather, liquidity support appeared to make recovery from a crisis longer and output losses larger—a finding confirmed by Bordo et al. (2001). Their findings suggest that the two most important policies during the containment phase are to limit liquidity support and not to extend blanket guarantees.

There are also cross-country studies investigating specific systemic bank restructuring policies that do not involve fiscal outlays. One study, Baer and Klingebiel (1995), analyzes the exceptions to the model of governments guaranteeing all liabilities in an effort to restore confidence. They show that in some crises—notably the United States (1933), Japan (1946), Argentina (1980–82), and Estonia (1992)—governments imposed losses on depositors with little or no adverse macroeconomic consequences or flight to cash or foreign currency. Economic recovery was relatively rapid and financial intermediation, including household deposits, was soon restored. Thus allocating losses to creditors or depositors will not necessarily lead to runs on banks or end in contraction of aggregate money, credit, and output. Baer and Klingebiel also suggest that intermittent regulatory intervention and forbearance make depositors more nervous and undermine regulatory credibility—especially if regulators had previously argued that the institutions involved were solvent. Both findings suggest that more accommodative policies and higher fiscal outlays do not necessarily lead to faster recovery.

Another effort to distinguish the impact of policy on recovery, but using individual firm level data, is Claessens, Klingebiel, and Laeven (2003). They study 687 corporations from eight crisis countries. When analyzing the impact of policies on firms, they find that a package of specific resolution measures can help accelerate recovery from a crisis. These policies, however, did not necessarily lead to more sustainable, longer-run debt

situations, suggesting that they induce moral hazard on the part of financial institutions and corporations. Furthermore, they studied a small cross-section of countries, raising the question as to whether these results can be generalized. Klingebiel, Kroszner, and Laeven (2002) investigate how financial crises affect the growth of sectors that depend on external sources of finance to various degrees. They use industry level data on real sectoral growth in value added and external financial dependence from 19 countries over 30 years and find that sectors highly dependent on external finance tend to experience a greater contraction of value added during a crisis in deeper financial systems than in countries with shallower financial systems. Finally, the International Monetary Fund (2003) has recently developed lessons from financial crises, although not in an empirical manner.

The studies on the containment and restructuring phase reviewed have typically analyzed a limited number of specific policies. In particular, three main policies have received much attention in the studies and debates: substantial liquidity support, explicit government guarantees of deposits, and forbearance from prudential regulation. These three policies are in many ways indicative of whether a more accommodative or strict “model” to crisis resolution is being followed. Countries applying substantial liquidity support,<sup>5</sup> explicit government guarantees of deposits<sup>6</sup> and large-scale forbearance from prudential regulations can be said to have an accommodative approach to crisis resolution, whereas those countries with limited liquidity support, no or limited guarantees and no forbearance from prudential regulations have a strict approach.

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<sup>5</sup> Substantial liquidity support is defined as a situation in which the government provides level of liquidity support that exceed aggregate banking sector capital and/or also provides support to institutions that are clearly known to be insolvent.

<sup>6</sup> A government is considered to be providing an explicit full guarantee to depositors if it explicitly protects all depositors and creditors.

Another advantage of focusing on these policies is that they are easily identifiable for empirical analyses.

These three policies are nevertheless not the only ones countries can adopt. Furthermore, except for explicit government guarantees of deposits,<sup>7</sup> these policies can still vary as to their intensity: countries can provide more or less liquidity support or practice more or less forbearance. Another measure of the degree to which the government has employed an accommodative or strict approach to crisis resolution can be the total fiscal costs the government has incurred. Countries providing more liquidity support, explicit full guarantees, and forbearance from prudential regulation tend to incur greater fiscal costs, with the costs increasing in the degree of accommodative policy. In contrast, countries that have more strict policies, by for example imposing some of the costs of the crisis on depositors (as analyzed by Baer and Klingebiel, 1995), will tend to incur smaller fiscal costs.

Countries not only vary in their adoption of policies aimed at containing and resolving a systemic crisis, but also in the quality of their institutional framework and in their general level of development. The institutional framework most relevant to systemic bank restructuring includes the laws, regulations, and institutions under which banks and corporations, including their management and owners, operate. The “optimal” framework for crisis resolution is easy to describe: A country’s insolvency system should enable financial institutions to enforce their claims on corporations, allow for speedy financial restructuring of viable corporations, and provide for the efficient liquidation of enterprises that have no prospects of economic value-added and cannot be rehabilitated.

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<sup>7</sup> Even here there can be differences. Ex-ante in the exact coverage of the guarantee and ex-post in the degree to which the government effectively honors the guarantee.

A proper prudential framework for banks includes accounting, classification, and provisioning rules that force a realistically marking of assets to market. Finally, regulations and laws should ensure that undercapitalized financial institutions are properly disciplined and closed if necessary. Institutions involved in these areas should be properly governed, accountable, and staffed with well-trained people facing the right incentives and having no conflicts of interest.

But, this optimal framework is most often not what countries with a systemic crisis face, especially not developing countries. Here, the country will often be experiencing a systemic crisis exactly because of its institutional deficiencies. Insolvency procedures for corporations and financial institutions may be poorly designed and/or the judicial system poorly equipped to handle large-scale financial distress. The transparency of decision-making processes may be limited and corruption prevalent. Ownership links between banks and corporations may be extensive, making restructuring more complex, even to the point that the debtor and creditor are the same party. Political economy factors more generally will typically complicate the resolution.<sup>8</sup>

These institutional deficiencies will affect the efficacy of the policy measures in terms of accelerating recovery, can lower the benefits of fiscal outlays, and can increase the overall fiscal costs. How this may happen can be obvious in some cases. It will, for example, not be productive to let the supervisory agency also be the agency that takes the lead in the restructuring of financial institutions when the agency is largely to blame for the crisis, because it did not enforce existing regulations. In those situations, policies such as forbearance may be less productive and can be expected to raise fiscal costs,

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<sup>8</sup> There are some that argue that the various policies chosen are purely the outcome of political economy circumstances that also triggered the crisis, and the whole loss-allocation is therefore a foregone conclusion. See, for example, Dooley and Verma (2003).

because financial institutions have little incentives to use the forbearance to recapitalize on a flow basis, i.e., with retained earnings. They may instead “gamble for resurrection” because the supervisory authority does not have the credibility that it will enforce the regulation in the future more strictly. By the same token, one cannot expect that ex-ante recapitalizations of banks (financed by the government) will result in corporate restructuring in countries where the bankruptcy system is not functioning and/or many ownership links exist between banks and corporations and the supervisory authority has little credibility in enforcing prudential regulations. Notwithstanding this, in other, intermediate circumstances where the institutional framework is not optimal but also not poor, the efficacy of fiscal outlays and the effects of various resolution policies on economic recovery are unclear.

How resolution policies can best be adjusted to weaknesses in the institutional environment is not immediately obvious. If institutions and institutional frameworks are weak, one could argue that governments should be less involved and incur lower fiscal outlays, but this may carry the risk of a further loss of confidence and result in an even slower recovery. On the other hand, one could argue that the government should be more involved (and incur higher fiscal outlays) in countries where institutions are weak as the private sector is unlikely to be able to resolve the crisis on its own given the poor institutional framework. In the end, the importance of the institutional framework for the efficacy of resolution policies and its impact on fiscal outlays and economic recovery in the aftermath of a crisis is an empirical question. Some accommodative policies for crisis resolution while fiscally expensive may accelerate economic recovery when institutions

are weak while others may delay economic recovery. So far, however, no empirical analysis has attempted to shed light on these questions.

## **2. Data and Empirical Methodology**

We are interested in examining whether the quality of the institutional framework has an impact on the efficacy of policies for financial crisis resolution. Specifically, we want to explain whether a country's (weak) institutional framework can render accommodative policies of crisis resolution ineffective meaning that the adoption of these policies will eventually result in higher fiscal outlays and higher economic output losses compared to situations where a country is equipped with a better institutional framework. We try answering these questions by using a country-level database. In this section, we first describe the data (for a detailed description of the variables and sources see Appendix Table 1) and then the methodologies we apply.

For data on fiscal outlays, we use Honohan and Klingebiel (2003), and update the data for recent crises using Kane and Klingebiel (2002), Caprio and Klingebiel (2003), and IMF (2003). Data are collected for 36 banking crisis episodes from 1977 to the present. The fiscal outlay figure includes both fiscal and quasi-fiscal outlays for financial system restructuring, including the recapitalization costs for banks, bailout costs related to the government covering obligations due to depositors and creditors, and debt relief schemes for bank borrowers. We scale the fiscal outlay estimates by gross domestic product (GDP). The variable, FISCAL OUTLAY, thus represents the fiscal outlay estimate of financial distress as a percentage of GDP. We use this as a measure of the

degree of accommodative stand of the government during the containment and initial restructuring process of a crisis.

We also collect data on a number of accommodative policies. Data on these policy responses come from Honohan and Klingebiel (2003), and are updated for recent crises by Kane and Klingebiel (2002), Caprio and Klingebiel (2003), and IMF (2003). As noted, we focus on three policies: substantial LIQUIDITY SUPPORT, EXPLICIT GUARANTEE on deposits, and regulatory FORBEARANCE. We use a dummy variable for each of the three policies. Data on policy responses are collected for 35 banking crisis episodes from 1977 to the present.<sup>9</sup>

In addition to explicit guarantees, deposits can also have an implicit government guarantee on deposits. For example, deposits in government-owned financial institutions are often (assumed to be) implicitly guaranteed by the government. Like explicit guarantees, implicit guarantees may affect the fiscal outlays during a crisis, and we will therefore want to control for the existence of implicit guarantees in our empirical analysis. We consider an implicit guarantee to be in place if the banking system is largely state-owned (75 percent or more) and the government has not issued an explicit guarantee. We refer to this dummy variable as IMPLICIT GUARANTEE.

Many financial crises were preceded by asset bubbles and credit booms. These may also affect the severity of the crises and the fiscal outlays, because when the boom is larger, the bust may also be larger and the crisis may be more costly to resolve. Since we do not have data on asset prices for most of the pre-crisis periods in our sample, we can only use (excessive) credit growth as a control measure for the size of the pre-crisis boom. We measure credit growth as the difference between real growth in bank credit to

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<sup>9</sup> We do not have data on policy responses for Jordan.

the private sector and real GDP growth during the three years prior to the start of the crisis. We call this variable CREDIT GROWTH.

For the aggregate economic recovery, we construct proxies for economic output losses suffered due to a crisis. We use two approaches here. One way is comparing, in real terms, the pre-crisis GDP level of a certain country with the GDP level during the following years until the pre-crisis level is reached. This approach considers pre-crisis GDP growth rates to a country's trend or potential growth rate. The pre-crisis, trend GDP growth is calculated as the average of GDP growth rates from year  $t-3$  to  $t-1$ , where year  $t$  is the start of the crisis. Then, each GDP growth rate from year  $t$  onwards is compared to the trend until the trend growth is reached. The output loss is defined as the sum of the difference between the actual and the trend growth rate over all the years until trend growth is reached again. This approach follows the methodology used in IMF's World Economic Outlook (1998), although we recalculate and update the data to include some recent crises. We call this variable OUTPUT LOSS (IMF).<sup>10</sup>

The second version of the output loss variable results from using the Barro (1991) growth model to estimate a country's GDP potential growth rates. We refer to this variable as OUTPUT LOSS (BARRO). Instead of using pre-crisis data to estimate the trend growth rate, we obtain predicted values of per capita GDP growth from equation (2) in Barro (1991, p. 410). The exact equation is: Average GDP per capita growth from 1960 to 1980 =  $0.0302 - 0.0111 * \text{GDP per capita in 1960} + 0.00051 * (\text{GDP per capita in 1960})^2 + 0.0323 * \text{Secondary school enrollment rate} + 0.0270 * \text{Primary school enrollment rate} - 0.122 * \text{Government consumption/GDP} - 0.0200 * \text{Number of}$

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<sup>10</sup> We also counted the number of years a country needs to get to the same GDP level as prior to the crisis. We ran the same regression for this variable and found similar results as for the two output loss measures.

revolutions - 0.0309 \* Number of assassinations - 0.0148 \* Deviation from the PPP in 1960. For simplicity, the last three regressors are considered to be zero. We collect data for the other variables using the Barro-Lee and Summers-Heston databases. We use GDP per capita and the enrollment rates for primary and secondary school for three years before the start of the crisis. For government consumption scaled by GDP, we take the average ratio for the period between eight years and three years before the start of the crisis. The quadratic form in the model of GDP per capita implies a positive relation between GDP per capita level and growth for values of GDP per capita above \$10,800.<sup>11</sup> We therefore restrict the realizations of the GDP per capita level variable to be no larger than \$10,800. For each country, we insert the realizations of the variables at three years before the start of the crisis into the Barro equation and adjust for population growth rates to obtain the predicted GDP growth rates. Finally, we compare this predicted rate with the actual growth rates during the crisis and, following the IMF methodology, summarize the differential growth rates into an output loss variable.<sup>12</sup>

For a country's institutional and legal environment, we use three indicators. QUALITY OF INSTITUTIONS is a broad measure of institutional quality developed by

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<sup>11</sup> The quadratic form can be viewed as an approximation to a functional form that asymptotically approaches a zero relation between growth and level of per capita GDP, with the relation coming close to zero when real GDP is above \$ 10,800 (Barro 1991). For simplicity, we cut off the GDP per capita data at \$10,800, thus forcing a flat relationship for higher actual GDP per capita.

<sup>12</sup> There are also a number of other measures that can be used to estimate the output loss. These differ in terms of the assumptions made about trend growth and the timing of the pre-crisis and post-crisis period. Generally, we got similar results for the fiscal outlay, policy, and institutional variables. Still, it is worthy to note there are many other factors determining the potential GDP level of a certain country at a certain time. Furthermore, since it is not possible to isolate the effect of the banking crisis on GDP from other shocks, none of these output loss measures correctly captures the effect of the banking crisis on GDP and the full economic costs of a banking crisis. This caveat is the more important as there can be large differences between the measures. In his discussion of the analysis of Hoggarth, Reis and Saporta (2002), for example, Honohan (2002) shows that their cumulative loss in output has a correlation of only 33% with the IMF-loss of growth measure. Hoggarth et al. also show that using a lost cumulative output—instead of the lost cumulative growth measure, output losses during crises in developed countries are as high, or higher, on average than those in emerging economies, a conclusion which contrasts with other research.

Kaufmann, Kraay, and Zoido-Lobaton (KKZ, 1999) and captures the quality of institutions in the country. CORRUPTION is a measure of the level of corruption in the government from La Porta et al. (1998) and JUDICIAL EFFICIENCY is an index of the efficiency of the judicial system, also from La Porta et al. (1998).

Our sample of countries includes those countries that experienced a systemic crisis during the last 30 years, as reported by Caprio and Klingebiel (1999), and where we also have data on FISCAL OUTLAYS and institutional characteristics (QUALITY OF INSTITUTIONS, CORRUPTION, AND JUDICIAL EFFICIENCY). Some countries experienced multiple systemic crises during our sample period (for example, Argentina) and in these cases each systemic crisis is included in our sample. Since our sample of systemic crisis cases would be biased if certain country characteristics that can explain why some countries are more prone to systemic crises than others also affect the speed of recovery from a financial crisis, we also include a control group of (a) countries that did not experience a systemic crisis during the sample period, but that did experience a non-systemic crisis (where we use the classification in Caprio and Klingebiel (1999) to identify whether the crisis is systemic or non-systemic), and (b) countries that did not experience a crisis at all during the sample period. Our total sample of 40 countries consists of 29 countries with a total of 32 systemic crises, five countries with a non-systemic crisis, and six countries with no crisis. Naturally, for the non-crisis countries we do not have data on fiscal outlays, accommodative policies, and output losses. As data on some variables are also not available for some crisis countries, the sample size varies on the particular regressions used. See Appendix Table 1 for the raw data by (non) crisis

episode, and Appendix Table 2 for a list of crises covered and detailed information on each crisis.

### **3. Estimation results**

We are interested in measuring the effects of accommodative policies and a country's institutional environment on fiscal outlays for crisis resolution and the speed of economic recovery in the aftermath of a banking crisis. We start our empirical analysis by investigating to what extent fiscal outlays vary with the quality of the institutional environment of a country. Specifically, we regress FISCAL OUTLAYS on our three measures of country's institutional environment (institutional quality, corruption, and judicial efficiency). We also include in these regressions the three specific accommodative policies—explicit guarantees, liquidity support, and forbearance—to investigate whether a country's institutional environment can explain differences in fiscal outlays, after controlling for the effect of these accommodative policies. Finally, we include the credit growth variable to control for the impact of pre-crisis credit booms on fiscal outlays.

The econometric results of explaining fiscal outlays are presented in Table 1. The results are based on a sample of (both systemic and non-systemic) crisis countries, but exclude countries without information on fiscal outlays or policy variables, which means we end up with a sample of 35 countries. In terms of policy measures, we find that all three accommodative policies considered (substantial liquidity support, explicit guarantees and regulatory forbearance) add to fiscal outlays, consistent with the results in Honohan and Klingebiel (2003), and consistent with the view that government incur

fiscal costs to minimize the impact of the crisis. Government guarantees and forbearance are the policies associated with the highest fiscal outlays. In terms of a country's institutional environment, we find that a better institutional environment tends to lower fiscal outlays related to crisis resolution. Credit growth pre-crisis and implicit guarantees do not appear to be correlated with fiscal outlays once we control for institutions and the other three policies.

Next, we move to the output loss regressions. We are interested whether better institutions accelerate recovery, i.e., limit output losses. We also want to investigate the effects of fiscal outlays on economic recovery, since in theory these are aimed at limiting output losses and speeding up economic recovery. However, fiscal outlays may not represent policy choices, but rather result from institutional weaknesses. Indeed, the previous regression results showed that fiscal outlays are in part driven by the quality of a country's institutions. We therefore do not include the fiscal outlays variable itself into our output loss regressions, but rather the residual term of a regression of fiscal outlays on the three institutional variables.<sup>13</sup> This residual term captures “excessive” fiscal outlays in the sense that a positive value indicates that the country incurred greater fiscal outlays to address its crisis than a country with a similar level of institutional development. This “excessive” fiscal outlay variable thus captures those fiscal costs purely associated with accommodative policies, such as the three specific policies documented—substantial liquidity support, explicit guarantees, and regulatory

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<sup>13</sup> The results that follow do not alter qualitatively if we use the fiscal outlay variable itself rather than the fiscal outlay residual variable.

forbearance—as well as other fiscal outlays aimed at crisis recovery, such as debt relief schemes for bank borrowers, not documented.<sup>14</sup>

The output loss regression results are reported in Table 2. The results are based on a sample of (both systemic and non-systemic) crisis countries, but exclude countries without information on fiscal cost or institutional variables. The first part of the table reports the results with OUTPUT LOSS (IMF) as dependent variable and the second part of the table reports the results for OUTPUT LOSS (BARRO) as dependent variable.

We find that accommodative policies do not achieve their intended goal of reducing output losses. For both output loss measures we find that excessive fiscal outlays arising from accommodative policies do not tend to accelerate economic recovery. In fact, the results indicate that accommodative policies even delay economic recovery as the signs are all positive (and generally statistically significant). On the other hand, we find that a better institutional framework, as characterized by less corruption and greater judicial efficiency, does reduce output losses, even when controlling for excessive fiscal outlays. This result is robust for the corruption variable under the two output loss measures, whereas the indicators for the quality of institutions and judicial efficiency are only statistically significant for the BARRO output loss measure.

To test the robustness of these results, we run a number of other regressions. It could be that the severity of a crisis is due to other factors, which may be correlated with the institutional and excessive fiscal outlay variables we use. This could lead us to wrongly conclude that the quality of the institutional environment and degree of

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<sup>14</sup> Even after controlling for institutional development, fiscal outlays may differ not only because a country makes more excessive use of accommodative policies or experienced bigger credit booms, but also because of differences in the severity of the crisis. As such, fiscal outlays may be endogenous to the speed of recovery from the crisis. We did use 2SLS regressions to control for this possibility, but did not find qualitatively different results.

accommodative policies affect the speed of recovery. Obviously, many aspects, both domestic and international, can affect the speed of recovery and it is difficult to be exhaustive. We nevertheless did consider a large number of other explanatory variables that should address most missing variables concerns. These additional variables included world GDP real growth at the start of the crisis, the presence of an explicit deposit insurance scheme at the onset of the crisis, the average inflation rate prior to the crisis, the degree of state ownership in banks, the degree of dollarization in the country, and the level of private credit to GDP. We did not find any of these variables to have a significant explanatory power on the speed of recovery nor to affect in a qualitative way the coefficients of the institutional environment and excessive fiscal outlay variables we use in Table 2 (we do not report these results).

A second robustness test investigates whether our results are biased because the possibility of a crisis occurring is related to the quality of institutions in the country. Institutionally worse developed countries may more likely have a deep crisis; studying only crisis countries could then lead us to conclude incorrectly that institutional factors determine the speed of recovery. To control for such potential sample selection bias, we estimate a Heckman model where the selection variable CRISIS takes the value of one if the country has experienced a crisis during the period 1977 to the present and the value of zero if the country has not experienced a crisis during this period. In a second-stage regression for the speed of recovery, we then control for the selection bias related to the country's institutional weaknesses. In this second-stage regression, we investigate again the importance of the institutional environment and the residual fiscal outlays on the speed of recovery. The Heckman regression results with CRISIS as dependent variable in

the first-stage regression and our two output loss variables as dependent variables in the second-stage regression are reported in Table 3.

The first-stage regression results confirm our prior that countries with weak institutions are more prone to crises. Unfortunately, our sample of non-crisis countries is small, only 6 observations, and the sample selection correction is thus not that powerful. The Heckman results should therefore be interpreted with the necessary caution. The second-stage regression results nevertheless confirm our earlier findings based on OLS regressions: better institutions reduce output losses and excessive fiscal outlays retard recovery. Controlling for potential sample selection bias thus does not seem to affect the main result.

Overall, we find that countries with weaker institutions tend to experience banking crises that take longer to recover from. The likely channels are various. At the micro-level, the resolution of a crisis is likely to take longer in countries with weaker institutions, especially more inefficient legal institutions. Good insolvency laws and well-functioning judicial systems are necessary to speedily restructure corporations in financial distress. Good legal institutions are also crucial in resolving the debt overhang in the financial system and allowing bank balance sheets to be restored. Efficient legal systems can help resolve the coordination problems between creditors and debtors. At the more aggregate level, in weaker environments supervisory authorities, and policy makers more generally, may have limited ability and credibility to enforce prudential regulations against financial institutions, intervene in financial institutions that do not comply with prudential regulations, and encourage large corporations to restructure speedily. As such, the recovery can be expected to take longer in institutionally weak

countries. The specific negative correlation between recovery and corruption, which is the most robust result, may indicate that more corrupt governments tend to provide assistance to banks and corporations not based on their financial soundness and compliance with regulations, but rather based on government ties with dominant shareholders and the business sectors in general and on political objectives. This lack of market-based dealings thereby prolongs the recovery.

Our second main result is that accommodative policy instruments, as reflected in excessive fiscal outlays, are not effective in terms of helping the country's economy to recover faster and to minimize output losses. Excessive fiscal transfers may mean that assistance is provided to institutions that have limited franchise value and fiscal support has then little effect on recovery. Fiscal outlays then represent more the costs of looting, with no economic gains, rather than support to reduce debt overhangs and overcome coordination problems in resolving claims.

Overall, our empirical findings reveal that both poor institutions and accommodating policies can significantly slow the recovery from a financial crisis. To gauge the relative importance of institutions and policies, Table 4 shows the effects of a change in excessive fiscal outlays or improvement in institutions on output losses, using both output loss measures. For these simulations, we use the regression results of Table 2. We find that a one standard deviation reduction in excessive fiscal outlays lowers the output losses according to the IMF definition by about 4.1 percent of GDP and according to the Barro definition by about 3.1 percent of GDP. In terms of institutional development, a country that improved its institutions by one standard deviation would have its predicted output losses using the IMF definition reduced by between 0.5 percent

of GDP (judicial efficiency) and 2.3 percent of GDP (corruption and quality of institutions) and using the Barro definition between 2.4 percent of GDP (judicial efficiency) and 4.8 percent of GDP (quality of institutions). These effects are sizeable. The results suggest that reductions in (excessive) fiscal outlays and improvements in the institutional environment are important economically, as both contribute about equally in terms of accelerating the recovery.

#### **4. Conclusions**

We have examined the impact of accommodative policy instruments on fiscal costs of a crisis and on accelerating economic recovery in the aftermath of a crisis. We then examined the link between the quality of a country's institutional frameworks, the effectiveness of accommodative crisis resolution policies, as measured by the size of excessive fiscal costs associated with the crisis, and economic output losses. We find accommodative policy measures, such as government guarantees on deposits and forbearance, to be fiscally costly, as also documented by Honohan and Klingebiel (2003). Moreover, when examining the question of whether these accommodative policy measures result in faster economic recovery, we find that output losses are not reduced by excessive fiscal outlays. Therefore there does not appear to be a trade-off between the size of the fiscal cost and the speed of economic recovery. Indeed, we find evidence that applying accommodative policies resulting in high fiscal outlays slows down economic recovery. We do find evidence that a better institutional framework not only lowers fiscal outlays of crisis resolution but also reduces the economic costs of a crisis.

Accommodative policy measures are thus not only fiscally costly, they also do not accelerate economic recovery, rather they can even slow down economic recovery. At the same time, the results suggest that sound legal and other institutions are important components for a resolution of the crisis that is not only cost-effective but also speedy. The best approach for a country to resolve a systemic crisis appears to be to implement strict resolution policies and focus on improving its institutional framework. The importance of the quality of the institutional framework may not be surprising, as institutional development has often been found to be important for a country's growth, productivity, and stability. Our analysis, however, provides more motivation to disentangle the elements of the institutional framework that are most important to help reduce the costs of a financial crisis and improve the recovery from a crisis, and the "returns" of such improvements. Such an analysis may in turn help guide policy makers in setting priorities for reform.

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Table 1. Explaining Fiscal Cost / GDP

This table shows country-level regressions estimated through ordinary least squares. Dependent variable is fiscal cost over GDP. The sample of countries is described in the Appendix Table 1. The policy variables explicit guarantee, liquidity support, and forbearance are zero-one dummies where a one is assigned when the country implemented the policy instrument. Implicit guarantee takes value one if deposits of state-owned institutions account for more than 75 percent of total banking deposits, and zero otherwise. Quality of institutions is a measure of the quality of institutions developed by KKZ (1999) and takes higher values when the quality of institutions is higher. Corruption index is a sub-component of the Political Risk Rating constructed by ICRG and takes higher values when lower levels of corruption are perceived. Efficiency of the judicial system takes higher values for countries with more efficiency and integrity of the legal environment. Credit growth is the difference between real private credit growth and real GDP growth. A constant is included but not reported. Robust standard errors are in brackets. \*, \*\*, and \*\*\* indicate significance at 10%, 5%, and 1% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Explicit guarantee	10.495** (4.477)			12.574** (4.672)			12.346** (4.812)			8.057 (6.263)	8.902 (5.379)
Implicit guarantee	6.674 (8.187)			18.181 (20.800)			19.871 (18.195)			19.731 (16.879)	18.134 (16.822)
Liquidity support		7.411 (5.278)			8.640 (6.044)			9.253 (6.085)		5.370 (6.361)	6.715 (6.057)
Forbearance			11.944*** (4.096)			13.336** (4.779)			13.446** (4.835)	11.939** (4.820)	10.101** (4.153)
Quality of institutions	-6.245* (3.134)	-6.535* (3.211)	-4.254 (3.422)								
Corruption				-2.960*** (1.047)	-2.810** (1.189)	-1.782 (1.258)					
Judicial efficiency							-3.132*** (0.930)	-3.022** (1.098)	-2.170* (1.118)	-2.150** (0.909)	-2.237** (0.886)
Credit growth											0.383 (0.321)
Observations	35	35	35	26	26	26	26	26	26	26	26
R-squared	0.21	0.17	0.23	0.38	0.26	0.33	0.40	0.29	0.37	0.55	0.58

Table 2. Explaining Output Loss

This table shows country-level regressions estimated by ordinary least squares. The dependent variable in columns (1) to (3) is the natural logarithm of 1 plus OUTPUT LOSS (IMF). The dependent variable in columns (4) to (6) is the natural logarithm of 1 plus OUTPUT LOSS (BARRO). QUALITY OF INSTITUTIONS is a measure of the quality of institutions developed by KKZ (1999) and takes higher values when the quality of institutions is higher. CORRUPTION is a measure of corruption developed by ICRG and takes higher values when lower levels of corruption are perceived. JUDICIAL EFFICIENCY is a measure of the efficiency of the judicial system and takes higher values for countries with more efficiency of the judiciary. FISCAL COST RESIDUAL is the residual term in the regression of fiscal cost on quality of institutions, corruption, and judicial efficiency. A constant is included but not reported. Robust standard errors are in brackets. \*, \*\*, and \*\*\* indicate significance at 10%, 5%, and 1% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Output loss (IMF)			Output loss (Barro)		
Quality of institutions	-0.396 (0.341)			-0.651* (0.341)		
Corruption		-0.223* (0.109)			-0.280*** (0.092)	
Judicial efficiency			-0.041 (0.115)			-0.184** (0.082)
Fiscal outlay residual	0.052*** (0.016)	0.051*** (0.015)	0.052*** (0.016)	0.023* (0.012)	0.021** (0.010)	0.020 (0.012)
Observations	28	28	28	27	27	27
R-squared	0.28	0.36	0.25	0.21	0.32	0.19

Table 3. Explaining Output Loss: Heckman model

This table shows country-level regressions estimated using Heckman's maximum likelihood estimator. The dependent variable in the second stage regression in columns (1) to (3) is (the natural logarithm of 1 plus the) OUTPUT LOSS (IMF). The dependent variable in the second stage regression in columns (4) to (6) is (the natural logarithm of 1 plus the) OUTPUT LOSS (BARRO). The dependent variable of the first-stage regression is CRISIS, which is a dummy variable that indicates whether the country has experienced a financial crisis in the last 30 years, or not. QUALITY OF INSTITUTIONS is a measure of the quality of institutions developed by KKZ (1999) and takes higher values when the quality of institutions is higher. CORRUPTION is a measure of corruption developed by ICRG and takes higher values when lower levels of corruption are perceived. JUDICIAL EFFICIENCY is a measure of the efficiency of the judicial system and takes higher values for countries with more efficiency of the judiciary. FISCAL OUTLAY RESIDUAL is the residual term in the regression of fiscal outlay on quality of institutions, corruption, and judicial efficiency. A constant is included but not reported. Robust standard errors are in brackets. \*, \*\*, and \*\*\* indicate significance at 10%, 5%, and 1% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Output loss (IMF)			Output loss (Barro)		
Quality of institutions	-0.089 (0.379)			-0.429 (0.425)		
Corruption		-0.390*** (0.034)			-0.324*** (0.094)	
Judicial efficiency			-0.082*** (0.031)			-0.146 (0.097)
Fiscal outlay residual	0.054*** (0.016)	0.043*** (0.014)	0.061*** (0.000)	0.023** (0.011)	0.021** (0.009)	0.020* (0.012)
<i>First-stage</i>						
Quality of institutions	-1.747*** (0.353)			-1.587*** (0.316)		
Corruption		-0.334*** (0.027)			-0.417*** (0.102)	
Judicial efficiency			-0.236*** (0.020)			-0.257*** (0.062)
Observations	35	34	34	34	33	33
Censored observations	7	6	6	7	6	6
Uncensored observations	28	28	28	27	27	27

Table 4: Estimated impact of changes in fiscal outlay and quality of institutions on output losses

This table shows simulations for changes in output losses. The results for the changes in output loss (IMF) and output loss (Barro) are based on the regression results from Table 2. The simulations calculate the effects on the outcome variables if the respective fiscal outlay were to be one standard deviation lower than its mean, or if the institutional index were to be one standard deviation higher than its mean.

	Change in output loss (IMF) (as % of GDP)	Change in output loss (BARRO) (as % of GDP)
<b>Fiscal outlays</b>		
Excessive fiscal outlays	-4.14	-3.08
<b>Institutional framework</b>		
Quality of institutions	-2.33	-4.79
Corruption	-2.34	-3.42
Judicial efficiency	-0.53	-2.43

Appendix Table 1. Description of variables

Variable Name	Description	Source
Fiscal outlay	The ex-post fiscal outlay estimate of financial distress as a percentage of GDP. It includes both fiscal and quasi-fiscal outlays for financial system restructuring, including the recapitalization costs for banks, bailout costs related to covering depositors and creditors, and debt relief schemes for bank borrowers.	Honohan and Klingebiel (2003), and IMF (2003)
Output loss (IMF)	Output loss, calculated as the sum of the differences between the actual and trend growth rates for the period t until the year in which the trend growth is reached, where trend GDP growth is calculated as the average of GDP growth rates from t-3 to t-1, and t is the starting year of the crisis. The approach follows IMF World Economic Outlook (1998) and the data are updated to include some recent crises.	IMF World Economic Outlook (2002)
Output loss (BARRO)	Same as output loss (IMF), but the trend growth is estimated as the predicted value from equation (2) in Barro (1991). The equation is: Average GDP per capita growth from 1960 to 1980 = 0.0302 - 0.0111 * GDP per capita in 1960 + 0.00051 * (GDP per capita in 1960) <sup>2</sup> + 0.0323 * Secondary school enrollment rate + 0.0270 * Primary school enrollment rate - 0.122 * Government consumption/GDP - 0.0200 * Number of revolutions - 0.0309 * Number of assassinations - 0.0148 * Deviation from the PPP in 1960. The realizations of the last three variables are set to zero. The sources of the other variables are the Barro-Lee and Summers-Heston databases. We use GDP per capita and the school enrollment rates at three years before the start of the crisis. Government consumption is averaged over the period 8 to 3 years before the start of the crisis. Per capita GDP is limited from above to \$10,800.	Barro (1991), Barro and Lee (1997), Summers and Heston (1991), IMF World Economic Outlook (2002)
Explicit guarantee	This variable takes a value of one when the government issues an explicit guarantee to depositors in private banks, and zero otherwise.	Honohan and Klingebiel (2003). For Ecuador, we update the data with information provided by the World Bank Ecuador country team.
Implicit guarantee	This variable takes a value of one when deposits of state-owned institutions account for more than 75 percent of total banking deposits (suggesting that market participants are implicitly protected), and zero otherwise.	Honohan and Klingebiel (2003)
Liquidity support	This variable takes a value of one when the government provides substantial liquidity support to insolvent institutions and zero otherwise. Substantial is defined as liquidity support surpassing total aggregate financial system capital.	Honohan and Klingebiel (2003)
Forbearance	This variable takes a value of one when the government gives forbearance in the sense that regulations (in particular loan classification and loan loss provisioning) are relaxed or the current regulatory framework is not enforced for at least a twelve months period to allow banks to recapitalize on a flow basis; or competition is restricted.	Honohan and Klingebiel (2003)
Quality of institutions	Index of the quality of institutions. The measure refers to 1998 and captures six dimensions of institutional quality: (1) democracy, (2) political instability, (3) rule of law, (4) bureaucratic regulation, (5) government effectiveness, and (6) corruption. An increase in the index means better institutions.	Kaufman, Kraay, and Zoido-Lobaton (1999)

Corruption	Measure of corruption in government. Average of the months of April and October of the monthly index between 1982 and 1995. Scale from 0 to 10, with lower scores for higher levels of corruption. Original source is the International Country Risk Guide.	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998).
Judicial efficiency	Assessment of the efficiency of the legal environment as it affects business. Average between 1980 and 1983. Scale from 0 to 10, lower scores represent lower efficiency levels. The original source is Business International Company.	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998).
Credit growth	Average real growth in bank credit to the private sector minus average real growth in GDP during the three years prior to the start of the crisis.	Authors' calculations using data from the International Financial Statistics (IFS) database maintained by the International Monetary Fund (IMF).

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Appendix Table 2. Country-level database

Country	Type of crisis	Crisis period	Fiscal outlay (% of GDP)	Output loss (IMF) (% of GDP)	Output loss (BARRO) (% of GDP)	Explicit guarantee	Implicit guarantee	Unlimited liquidity support	Forbearance	Quality of institutions	Corruption	Judicial efficiency
Argentina	systemic	1980-82	55.1	17.0	25.0	no	yes	no	yes	0.33	6.02	6.00
Argentina	systemic	1995	2.0	12.2	7.3	no	no	no	yes	0.33	6.02	6.00
Australia	non-systemic	1989-92	2.0	0.0	0.0	no	no	no	no	1.41	8.52	10.00
Austria	no crisis									1.37	8.57	9.50
Belgium	no crisis									0.90	8.82	9.50
Brazil	systemic	1994-99	13.2	0.0	0.0	no	no	no	yes	0.00	6.32	5.75
Chile	systemic	1981-83	42.0	46.0	25.1	no	no	yes	yes	0.87	5.30	7.25
Colombia	systemic	1982-87	5.0	7.0	83.6	no	yes	yes	no	-0.41	5.00	7.25
Czech Republic	systemic	1989-91	12.0	0.0		yes	no	no	yes	0.68		
Ecuador	systemic	1998-2001	20.0	12.0	0.0	yes	no	yes	no	-0.32	5.18	6.25
Finland	systemic	1991-94	11.2	21.0	16.7	yes	no	yes	no	1.62	10.00	10.00
France	non-systemic	1994-95	0.7	0.0	2.7	no	no	no	no	1.02	9.05	8.00
Ghana	systemic	1982-89	6.0	7.0	22.6	no	yes	yes	yes	-0.14		
Hungary	systemic	1991-95	10.0	14.0	36.4	no	yes	yes	yes	0.87		
Indonesia	systemic	1997-2002	55.0	39.0	35.0	yes	no	yes	yes	-0.76	2.15	2.5
Ireland	no crisis									1.40	8.52	8.75
Jamaica	systemic	1996-2000	43.9	7.0	32.3	yes	no	yes	yes	-0.03		
Japan	systemic	1991-	24.0	48.0	4.5	yes	no	yes	yes	0.95	8.52	10.00
Jordan	non-systemic	1989-90	10.0	16.9	12.9					0.33	5.48	8.66
Korea, Rep. of	systemic	1997-2002	28.0	17.0	10.0	yes	no	yes	yes	0.48	5.3	6.00
Malaysia	systemic	1997-2001	16.4	33.0	11.9	yes	no	yes	yes	0.51	7.38	9.00
Mexico	systemic	1994-2000	19.3	10.0	14.5	yes	no	yes	yes	-0.07	4.77	6.00
Netherlands	no crisis									1.64	10.00	10.00
New Zealand	non-systemic	1987-90	1.0	0.0	10.2	no	no	yes	no	1.59	10.00	10.00
Norway	systemic	1990-93	8.0	0.0	0.0	yes	no	yes	no	1.53	10.00	10.00
Paraguay	systemic	1995-2000	13.0	0.0	22.9	yes	no	yes	yes	-0.56		
Philippines	systemic	1983-87	3.0	26.0	38.3	no	no	yes	yes	0.21	2.92	4.75

Country	Type of crisis	Crisis period	Fiscal outlay (% of GDP)	Output loss (IMF) (% of GDP)	Output loss (BARRO) (% of GDP)	Explicit guarantee	Implicit guarantee	Unlimited liquidity support	Forbearance	Quality of institutions	Corruption	Judicial efficiency
Philippines	systemic	1998-	13.2	10.1	19.1	no	no	no	no	0.21	2.92	4.75
Poland	systemic	1992-95	3.5	0.0	0.1	no	yes	yes	yes	0.70		
Portugal	no crisis									1.20	7.38	5.50
Senegal	systemic	1988-91	17.0	0.0	4.8	no	yes	yes	yes	-0.30		
Slovenia	systemic	1992-94	14.6	0.0	6.2	yes	no	no	yes	0.85		
Spain	systemic	1977-85	5.6	0.0		no	no	yes	no	1.11	7.38	6.25
Sri Lanka	systemic	1989-93	5.0	1.0	7.8	yes	no	no	yes	-0.38	5.00	7.00
Sweden	systemic	1991-94	4.0	11.0	2.6	yes	no	no	no	1.53	10.00	10.00
Switzerland	no crisis									1.72	10.00	10.00
Thailand	systemic	1997-2002	34.8	40.0	26.7	yes	no	yes	yes	0.15	5.18	3.25
Turkey	systemic	1982-85	2.5	0.0	3.7	no	no	no	no	-0.33	5.18	4.00
Turkey	systemic	2000-	30.5	0.0	12.9	yes	no	yes	yes	-0.33	5.18	4.00
United States	non-systemic	1988-91	3.2	0.0	0.0	no	no	no	yes	1.29	8.63	10.00
Uruguay	systemic	1981-84	31.2	41.0	19.8	no	yes	yes	yes	0.56		
Venezuela	systemic	1994-95	22	14.0	12.5	no	no	yes	yes	-0.37	4.70	6.50