Financial Restructuring in Systemic Crises
What Policies to Pursue?

Stijn Claessens

With

Daniela Klingebiel and Luc Laeven

World Bank

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Abstract

We review the literature on resolving systemic bank and corporate sector crises to identify policies that affect the depth of a crisis, the ease and sustainability of recovery, and the fiscal cost of resolving a crisis. Using data for a large number of corporations from nine crisis countries, we complement this review by investigating empirically the effects of some particular policies. We find that liquidity support and public asset management companies can help reduce the impact of a crisis and accelerate the recovery from a crisis, but government guarantees on the liabilities of the financial system does neither. These particular policies, however, do not necessarily contribute to more sustainable corporate financial structures and several come with large fiscal costs. Fundamental reform, that is a better legal framework, is however, associated with less deep crises, better recoveries and more sustainable financial structures.

1.   **Introduction**

Whether cause or effect, a systemic banking (and corporate sector) crisis is often part of a currency crisis. The resolution of a systemic bank crisis involves many policy choices ranging from macro-economic, including the tightness of monetary and fiscal policy, to micro-economic, including the speed at which to raise or enforce capital adequacy and other prudential requirements, and the depth of legal and other fundamental reforms. These choices involve various tradeoffs, including the speed of recovery and its ultimate sustainability, the magnitude of fiscal resources needed to resolve a crisis, and the depth of fundamental reforms. In spite of much analysis, the tradeoffs along these dimensions are still not well known, leading at times to conflicting policy advice and possibly larger than necessary economic costs. And even less known are the political economy factors that make governments choose certain policy paths.

This paper reviews the current knowledge on the various tradeoffs regarding public policies towards systemic financial and corporate sector restructuring. It finds that consistency in the framework adopted for bank and corporate restructuring is the key factor, although often missing. This consistency covers many dimensions and entails, among others, ensuring that there are sufficient resources for loss-absorption and that private agents face an appropriate framework of sticks and carrots for restructuring. To assure the sustainability of restructuring, deeper structural reforms will be necessary, which often requires that political economy factors are considered up-front.

The paper compliments the literature review with some new empirical analysis. It uses data for some 700 corporations from nine crises countries to investigate the quantitative importance of a number of specific government policies: liquidity support to financial institutions and the guaranteeing of the liabilities of the financial system during the early phase of the crisis, and the establishment of a public asset management company during the restructuring phase. It finds that liquidity support from the central bank to financial institutions helps mitigate a crisis, and facilitates quicker recovery by corporations from a crisis. Similarly, a public asset management corporation can reduce the impact and facilitate recovery. The government guaranteeing the liabilities of the banking system does not mitigate a crisis nor does it help recovering from a financial crisis. And the final sustainability of corporations' financial structures depends more on the quality of the institutional framework in the country, especially the legal framework, rather than on some specific government interventions.

2.   Characteristics of systemic banking system and corporate sector crises

A systemic crisis can be characterized as a situation with large-scale corporate and financial distress.[1] Examples of recent systemic crises include the Nordic countries' crises in the early 1990s, the Mexico crisis in 1994/5, the crises in East Asia after 1997, and some crises in transition economies in the 1990s (although the latter also suffered from longer-term structural problems). The frequency of currency crises and related systemic bank and corporate sector crises appears to have increased since the early 1980s. Caprio and Klingebiel (1999) identified 93 countries that experienced a systemic financial crisis during the 1980s or 1990s (Figure 1).   It also appears that the depth of crises has increased in the 1990s compared to earlier periods (see Bordo, et al., 2000). Furthermore, most of these recent crises were in developed countries: of the 93 cases, only five were in developed countries.

Typically in a systemic crisis, in part as a result of large shocks to foreign exchange and interest rates, and a general economic slowdown, the corporate and financial sectors will experience a large number of defaults and difficulties to repay contracts on time and non-performing loans will increase sharply. This situation is often accompanied by generally depressed asset prices, such as equity and real estate prices, following run ups before the crisis, sharp real interest rate increases, and a slowdown of or reversal in capital flows. In countries with long-term structural problems that reached (too) large proportions, such as several transition economies, a systemic crisis may not be accompanied by the same asset price and capital flows behavior, in part as the run ups in prices and capital flows may not have occurred. Table 1 presents some key variables for a sample of systemic crisis countries for which we undertake some further empirical work in this paper. The table confirms the general characteristics of a systemic crisis.

The pattern of these systemic crises highlights the complicated coordination problems that arise among individual corporations, between the corporate and financial sectors, between the government and the rest of the economy, and with respect to domestic and foreign investors. In a systemic crisis, an individual corporation's fate, and its owners' and managers' best course of actions, will depend on the actions of many other corporations and financial institutions, and the general economic outlook.   The financial and the corporate sectors, always already very closely intertwined, will need both restructuring in a systemic crisis, with actions affecting each other's liquidity and solvency situation. The government will need to set both the rules of the game as well as be a main actor in the restructuring. And investors, domestic and foreign, will await the signs of actions of owners, government, etc., often implying a shortage of foreign and domestic capital when needed most.

The crisis and its coordination problems are typically aggravated by institutional weaknesses, many of which likely gave rise to the crisis in the first place. There will often be deficiencies in the bankruptcy and restructuring frameworks; disclosure and accounting rules for financial institutions and corporations may be weak; equity and

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[1] We do not focus on trying to identify the exact causes of systemic distress, not on whether currency crises are caused by systemic distress or vice-versa.

creditor rights might be poorly defined; the judicial efficiency will often be limited; etc.. There will typically also be a shortage of qualified management in the corporate and financial sectors, and a lack of qualified domestic restructuring and insolvency specialists, in part as there may not have been a history of corporate and financial sector restructuring. The government itself may face credibility problems, as it was possibly part of the cause of the crisis, and in general faces many time-consistency problems, e.g., how to avoid large bailouts while at the same time restarting the economy.

These complicated coordination problems already suggest that a systemic crisis will be difficult to resolve. Many observers have tried to develop best practice lessons on how to best resolve these systemic crises. We next review this literature.

3. Review of literature

During the 1980s and 1990s, governments have used a variety of approaches to try to resolve systemic bank and corporate distress. Resolving systemic financial distress is no easy task and opinions as what constitutes best practice appear to differ widely. Many different, and what appears to be at times contradictory, policy recommendations have been made to limit the fiscal cost of crises and speed the recovery. Empirical research supporting particular views in this area remains limited, and most research is limited to particular, individual cases. Sheng (1996) was the first attempt to distill lessons from a review of several banking crises. Caprio and Klingebiel (1996) expanded on these lessons using some additional case studies. The main lessons from these two studies was that managing a financial crisis in a developed country differs significantly from that in emerging market economies given their poorer institutional environment, the often larger size of crises and other initial differences. As a result, lessons from developed countries do not translate easily to developing countries.

In reviewing the literature on financial restructuring, especially as it applies to emerging markets, it is useful to differentiate between three aspects of systemic financial restructuring. During the first phase, which can be called the short-term containment phase, the financial crisis is still unfolding. Governments tend to implement policy measures in this phase that are mostly aimed at restoring overall public confidence to minimize the repercussions of the loss of confidence by depositors and other investors in the financial system on the real sector. The second phase comprises the actual financial and operational restructuring of financial institutions and corporations. The third phase refers to the structural reforms, including changes in the legal and regulatory frameworks, privatization of financial institutions and corporations, etc.

A.   Containment phase

Policymakers often fail to respond effectively to any evidence of an impending banking crisis, hoping that banks and corporations will grow out of their problems.[2]

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[2] We acknowledge that there will be many political economy reasons why policy makers may not wish to act, thereby given rise to the crisis in the first place, but do not discuss these.

Rather than waiting, intervening early with a comprehensive and credible plan can avoid a systemic crisis, minimize adverse effects, and limit the overall losses (Sheng 1996). Early intervention appears especially important in stopping the flow of financing to loss-making financial institutions and corporations and to limit moral hazard of financial institutions and corporations gambling for survival. Experience further suggests that the intervention and closure process of financial institutions need to be properly managed. Uncertainty among depositors need to be limited, as otherwise government may have to try to resolve a loss of confidence with an unlimited government guarantee on banks and other financial institutions' liabilities. In practice, however, ad-hoc closures are more the norm and often add to the overall uncertainty, and thereby trigger a systemic crisis. For example, the closure of a group of 16 banks in Indonesia in late 1997 triggered a depositor run, as depositors were aware of the fact that some politically, well-connected banks known to be insolvent were kept open (Lindgren et al. 1999).

Reviewing several cases, Baer and Klingebiel (1995) suggest that, to avoid uncertainty among depositors and limit depositors' incentives to run, policymakers need to deal simultaneously with all insolvent and marginally solvent institutions. Intermittent regulatory intervention increases depositors' nervousness and damages regulatory credibility, especially in cases where regulators had previously argued that the institutions were solvent.[3] In emerging markets, moreover, given the often-weak regulatory environment, limited supervisory resources, and poor data indicators for financial (in-)solvency, intervention tools need to be designed in a relatively simple way. For example, a rehabilitation program for undercapitalized financial institutions, which involves institutions indicating how they plan to meet capital adequacy requirements in the future, requires careful government oversight and good financial statements, often not present in developing countries. Instead of relying on rehabilitation with need for good oversight, regulators could instead apply a 100 percent (marginal) reserve requirement, thus limiting the ability of weak banks to reallocate resources in a detrimental way.

There appear to be two schools of thoughts on whether to employ liquidity support and unlimited guarantees during the containment phase. Some argue that crisis conditions make it all but impossible to distinguish between solvent and insolvent institutions, leaving the authorities with little option but to extend liquidity support. Moreover, it is argued that the issuance of an unlimited guarantee preserves the payments system and helps stabilize institutions' financial claims while the restructuring work is being organized and carried out (Lindgren et al. 1999). Other argue that open-ended liquidity support provides more time for insolvent institutions to gamble for resurrection, facilitates the continued flow of financing to loss-making borrowers, and allows owners and managers to engage in looting. And they argue that a government guarantee on financial institutions' liabilities reduces (large) creditors' incentives to monitor financial institutions, thus allowing bank managers and shareholders to continue "gambling to

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[3] The paper also points out that a comprehensive approach presents the additional advantage of reducing the demand on supervisory resources. Under a piecemeal approach, insolvent and marginally solvent institutions would continue to exist at the same time that other insolvent were being closed or restructured. These institutions would be subject to moral hazard and fraud and would be unable and unwilling to raise additional capital

resurrect" their insolvent banks. They further point out that extensive guarantees limit the governments' maneuverability in terms of how to allocate losses, with often the end result that the government incurs most of the cost of the systemic crisis (Sheng 1996).

In practice, there will be a tradeoff between re-establishing confidence and fiscal costs. Some evidence on these tradeoffs comes from Honohan and Klingebiel (2000). They show that a large part of the variation in the fiscal cost of 40 crises in industrial and developing economies (1980-97) can be explained by different government approaches to resolving the liquidity crisis. They find that governments that used open-ended liquidity support and blanket deposit guarantees substantially increased the overall fiscal costs of resolving a financial crisis. They also find that these costs are larger in weaker institutional settings. Most importantly, they find no obvious trade off between fiscal costs and subsequent economic growth recovery (or overall output losses). Countries that employed policy measures such as liquidity support, blanket guarantees or forbearance policies that were particularly costly to the budget did not recover faster subsequently. Rather, they find that the extension of liquidity support appears to make recovery from a crisis longer and output losses larger. This latter finding is confirmed by Bordo et al. (2001). This suggests that the two most important policies during the initial phase are to limit liquidity support and not to extend guarantees.

B.   Restructuring and rehabilitating financial institutions

Following the phase of stabilizing financial markets, the second phase involves restructuring of financial institutions. Restructuring refers here to several related processes: recognizing and allocating financial losses; restructuring financial claims of financial institutions (and corporations); and operational restructuring of financial institutions (and corporations). The restructuring phase is a complex undertaking, as policymakers need to take into account various aspects.

Financial restructuring depends importantly on the speed at which macro-stability can be achieved since this will determine the viability of corporations, banks and other financial institutions, and more general the overall uncertainty. Yet, macro stability will often require progress in financial and corporate restructuring, and can thus not be seen independently from the restructuring process (see further other papers in this conference).

Recognition involves the allocation of existing losses and associated redistribution of wealth and control. Losses, that is differences between financial institutions' market value of assets and nominal values of liabilities, can be allocated to shareholders—by dilution, to depositors and external creditors—by reduction of (the present value) of their claims, to employees—by reduced wages and suppliers, and to the government, that is the public at large—through increased taxes, expenditures cuts or inflation. To minimize moral hazard and strengthen financial discipline, the government can allocate losses not only to existing shareholders, but also to creditors and depositors who should have monitored the bank.

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Often, the government will assume all losses through its guarantees. Nevertheless, there are exceptions to the model of government guaranteeing all liabilities in an attempt to restore confidence. Baer and Klingebiel (1995) show that in some crises governments imposed losses on depositors with little (or no) adverse macro-economic consequences or flight to currency. Economic recovery in the cases where government imposed losses on depositors was rapid and financial intermediation, including household deposits, was restored within a short time. Allocating losses to creditors or depositors will thus not necessarily lead to runs on banks or end in contraction of aggregate money and credit, and output. Relatedly, Caprio and Klingebiel (1996) show that financial discipline is further strengthened when bank management, often part of the problem, is changed as well, and banks are operationally restructured.

Besides direct allocation of losses, the processes of financial sector and corporate restructuring, intrinsically linked with one another, crucially depend on the incentive frameworks under which both banks and corporations operate (Klingebiel and Dado 2000). Successful corporate debt workouts require proper incentives for both banks and borrowers to come to the negotiating table. The incentive framework for banks includes accounting, classification and provisioning rules, i.e., financial institutions need to be asked to realistically mark their assets to market. It also includes the legal and prudential frameworks. The prudential system needs to ensure that undercapitalized financial institutions are properly disciplined and closed. The insolvency system needs to enable financial institutions to enforce their claims against corporations, allow for speedy financial restructuring of corporations that are viable, and provide an efficient mechanism for the liquidation of enterprises that cannot be rehabilitated. A proper incentive structure also means limited ownership links between banks and corporations (since otherwise the same party could end up being both debtor and creditor).

A key component of a proper incentive framework is adequately capitalized financial institutions, as financial institutions need to have the loss absorption capacity to engage in sustainable corporate restructuring. In a systemic crisis, capital will often have to come from the government through recapitalization. General experience, as also highlighted by the recent East Asia experience, suggests, however, that recapitalization of financial institutions need to be structured and managed adequately to limit moral hazard. In their analysis of 39 banking crises, Honohan and Klingebiel (2000) find that repeated, incomplete recapitalization tend to increase the overall fiscal costs of resolving a banking crisis. One possible explanation is that marginally capitalized banks tend to engage in cosmetic corporate restructuring, such as maturity extension or interest rate reduction on loans to non-viable corporations. Besides adequate capitalization, preferably by private shareholders, banks' incentives to undertake restructuring can be strengthened by linking government financial resources directly to the actual financial corporate restructuring undertaken by banks. For example, a capital support scheme in which additional fiscal resources are linked to actual corporate restructuring through loss sharing arrangements can induce banks to conduct deeper restructuring.

In principle the government should only capitalize or strengthen the capital base of those financial institutions with charter and franchise value. But, apart from political

economy problems, it will often be difficult for the government to distinguish good from bad banks. Risks-sharing mechanisms with the private sector, such as co-financing arrangements with (preferred forms of) government equity infusion when private sector provides capital, can help identify the better banks but still requires some institutional framework. Especially in a weak institutional environment, with limited private capital, the government may want to rely more on hard-budget constraints, such as 100% marginal reserve requirements, to prevent a large leakage of fiscal resources, including guarantees on financial institutions' liabilities.

C.   Corporate sector restructuring

The already large links between the solvency and performance of the corporate and financial sectors in normal times, and the nature of a systemic crisis, make it clear that bank restructuring needs to be complemented in a systemic crisis with corporate restructuring. To start the restructuring process, a quick triage of corporations into viable, not financial distressed corporations, viable, but financial distressed corporations, and unviable corporations would be preferable. In a normal restructuring situation of an individual case of financial distress, private sector agents will undertake this triage and then start the necessary operational and financial restructuring.[4] In a systemic crisis, however, case-by-case restructuring will be difficult, as the incentive framework under which agents operate is likely not conducive, private sector capital is typically limited, and coordination problems are large.

The starting point nevertheless will have to be to have a proper incentive framework for private sector agents to allow and encourage market-based, sustainable corporate restructuring. Given that the crisis is likely in part induced by weaknesses in the environment under which the corporate sector previously operated, the first step for the government will have to be to create an enabling environment. Depending on the country circumstances, this can imply undertaking corporate governance reforms, improving the bankruptcy and other restructuring frameworks, enhancing the efficiency of the judicial system, liberalizing entry by foreign investors, changes in the competitive framework, or other supportive structural measures. In general, the political economy of reform suggests that a crisis can often be a good way to get difficult structural reform accepted (Haggard, 2001).

Most crisis countries do undertake structural reforms (see Claessens et al. 2001, Klingebiel and Dado, 2000, Stone, 2000a and 200b, and World Bank 2000, for different groups of crisis countries), although the strengths and depth of the reforms differ. For example, although its crisis started in the fall of 1999, Indonesia did not adopt a new bankruptcy regime until August 1998, 12 months after the crisis had started, and even then there where very few bankruptcy cases in the months following. In the case of

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[4] Financial restructuring for corporations can take many forms: reschedulings (extensions of maturities), lower interest rates, debt-for-equity swaps, debt forgiveness, indexing interest payments to earnings, and so on. Operational restructuring, an ongoing process, includes improvements in efficiency and management, reductions in staff and wages, assets sales (for example, reduction in subsidiaries), enhanced marketing efforts, and so on with the expectation of increased profitability and cash flow.

Thailand, only on February 12, 1999 did the Senate of Thailand approve The Act for the Establishment of and Procedure for Bankruptcy Court, an act that was intended to increase the efficiency of judicial procedures in bankruptcy cases, and the number of bankruptcy still remained low following the adoption of the act (see further Foley, 2000).

Beyond fixing the environment, it can be necessary to create extra incentives for private sector agents for (quick) corporate restructuring. These incentives can involve tax, accounting or other measures. Banks, for example, may be given more leeway in obtaining tax relief from provisioning or restructuring loans. Corporations may be given more favorable accounting relief for the recognition of foreign exchange losses. In the wake of its crisis, Korea adopted more favorable tax rules for corporate restructuring (although they ended up being more misused). Some countries have taken steps to offer guarantees on exchange rate behavior (for example, Indonesia with its so-called INDRA scheme and Mexico with its so-called FICORCA scheme, see further Stone, 2000). These measures will have be evaluated as to their efficiency from various perspectives—beneficial effects on restructuring, public finance, and possible redistributive effects. While they may speed up the recovery, often they are not aiding to any fundamental reforms. In any case, the general opinion is that such measures should in principle be of a temporary, time-bound nature (i.e., with sunset clauses).

In addition, even when adequate for normal times, the (revamped) bankruptcy and restructuring framework might not be sufficient for the systemic crisis given the various coordination problems and weaknesses in other aspects of the institutional framework. The government may therefore want to create a special framework for corporate restructuring, such as the London-approach[5] first used in Mexico (called UCABE) and afterwards in several East Asian countries (Korea, Thailand, Malaysia and Indonesia). These London approaches have involved an out-of-court accord, under regular contract or commercial law, to which all (or most) creditor institutions (are coerced to) sign on. With such an accord, agreements reached among the majority of creditors can often be enforced on other creditors without going through formal judicial procedures. Also, arbitration with specific deadlines, as well as specific penalties for failure to meet deadlines, can be made part of the accord, thus avoiding the formal judicial process to resolve disputes.[6] The degree of such enhancements to the London approach has varied among countries. In East Asia, for example, the framework in Thailand, followed by those in Korea and Malaysia, were the most conducive to out-of-court restructuring, with the framework in Indonesia the least (Claessens et al. 2001). These differences appear to explain in part the variations in the speed of restructuring in these four countries.

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[5] The London rules are principles for corporate reorganization first enunciated in the United Kingdom in the early 1990s. Since the London rules were not designed for systematic corporate distress, countries have tried to tighten them in various ways.

[6] Bankruptcy or other legal resolution techniques are not the only methods for dealing with financial distress. Economists have been proposing alternative procedures for some time. These center on versions of an asset sale or a cash auction. Cash auctions are easy to administer and do not rely on the judicial system (Hart et al., 1997). While attractive from a theoretical perspective, these proposals have not had recent followers, except for Mexico in 1998.

The most far-reaching proposal to enhance the framework for restructuring is that of "super-bankruptcy" (or "Super Chapter 11"), a temporary tool which allows corporate management to stay in place automatically and forces debt-to-equity conversion (Stiglitz, 2001). Such a Super Chapter 11 can preserve the going concern value of firms by preventing too many liquidations and keeping in place existing managers, who arguable most often will know best how to run the firms. An important design issue is when to call for it, i.e., when is a crisis of a systemic nature, and who has the authority to call for such a suspension of payments? Political economy factors should be taken into account here in adopting the possibility of such a regime, as some debtors would stand to gain disproportionately from a suspension of payments. So far, no country has adopted this approach.[7]

Even with an enhanced enabling environment, agents will likely not be able to triage corporations quickly and get the necessary restructuring underway. The resulting period of "deadlock" in claims or "debt overhang" can be especially risky in weak institutional environments and can greatly increase the costs to the public sector of finally resolving the crisis. Weak banks may continue lending to "too big to fail" corporations, in part as a way of gambling for resurrection, and thus delay sustainable corporate restructuring. Owners of defunct enterprises may strip assets, leaving only shells of liabilities for creditors. It may then also be necessary in the short-run to use hard-budget constraints to limit the flow of resources to weak corporations coming from (weak) financial institutions or other sources of external financing. To further counterbalance tendencies of lending to weak corporations, thereby reducing credit to those corporations that can actually repay, it may be necessary to temporarily have across-the-board mechanisms in place for certain classes of borrowers (SMEs) or certain activities (e.g., trade financing). The need for such blunter tools will increase with the degree of institutional weakness in the country. The "market-based" approach pursued in Indonesia for corporate restructuring, for example, had very little impact and probably only led to further asset stripping.

As a next step, it will often be necessary for the government to more directly support the corporate sector restructuring process. As with support for the financial system, it will be essential to restructure the strong and viable, and not the weak corporations. All too often, however, the unviable, e.g., "too big too fail' corporations, will be supported, rather than the deserving viable corporation. This was the case in Korea with the large chaebols, and the large-family controlled conglomerates in Indonesia and Thailand receiving dis-proportioned large amounts of financing while smaller firms lacked even working capital (see further Claessens et al. 1999). The most difficult task is then also to choose the lead agent for corporate restructuring such that market-based incentives for a proper analysis of a corporation's prospects and durable operational and financial restructurings are preserved. This in turn requires a lead agent to undertake the restructuring.

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[7] It should be noted, however, that while bankruptcy regimes differ considerably, even among developed countries, there is a general trend towards moving from more creditor-friendly regimes to more debtor-friendly regimes (see for example, Westbrook, 2001).

The main choice for lead agent is between the government itself and the private sector in a decentralized way. The modalities for implementing this choice can be multiple. A centralized asset management corporation (AMC) will put the government in charge. A strategy of ex-ante recapitalization of privately owned banks will put the banks in charge. Under other models, other investors and corporations themselves can become the lead agent, with the government sharing in the risks. The banks can work out non-performing loans, for example, but with some stop-loss arrangements with the government. Or non-performing loans can be transferred to a number of corporate restructuring vehicles which, while state-owned, can be privately run. Most important is that the lead agents have the necessary loss absorption capacity, as well as the institutional capacity and external enforcement mechanisms, to effect the restructuring. Undercapitalized banks, for example, will not be very effective restructuring agents. And without a working bankruptcy regime, private agents will not be able to force recalcitrant debtors to come to the negotiating table, as has been the case in Indonesia and in Thailand, with TPI as the most notable example.

In practice, countries often choose a mixture of these various approaches when dealing with a systemic crisis. Of the four East Asian crises countries, for example, three employed AMCs, all have employed some form of out-of-court-systems for corporate restructuring; and most have used, after initial period, fiscal stimulus and monetary policy to foster economic growth (Claessens et al., 2001). In addition, all have enhanced their basic framework for private sector operations, including bankruptcy and corporate governance frameworks, liberalization of foreign entry in the financial and corporate sectors, etc. Similarly, both an AMC as well as a more decentralized approach were attempted in Mexico in 1995.

The empirical evidence on these mechanisms is limited, but tends to favor the more decentralized model. A review of AMCs (Klingebiel 2000) shows that most AMCs did not achieve their stated objectives when it came to corporate restructuring. In two out of three cases, corporate restructuring AMCs did not achieve their narrow goals of expediting bank- and/or corporate restructuring. Only the Swedish AMC successfully managed its portfolio, acting in some instances as lead agent in the restructuring process. Rapid asset disposition vehicles fared somewhat better with two out of four agencies, namely Spain and the US, achieving their objectives. The successful experiences suggest that AMCs can be effectively used, but only for narrowly defined purposes of resolving insolvent and unviable financial institutions and selling of their assets. But even achieving these objectives required many ingredients: a type of asset that is easily liquefiable (real estate), mostly professional management, political independence, a skilled resource base, appropriate funding, adequate bankruptcy and foreclosure laws, good information and management systems, and transparency in operations and processes. The evidence by Klingebiel on AMCs is corroborated by a review of three East Asian countries (Dado, 2000). The centralized AMC used in Indonesia and Korea do not appear set to achieve their narrow goal of expediting bank and/or corporate restructuring, while the AMC in Malaysia was relatively successful, helped by a strong bankruptcy regime in that country.

Dado and Klingebiel (2000) analyze the decentralized restructuring model for seven countries (Japan, Norway, Argentina, Chile, Thailand, Hungary and Poland). They find that the success of this approach depended on the quality of the institutional framework, including accounting and legal, and the initial conditions, including the capital positions of banks and ownership links. In Norway's case, the government built on what were already favorable initial conditions to attain a solid overall framework for the decentralized approach. The biggest improvement to the overall framework was made in Chile's case, with favorable results. The experiences of Poland and Hungary ranked behind that of Chile, although Poland improved its overall framework much sooner than Hungary. Thailand made little progress with strengthening its framework. In Japan, despite many reforms to its overall framework, efforts remained blocked by large ownership links. And Argentina relied solely on public debt relief programs, and it did not change its overall framework for restructuring.

Often, a mixture of approaches is tried, with varying success. In Mexico, neither the AMC nor the enhanced restructuring frameworks were effective, possibly because fundamental reforms were lacking (the bankruptcy regime in Mexico, for example, was not revamped until four years after this crisis). It appears to have been the export led-growth that led the Mexican recovery (although it did not resolve its banking sector problems).

As the crisis can be a window to undertake structural reform, so can it be an opportunity to reform the ownership structure in the country. As a direct party to the restructuring process, the state will often become the owner of (defunct) financial institutions and corporations. As noted, this severely complicates the resolution of the crisis, as the government may not have the right incentives or capacity to effect the necessary operational restructuring and financial restructuring. At the same time, the large (in) direct ownership by the state provides for an opportunity to change ownership structures as part of restructuring process. This can have two benefits. First, it can correct those ownership structures that were a contributing part to the crisis and thus prevent future crises. To the extent, for example that ownership concentration in the hand of a few families was a contributing factor to the crisis, as argued by some observers in the case of East Asia, the government can try to widen ownership structures. Second, the government can try to obtain political support for its restructuring by reallocating ownership.[8] One option, for example, is to reprivatize financial institutions or corporations is such a way to favor redistribution of ownership among the general public or employees of the restructured institution. Another option would be to use some of the state-ownership to endow previously unfunded pension obligations from a pay-as-you-go system. In this way, the government can create ownership structures that over time will reinforce its reform strategies.

Another common theme in the literature has been that corporate restructuring preferably happens within the context of overall supportive macro policies. The main

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[8] Regardless of the changes in ownership and relationships between debtors and creditors, the government may want to create a special social safety net for the inevitable layoffs and help sustain political support for the restructuring process over the longer run.

macro-policies (fiscal, and monetary) will have to have the right stance to allow for a speedy recovery of overall activity and corporate sector output. The appropriate fiscal stance has been extensively reviewed, especially in the context of the East Asian crisis (see also other papers in this conference). A review by IMF's own staff (Lane et al., 1999) suggests that the fiscal stance was too tight initially in East Asia. The appropriate monetary stance has been more controversial, and is still being debated (see further other papers in this conference). Micro-based empirical literature suggests that there was some evidence of a credit crunch early during the East Asian crisis (Claessens, Djankov and Xu, 2000, Colaco et al, 2000, Dollar and Hallward-Driemeier, 2000). The credit crunch was likely the result of both tighter capital adequacy requirements and the particular monetary policies being pursued. More generally, it has been found that, while the effects of tighter capital adequacy rules are minimal on aggregate credit provision, borrowers from weaker banks are affected by tighter regulation and supervision (BIS, 1999). Given the unbalanced financial systems in East Asia, where banks dominate and little alternative financing sources were available (Greenspan, 1999), and the fragile state of many banks even before the crisis (Claessens and Glaessner, 1997), it is likely that, at least initially, the banking sector weaknesses and tighter regulatory and supervisory frameworks led to a credit crunch for East Asian corporations (see further Domac and Ferri, 1999). Following this initial credit crunch, corporations may have ended up into a situation of debt overhang, with the consequent need for financial restructuring.

4.   Additional empirical evidence on the effects of alternative resolution policies.

In this section, we try to shed new light on the costs and benefits of alternative crisis resolution policies. Specifically, we empirically investigate how policies affect the performance and financial structures of individual corporations.   We focus on the corporate sector for several reasons. First, the final purpose of resolution policies, even if directed towards the financial sector only, is a revitalization of the real sector and overall economic growth. Using corporate sector indicators can thus provide a better measure of the final outcome. Second, the effects of policies can be more precisely measured by focusing on the corporate sector rather than the financial sector. The performance of banks, for example, will be highly affected by government financial actions, such as recapitalization, and therefore may not provide a good indication of the real outcomes achieved.   Third, measuring the impact of resolution policies on a micro rather than a macro level (for example, by GDP) allows us to better differentiate across policies. We can control, for example, for country characteristics, such as different corporate sector structures, when studying policies commonly adopted.

We collect company-specific data for a sample of crisis countries around the period of crisis in each respective country. Our sample selection proceeded as follows. We collected company data from WorldScope for all emerging markets and developed countries that were classified by Caprio and Klingebiel (1999) as having had a systemic financial crisis. We had to exclude all crises prior to 1989 since we use the WorldScope does not have sufficient data before 1989. This left about 20 countries with a systemic crisis. We had to exclude some countries for which we did not have a significant number

of corporations with available data. For Venezuela, for example, we only had 9 corporations for the sample period.

Given this data availability, we are left with nine crisis countries, namely Czech Republic, Finland, Indonesia, South Korea, Malaysia, Mexico, Philippines, Sweden, and Thailand. For each country, we distinguish three periods. The crisis year is the year of the peak of the crisis as identified by Caprio and Klingebiel (1999). The pre-crisis year is defined as the average of the three years before the peak of the crisis and the post-crisis year as one year after the peak of the crisis. Table 2 reports the sample of crisis countries, and their respective crisis years.

In estimating the impact of resolution policies on the performance of the corporate sectors, we distinguish between the depth of the crisis, the recovery after the crisis and the sustainability of the recovery. As a measure for the depth of the crisis, we used the difference in a corporation's operating income, defined as earnings before interest and taxes with depreciation added, as a ratio of sales, i.e., EBITDA-to-sales, between the pre-crisis and during-crisis period. Our measure for the degree of recovery of corporate performance is similarly the difference in EBITDA-to-sales between the post-crisis and during-crisis period. And as our measures for the sustainability of the corporate debt structures we use the change in the interest rate coverage (measured by operating income-to-interest rate expenses) and the change in the leverage ratio (measured by the total debt-to-assets ratio), comparing again pre- with post-crisis periods.

Table 3 reports summary statistics of the company-specific data for EBITDA-to-sales, interest coverage and leverage, the three variables used in the empirical analysis, across all countries. We find that, measured by EBITDA-to-sales, firms performed worst during the crisis year, that firms had a worse interest coverage during the crisis year than before, and that firms were more leveraged at the peak of the crisis than before the crisis. We also find that, although both the performance and capital structure of firms improved after the peak of the crisis, firms do not reach pre-crisis levels within two years after the year of the peak of the crisis. When measuring performance and sustainability using other measures, similar results obtain. For example, the median return on assets falls from 5.5% in the pre-crisis period to 1.4% during the crisis period and then recovers to 2.8% in the post crisis period. And the price to book value of equity ratio moves from 1.8 before the crisis period to 0.7 during the crisis period, to recover to only 1.03 in the post-crisis period.

These general trends are also reflected in Figures 2 to 4 that plot respectively EBITDA-to-sales, interest coverage and leverage, for the three periods. The earnings and interest coverage distributions (Figure 2 and 3) shift to the left from the pre-crisis to the crisis period, and then recover somewhat, but not to the distribution before the crisis. Similarly, the distribution of leverage (Figure 4) shifts to the right during the crisis, and then back to the left after the crisis period, but is still generally to the right of the pre-crisis distribution.

Table 3 also reports the summary statistics for individual countries for the same set of variables. The patterns for each country are generally the same as the overall trend. Some exceptions are Finland, Indonesia, Mexico and Sweden, where post-crisis corporate sector performance is on average better than pre-crisis performance. In these countries, some corporations may have benefited from the depreciation of the exchange rate, explaining the better performance. This is not the case for the other countries: in the Czech Republic and Thailand, for example, post-crisis performance is actually the worst of all three periods. Korea and Malaysia correspond to the pattern for the whole sample, with the recovery performance above crisis, but below the pre-crisis level. In terms of interest coverage, the picture is more uniform across the countries: some deterioration during the crisis, followed by an improvement. The exceptions are the Czech Republic, Malaysia and Thailand where the average interest coverage ratios decline throughout.

Apart from industry and other corporation specific factors, such as initial financial structures, differences in policies adopted may explain some of the differences. Honohan and Klingebiel (2000) motivate the specific policy measures we investigate. They identified for a large sample of countries those policy measures, which could be systematically linked to fiscal costs of a systemic crisis. The three specific policy variables we use from their analysis: (1) whether the central bank has provided liquidity support to financial institutions during the crisis or not; (2) whether the government has guaranteed bank liabilities or not and (3) whether the government has established a publicly-owned, centralized asset management company or not. As noted in section 2, Honohan and Klingebiel show that these three measures particularly increased the overall fiscal costs of resolving a crisis, controlling for a number of country specific factors. Since we investigate whether these policies resulted in improved performance and financial sustainability of the corporate sector, we can shed some light on whether a tradeoff might exist for certain policies between fiscal costs and corporate sector outcomes.

Table 4 presents the policy measures taken in the sampled countries. There are some similarities in policies across countries. Most countries' governments for example, guaranteed the liabilities of the financial sector during the crisis, although the Philippines and the Czech Republic did not. About half of the countries had extensive liquidity support to the financial sector and similarly about half did establish a public asset management corporation. The Philippines is the only country that did not undertake any of the three resolution measures.

Using these variables, we aim to answer the following questions. What are the effects of open-ended liquidity support or unlimited guarantees on the financial sector during the containment phase on firm performance and sustainability? Does moving non-performing loans to a publicly owned, centrally managed asset management company during the resolution phase of a crisis affects firm behavior? In addition to the resolution policies themselves, we also want to assess how other factors influence both the speed and the sustainability of the recovery of the corporate sector. Specifically, we investigate the role of the quality of the legal and institutional framework. Moreover, we investigate to what extent initial conditions such as the quality of the legal framework and corporate

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debt structures matter for the impact of policies, by interacting policy variables with the legal indicators. The data allow us to control for certain firm or sector specifics that can affects firm behavior. To control for any sectoral differences across firms we use industry dummies (based upon two-digit SIC codes). As company-specific variable, we use for the performance regressions the corporation's initial debt-to-assets ratio.

We use the following specific model to explain the depth of the crisis, as measured by the deterioration of firm profitability, the EBITDA-to-sales ratio (Model 1).

$$(1) \quad \frac{EBITDA}{Sales}(pre-crisis) - \frac{EBITDA}{Sales}(crisis) =$$

f(Policy dummies, Legal framework (pre-crisis), Leverage (pre-crisis), Industry dummies).

We use first differences, rather than percentage increase, because EBITDA-to-sales ratio can take on non-positive values. We do not include among the policy variables the establishment of a public AMC dummy variable, as in the sampled countries AMCs were set up after the containment phase. We rather restrict the analysis to guarantees and liquidity as some countries used this to limit the impact of the crisis. The quality of the legal framework is proxied by the Law and Order index from the International Country Risk Guide compiled by the Political Risk Services group. We include in all regressions industry dummies, but these are not reported. We also estimate several specifications of model 1. All results are presented in Table 5.

We find that the profitability of firms fell significantly less in those countries that provided liquidity support to financial institutions. And, liquidity support interacts with leverage, suggesting that liquidity support is more important for high leverage firms. Our interpretation is that liquidity support helped financial institutions to extend credit to weak, but viable corporations, thus limiting the impact of credit crunch. A better legal framework is found to limit the depth of the crisis as well, suggesting that banks (and other creditors) are better able to distinguish the viability of corporations and willing to provide support to those deserving when a good legal framework is present. Furthermore, the regression results with the interactive variable (model 3) shows that liquidity support is more effective in limiting the reduction in firm profitability in countries with a better legal framework. The regression results imply that one standard deviation increase in the law and order index would improve the effectiveness of liquidity support to limit the drop in EBITDA/Sales by 1.5 percentage points, which can be compared to the average drop of in EBITDA/Sales of 9 percentage points and a median drop of 4 percentage points.[9] This further suggests that quality of intermediation of the liquidity support is significantly enhanced if the legal framework is more solid. We also find that extending guarantees on financial institutions' liabilities does not have any significant impact on limiting the depth of the crisis. Since extending guarantees come

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[9] This result follows from the regression coefficient of Column 3 in Tables 5, with the impact on the depth of the crisis calculated as –0.02*0.77=-0.015 or 1.5% less, where -0.02 is the regression coefficient and 0.77 is the sample standard deviation of the Law and Order index.

with large fiscal costs, it may just be a very costly policy to pursue, with no gains in recovery.

We use the same type of regression model to explain the (relative) recovery of the profitability of firms (Model 2).

$$(2) \quad \frac{EBITDA}{Sales}(post-crisis) - \frac{EBITDA}{Sales}(crisis) =$$

f(Policy dummies, Legal framework (pre-crisis), Leverage (pre-crisis), Industry

dummies).

We use again first differences because EBITDA-to-sales ratio's can take on non-positive values. We estimate several specifications of model 2, the results of which are presented in Table 6.

We find that the establishment of a public AMC has a positive and significant impact on the degree of recovery in firm profitability. We also find that an AMC is more effective in encouraging recovery in countries with a good legal framework, and for highly leveraged firms. This suggests that removing non-performing loans from banks' balances sheet in a country with a good legal framework through an AMC can increase banks' ability to resume lending to more viable firms, thus accelerating the recovery. The quantitative importance of the legal framework for the effectiveness of an AMC is large: an one standard deviation increase in the quality of the legal framework translates into a 2.8 percentage point increase in recovery. The clearest indication of this importance a good legal framework for this policy is to contrast Sweden and Indonesia. In Sweden, many loans were removed from banks' balance sheets and corporate sector performance recovered relatively quickly. This happened also in Indonesia, but the gains have been very limited, if any, so far, while the fiscal costs has been huge.

We find that extending liquidity support does not have a significant impact on recovery. The fact that the beneficial effects of liquidity support during the crisis phase do not extend to the recovery phase suggests that the ability to lend to viable firms during the recovery is not limited because of shortage of liquidity in the banking system. This conforms to other evidence that finds that typically banks are in a surplus liquidity position during the period immediate after a crisis. And similar to before, the extension of guarantees does not have any impact on the recovery of firm performance, suggesting that confidence in financial intermediaries by the general public and investors is not necessarily an immediate binding constraint on recovery.

To assess the sustainability of the debt structures, we investigate the improvement in the debt repayment capacity as well as the improvement in the debt structure itself. For the improvement in debt repayment capacity, we estimate the following model (Model 3).

(3) *Interest Coverage (post-crisis) – Interest Coverage (pre-crisis) =*

f(Policy dummies, Legal framework (pre-crisis), Leverage (pre-crisis), Industry

dummies).

Model 3 compares the interest rate coverage after the crisis with the interest rate coverage before the crisis and explains the difference as a function of the firm's leverage and legal framework before the crisis, and the three resolution measures. The regression results are presented in Table 7.

We find that the provision of open-ended liquidity support has a positive and significant impact on the improvement in the interest rate coverage, and more so in countries with a strong legal framework and for firms with a high leverage before the crisis containment phase. This is probably the result of two developments: the increase in operational performance associated with liquidity support, as reported above, and relatively lower overall interest rates when more ample liquidity is provided to financial intermediaries. The regression results do not allow us to separate the two effects, but the fact that the improvement due to liquidity provision is stronger for firms with higher leverage suggests that the effect of a lower interest rate is more important. We also find that the extension of unlimited guarantees has no significant impact on the change in interest rate coverage over the crisis period, again suggesting that guarantees only add to the fiscal costs. The establishment of public asset management companies is found to improve the interest rate coverage, but only for firms with a weak corporate debt structure before the crisis (as only the coefficient for the interaction term between AMCs and leverage is statistically significant while the coefficient for AMCs only is not significant). This suggests that AMCs may end up removing from banks' non-performing loans of corporations that were weak already before the crisis.

To assess the improvement in the debt structure, we estimate the following model (Model 4).

(4) *Leverage (post-crisis) – Leverage (pre-crisis) =*

f(Policy dummies, Industry dummies, Legal framework (pre-crisis), Industry

dummies)

Model 4 explains the improvement in financial leverage over the crisis period by the quality of the legal framework before the crisis, and the three resolution measures. The regression results of Model 4 are presented in Table 8.

We find that leverage increases in general over the crisis period, as the intercept is statistically significant. Otherwise there are no statistically significant coefficients, nor with most other specifications (not reported). There is some, but very weak evidence that leverage increases more so in countries with a weak legal framework as the sign for

liquidity is negative, but not statistically significant.[10] We also find some, but not statistically significant, evidence that financial leverage of firms is reduced more in countries that provide liquidity support during the crisis. AMCs do not appear to aid to the sustainability of debt structures, as the sign is positive, but not statistically significant. In general, however, the poor regression results suggest that leverage may not necessarily be the right measure to assess sustainability. Instead, the interest coverage ratio may be the more relevant measure as it captures the combined effects of changes in interest rate, leverage, and operating income.

5.   Conclusions

The literature on systemic restructuring stresses the need for the government to actively intervene to overcome the many coordination problems and to relieve the shortage of financial capital, which both impede progress with case-by-case restructuring. The core issue to deal effectively with a systemic crisis then becomes how to resolving the coordination issues while preserving or enhancing incentives for normal market-based restructuring and transactions. This requires achieving a consistent set of government policies, both among issues and sectors, and over time. Areas which have been stressed in the literature were consistency is required include the following.

The literature also stresses that fiscal and monetary policies have to support the recovery process in a systemic crisis. These supportive policies concern need to strike the right balance between exchange rate and interest rate support and avoiding a too serious credit crunch created by too high interest rates or too strict (new) capital adequacy requirements. It also covers other dimensions, however, such as whether there should be any allowance made for automatic rollover of payments for small and medium enterprises during the early phases of a crisis. As extensively debated in the context of the East Asian crisis, and earlier (for example, following the 1982 Chilean crisis), these supportive policies appear not always to have been in place during systemic crises.

Especially during the containment phase of a systemic crisis, but also afterwards, governments will have to balance achieving stability with aggravating moral hazard. One dimension is avoiding the extension of government guarantees of financial institutions' liabilities, which can create moral hazard and reduce the degree of freedom in future loss-allocation. Another dimension is the closing or suspension of some financial institutions. While a tool to signal a certain supervisory stance and limit moral hazard, closing some financial institutions can conflict with the regaining of deposit confidence. In some systemic crises, when the institutional framework for bank resolution was weak and when there was much uncertainty among depositors and investors on the intrinsic value of the banking system, closing a (limited number of) banks without addressing the large problems in the financial system aggravated the systemic crisis.

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[10] Including only the law and order and guarantees variable, and not the liquidity support and AMC variables, leads to a statistically significant coefficient on law and order.

In terms of financial reform, consistency concerns, among others, the area of prudential regulation in relation to the status of financial institutions' profitability and the availability of private capital. Capital adequacy requirements, for example, will need to be set consistent with current and future bank profitability and the availability of new, private capital. Raising capital adequacy requirements during a systemic crisis will often not useful, as capital is negative, bank earnings low or negative, and there is no or very limited new supply of capital. This also relates to public recapitalization and the fiscal envelope. Any public recapitalization of banks will have to take into the availability of fiscal resources. Several countries saw that recapitalization of financial institutions with government bonds did not necessarily lead to a restoration of confidence as fiscal resources were limited. A key, related inter-temporal consistency issue in any crisis is the government's own credibility. We did not address this issues here directly, but it might be useful to note that credibility requires as a pre-condition, ex-ante consistency in many areas.

Finally, there needs to be consistency between the institutional development of a country and the realism of certain approaches. Clearly, institutional deficiencies can rule out certain approaches in some countries, although they may be best practice in other countries. This can include, for example, a heavy reliance on a market-based corporate restructuring approach—where banks are recapitalized and asked to workout debtors—in an environment where corporate governance and regulation and supervision is. This will typically be a recipe for asset stripping or looting, rather than sustainable restructuring. Clearly, from this context, emerging markets will need different approaches than developed countries.

While many of these lessons are often mentioned in the literature we review, this set of "best practice" policies appears not often to be applied. This is likely as often, in the middle of the crisis, "mistakes" may be made. Ex-post, it will be easier of course to point out these inconsistencies, but even ex-ante there have been enough clear cases where the design of the financial restructuring program had some inconsistencies. Most often, these inconsistencies will come about as policy makers are trying to overcome political constraints, for which it is hard to judge whether they do this in the most efficient manner. At times, however, this may reflect genuine differences of opinion among policymakers or advisors on what constitutes best practice, as, for example, in the necessity to guarantee all liabilities during the initial phases of a crisis. The end result is similar in the sense that consistency is lacking.

Specific lessons from empirical part of the paper reinforce some of the general lessons, and add new evidence to some that be more controversial. The analysis on data of corporate sector performance suggests that unlimited government guarantees on bank liabilities have no impact on both the recovery and sustainability. Given that they are fiscally very costly, this suggests governments should avoid guarantees. The provision of liquidity support seems to limit the depth of the crisis, and speed recovery, and to improve the interest rate coverage of firms. The effect is again stronger in countries with a better legal and regulatory framework. Perhaps liquidity support avoids banks from having to raise interest rates to high levels during the crisis, which in turn alleviates the

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interest rate burden of firms. There will be a tradeoff using liquidity, however, given its impact on fiscal cost on one hand and the speed of recovery on the other hand. The empirical evidence also suggests that public asset management companies help corporations recover from a crisis, especially highly indebted firms, but do not necessarily improve the sustainability of the debt structure of firms. This suggests that, although asset management companies can help to clean the balance sheet of banks in the short run, they do not provide the right incentives for banks and firms to improve firm capital structure in the long run.

Perhaps the most important finding of the empirical work is that the quality of the initial regulatory framework matters both for a speedy and a sustainable recovery of a financial crisis. The framework matters directly as well as indirectly as we find that resolution measures have greater effects in an environment with a strong legal and regulatory framework. Public asset management companies, for example, are more effective in environments with better laws. This suggests that improvement of bankruptcy procedures and creditor rights may be important steps for countries to take towards building a financial system that is both capable of a speedy recovery from shocks, and less prone to a systemic financial crisis. It also suggests that support measures have to differ by the institutional environment. Establishment of centralized asset management companies, for example, may have to be limited to those environments with good legal framework to limit moral hazard.

More generally, the final effect of government efforts at restructuring will need to take into account the political economy factors behind the causes of the crisis and its resolution. In this context, there might be possibilities to actively try to remap ownership structures in a systemic crisis such that recovery is speeded up and more sustainable outcomes result. Unfortunately, while we know little on systemic crisis, we lack even more an understanding of the political economy of systemic crises.

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Table 1: Patterns of Systemic Banking Crises

Country	Crisis year	Fiscal cost (% of GDP)	Peak NPL (% of loans)	Real GDP growth	Change in exchange rate	Peak in real interest rates	Decline in real asset prices
Czech Rep	1998	14.0	38	+0.4%	-3.1%	6.2%	-56.6%
Finland	1992	11.0	13	-4.6%	-5.5%	14.3%	-34.6%
Indonesia	1998	50.0	65-75	-15.4%	-57.5%	3.3%	-78.5%
Korea	1998	37.0	30-40	-10.6%	-28.8%	21.6%	-45.9%
Malaysia	1998	16.4	25-35	-12.7%	-13.9%	5.3%	-79.9%
Mexico	1995	19.3	29.8	-6.2%	-39.8%	24.7%	-53.3%
Philippines	1998	0.5	20	-0.8%	-13.0%	6.3%	-67.2%
Sweden	1992	4.0	18	-3.3%	+1.0%	79.2%	-6.8%
Thailand	1998	32.8	33	-5.4%	-13.7%	17.2%	-77.4%

Data sources: "Crisis year" is the peak crisis year, from Caprio and Klingebiel (1999). The "fiscal costs as % of GDP" variable is from Honohan and Klingebiel (2000) and Tang, Zoli and Klytchnikova (2000) in the case of the Czech Republic. The "peak non-performing loans as % of total loans" variable is from Caprio and Klingebiel (1999) in the case of Indonesia, Korea, the Philippines and Thailand, Lindgren, Garcia and Saal (1996) in the case of Finland and Sweden, Krueger and Tornell (1999) in the case of Mexico, and Tang, Zoli and Klytchnikova (2000) in the case of the Czech Republic. The "real GDP growth" variable equals the percentage change in real fourth-quarter GDP in the crisis year compared to real fourth-quarter GDP one year before the crisis year. CPI inflation is used to get the real growth in GDP, and the growth in GDP is in terms of local currency. GDP data are from IFS (IMF). The inflation rate equals the percentage change in the CPI during the crisis year and is from IFS. The "change in the exchange rate" equals the percentage change of the exchange rate versus the US dollar during the first quarter of the crisis year. An increase in the exchange rate indicates an appreciation. The exchange rate data are from IFS. The "real interest rate spike" equals the peak in the real money market rate during crisis year. For the Czech Republic and the Philippines, the real discount rate is reported instead of the money market rate, due to data unavailability. The interest rate data are from IFS. The "real growth in asset prices" variables is the largest drop on a monthly basis in the stock market index during the crisis year compared to the level of the stock market index in January of the year before the crisis year. The return is in local currency and corrected for inflation. We use the Datastream global market indices for Finland, Mexico and Sweden, and the IFC global market indices for the other countries.

Table 2:   Sample Crisis Countries and Crisis Years

Country	Pre-crisis	Peak of Crisis	Post-crisis
Czech Rep	1995	1998	1999
Finland	1989	1992	1993
Indonesia	1995	1998	1999
S. Korea	1995	1998	1999
Malaysia	1995	1998	1999
Mexico	1992	1995	1996
Philippines	1995	1998	1999
Sweden	1989	1992	1993
Thailand	1995	1998	1999

Source: Caprio and Klingebiel (1999); authors' definitions.

Table 3:   Descriptive Statistics of Corporate Sector Performance

(means, medians (in brackets), and number of observations)

Country	EBITDA/Sales			Interest coverage			Debt-to-assets			# of
	Pre-crisis	Crisis	Post-crisis	Pre-crisis	Crisis	Post-crisis	Pre-crisis	Crisis	Post-crisis	Obs.
All	0.218	0.121	0.168	8.275	2.504	4.825	0.314	0.427	0.424	678
	[0.170]	[0.133]	[0.144]	[3.125]	[1.316]	[1.739]	[0.312]	[0.390]	[0.356]	
Czech	0.342	0.237	0.233	3.766	2.897	1.817	0.173	0.242	0.263	8
	[0.260]	[0.210]	[0.155]	[3.102]	[2.127]	[1.674]	[0.186]	[0.226]	[0.264]	
Finland	0.129	0.136	0.157	2.272	1.697	3.184	0.370	0.432	0.409	67
	[0.107]	[0.122]	[0.131]	[1.587]	[1.266]	[1.724]	[0.357]	[0.412]	[0.398]	
Indonesia	0.256	0.089	0.292	9.813	2.942	9.785	0.323	0.595	0.503	54
	[0.226]	[0.153]	[0.274]	[3.448]	[0.645]	[2.500]	[0.329]	[0.609]	[0.493]	
Korea	0.162	-0.029	0.170	2.235	-0.274	2.125	0.481	0.566	0.668	50
	[0.140]	[0.119]	[0.141]	[1.515]	[1.053]	[1.852]	[0.453]	[0.450]	[0.390]	
Malaysia	0.226	0.008	0.122	16.848	4.061	5.187	0.212	0.386	0.390	177
	[0.181]	[0.130]	[0.146]	[6.667]	[1.333]	[1.120]	[0.192]	[0.299]	[0.299]	
Mexico	0.258	0.241	0.307	10.215	2.665	4.411	0.258	0.338	0.330	43
	[0.207]	[0.225]	[0.272]	[3.280]	[1.835]	[3.125]	[0.287]	[0.319]	[0.303]	
Philippines	0.337	0.186	0.215	7.661	-1.908	2.681	0.258	0.319	0.320	41
	[0.271]	[0.175]	[0.175]	[4.348]	[0.799]	[1.282]	[0.272]	[0.296]	[0.335]	
Sweden	0.144	0.109	0.162	3.621	0.448	3.832	0.299	0.323	0.307	92
	[0.112]	[0.088]	[0.119]	[2.778]	[1.118]	[2.000]	[0.280]	[0.346]	[0.310]	
Thailand	0.247	0.255	0.130	6.304	4.222	5.840	0.406	0.504	0.507	146
	[0.200]	[0.200]	[0.130]	[3.226]	[2.222]	[0.952]	[0.411]	[0.532]	[0.509]	

Source: WorldScope.

Table 4:   Resolution Policies Across the Sample of Countries

	Yes	No
Guarantee	Finland, Indonesia, Korea, Malaysia, Mexico, Sweden, Thailand (7)	Czech, Philippines (2)
Liquidity support	Finland, Indonesia, Korea, Mexico, Thailand* (5)	Czech, Malaysia, Philippines, Sweden (4)
Public AMC	Czech, Indonesia, Korea, Malaysia, Mexico (5)	Finland, Philippines, Sweden, Thailand (4)

Notes: * indicates that liquidity support is provided to non-bank financial institutions only, not to deposit and money banks as well.
Source: Honohan and Klingebiel (2000).

Table 5: Depth of Crisis: Change in EBITDA/Sales

Variable	(1)	(2)	(3)	(4)
Constant	.142	**.289	.075	.090
	(.130)	(.145)	(.130)	(.120)
Guarantees	.025	.058	?	?
	(.066)	(.074)		
Liquidity support	***-.126	***-.142	?	?
	(.042)	(.047)		
Law and Order	?	*-.036	?	?
		(.009)		
Liquidity * Law	?	?	***-.020	?
			[-.100]	
			(.006)	
Liquidity * Leverage	?	?	?	**-.115
				[-.036]
				(.055)
Leverage	.138	.153	.160	?
	(.109)	(.114)	(.119)	
Adjusted R-squared	.026	.027	.051	.045
# of observations	659	659	659	659

Notes: Dependent variable is the difference between the EBITDA-to-sales ratio in the pre-crisis year and the EBITDA-to-sales ratio in the crisis year. "Guarantees" is a dummy variable that takes the value of one if the government has issued an unlimited guarantee on bank liabilities, and zero otherwise. "Liquidity support" is a dummy variable that takes the value one if the government has provided open-ended liquidity support to financial institutions, and zero otherwise. "Leverage" is the total debt-to-assets ratio in the pre-crisis year. "Law and Order" is the law and order index of ICRG in the crisis year. The law and order index ranges from 0 to 10 and is increasing in the quality of law and order. "Liquidity * Law" is the "Liquidity support" dummy interacted with the "Law and Order" variable. "Liquidity * Leverage" is the "Liquidity support" dummy interacted with the "Leverage" variable. Regression results include industry dummies, but these are not reported. We report standardized regression coefficients between square brackets. We standardize a multiplicative dummy by multiplying the coefficient by the average value of the non-dummy variable. For example, for Liquidity * Law the standardized coefficient (-.100) equals the average value of the law and order index (5.00) times the normal regression coefficient (-.020). We report heteroskedasticity-corrected standard errors between brackets. * indicates significance at a 10% level. ** indicates significance at a 5% level. *** indicates significance at a 1% level.

Table 6:   Recovery from the Crisis: Change in EBITDA/Sales

Variable	(1)	(2)	(3)	(4)
Constant	.108	-.168	.072	-.058
	(.100)	(.135)	(.102)	(.125)
Guarantees	-.015	-.099	?	?
	(.053)	(.064)		
Liquidity support	-.068	-.028	?	?
	(.044)	(.045)		
Public AMC	***.170	***.222	?	?
	(.037)	(.047)		
Law and Order	?	***.063	?	***.052
		(.020)		(.019)
Public AMC * Law	?	?	***.037	?
			[.185]	
			(.009)	
Guarantee * Leverage	?	?	?	-.060
				[-.019]
				(.201)
Liquidity * Leverage	?	?	?	-.230
				[-.071]
				(.187)
Public AMC * Leverage	?	?	?	***.659
				[.204]
				(.137)
Leverage	.195	.185	.145	?
	(.128)	(.128)	(.114)	
Adjusted R-squared	.034	.039	.032	.075
# of observations	651	651	651	651

Notes: Dependent variable is the difference between the EBITDA-to-sales ratio in the post-crisis year and the EBITDA-to-sales ratio in the crisis year. "Guarantees" is a dummy variable that takes the value of one if the government has issued an unlimited guarantee on bank liabilities, and zero otherwise. "Liquidity support" is a dummy variable that takes the value of one if the government has provided open-ended liquidity support to financial institutions, and zero otherwise. "Public AMC" is a dummy variable that takes value one if the government has established a publicly owned, centrally managed asset management company, and zero otherwise. "Leverage" is the total debt-to-assets ratio in the pre-crisis year. "Law and Order" is the law and order index of ICRG in the crisis year. The law and order index ranges from 0 to 10 and is increasing in the quality of law and order. "Public AMC * Law" is the "Public AMC" dummy interacted with the "Law and Order" variable. "Guarantee * Leverage" is the "Guarantees" dummy interacted with the "Leverage" variable. "Liquidity * Leverage" is the "Liquidity support" dummy interacted with the "Leverage" variable. "Public AMC * Leverage" is the "Public AMC" dummy interacted with the "Leverage" variable. Regression results include industry dummies, but these are not reported. We report standardized regression coefficients between square brackets (see Table 5 for more details on the standardization). We report heteroskedasticity-corrected standard errors between brackets. * indicates significance at a 10% level. ** indicates significance at a 5% level. *** indicates significance at a 1% level.

Table 7: Sustainability: Change in Interest Rate Coverage Ratio

Variable	(1)	(2)	(3)	(4)
Constant	-1.75	-3.77	*-1.77	***-3.76
	(1.10)	(3.32)	(1.05)	(1.41)
Guarantees	.365	-.137	?	?
	(.839)	(.873)		
Liquidity support	***.944	***1.20	?	?
	(.310)	(.346)		
Public AMC	-.198	.166	?	?
	(.287)	(.391)		
Law and Order	?	.443	?	**.483
		(.276)		(.239)
Guarantee * Law	?	?	.083	?
			[.415]	
			(.131)	
Liquidity * Law	?	?	***.172	?
			[.860]	
			(.059)	
Public AMC * Law	?	?	-.034	?
			[-.170]	
			(.066)	
Guarantee * Leverage	?	?	?	-1.06
				[.329]
				(1.25)
Liquidity * Leverage	?	?	?	***2.42
				[.750]
				(.846)
Public AMC * Leverage	?	?	?	**1.50
				[.465]
				(.72)
Adjusted R-squared	.053	.057	.052	.061
# of observations	523	523	523	523

Notes: Dependent variable is the difference between the interest coverage in the post-crisis year and the interest coverage in the pre-crisis year. "Interest coverage" is the interest coverage in the pre-crisis year. "Guarantees" is a dummy variable that takes the value of one if the government has issued an unlimited guarantee on bank liabilities, and zero otherwise. "Liquidity support" is a dummy variable that takes the value of one if the government has provided open-ended liquidity support to financial institutions, and zero otherwise. "Public AMC" is a dummy variable that takes value one if the government has established a publicly owned, centrally managed asset management company, and zero otherwise. "Leverage" is the total debt-to-assets ratio in the pre-crisis year. "Law and Order" is the law and order index of ICRG in the pre-crisis year. The law and order index ranges from 0 to 10 and is increasing in the quality of law and order. "Guarantee * Law" is the "Guarantees" dummy interacted with the "Law and Order" variable. "Liquidity * Law" is the "Liquidity support" dummy interacted with the "Law and Order" variable. "Public AMC * Law" is the "Public AMC" dummy interacted with the "Law and Order" variable. "Guarantee * Leverage" is the "Guarantees" dummy interacted with the "Leverage" variable. "Liquidity * Leverage" is the "Liquidity support" dummy interacted with the "Leverage" variable. "Public AMC * Leverage" is the "Public AMC" dummy interacted with the "Leverage" variable. We exclude observations for which the absolute value of the change in the interest rate coverage is larger than 10. Regression results include industry dummies, but these are not reported. We report standardized regression coefficients between square brackets (see Table 5 for more details on the standardization). We report heteroskedasticity-

corrected standard errors between brackets. * indicates significance at a 10% level. ** indicates significance at a 5% level. *** indicates significance at a 1% level.

Table 8: Sustainability: Changes in Leverage

| Variable	(1)	(2)
Constant	**.164	.078
	(.075)	(.041)
Guarantees	.022	?
	(.034)	
Liquidity support	-.038	?
	(.026)	
Public AMC	.013	?
	(.027)	
Law and Order	-.022	?
	(.014)	
Guarantee * Law	?	-.005
		[-.025]
		(.004)
Liquidity * Law	?	-.004
		[-.020]
		(.004)
Public AMC * Law	?	.006
		[.024]
		(.004)
Adjusted R-squared	.027	.026
# of observations	678	678

Notes: Dependent variable in (1) and (2) is the difference between the leverage in the post-crisis year and the leverage in the pre-crisis year, where we measure financial leverage as the total debt-to-assets ratio. "Guarantees" is a dummy variable that takes the value of one if the government has issued an unlimited guarantee on bank liabilities, and zero otherwise. "Liquidity support" is a dummy variable that takes the value of one if the government has provided open-ended liquidity support to financial institutions, and zero otherwise. "Public AMC" is a dummy variable that takes value one if the government has established a publicly owned, centrally managed asset management company, and zero otherwise. "Law and Order" is the law and order index of ICRG in the pre-crisis year. The law and order index ranges from 0 to 10 and is increasing in the quality of law and order. "Guarantee * Law" is the "Guarantees" dummy interacted with the "Law and Order" variable. "Liquidity * Law" is the "Liquidity support" dummy interacted with the "Law and Order" variable. "Public AMC * Law" is the "Public AMC" dummy interacted with the "Law and Order" variable. We exclude observations for which the change in leverage is larger than 100 percent. Regression results include industry dummies, but these are not reported. We report standardized regression coefficients between square brackets (see Table 5 for more details on the standardization). We report heteroskedasticity-corrected standard errors between brackets. * indicates significance at a 10% level. ** indicates significance at a 5% level. *** indicates significance at a 1% level.

**Figure 1: Frequency of Systemic Banking Crises**
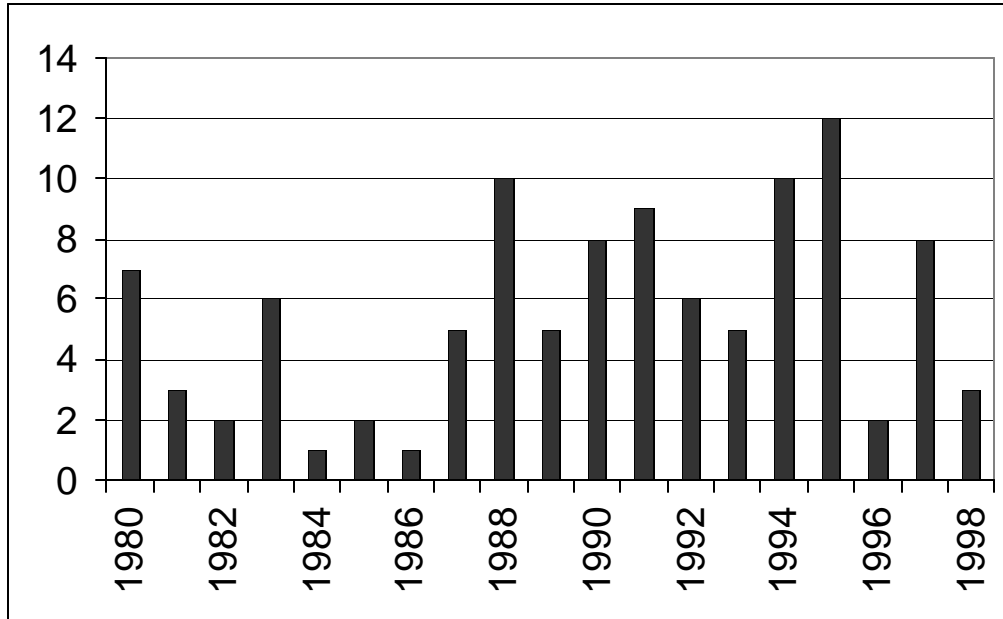
Notes: The frequency on the vertical axis indicates the number of countries that started a crisis in the year on the horizontal axis (out of the 93 sampled countries).
Source: Caprio and Klingebiel (1999); authors' calculations.

**Figure 2:   EBITDA-to-sales across Periods
(fraction of firms)**
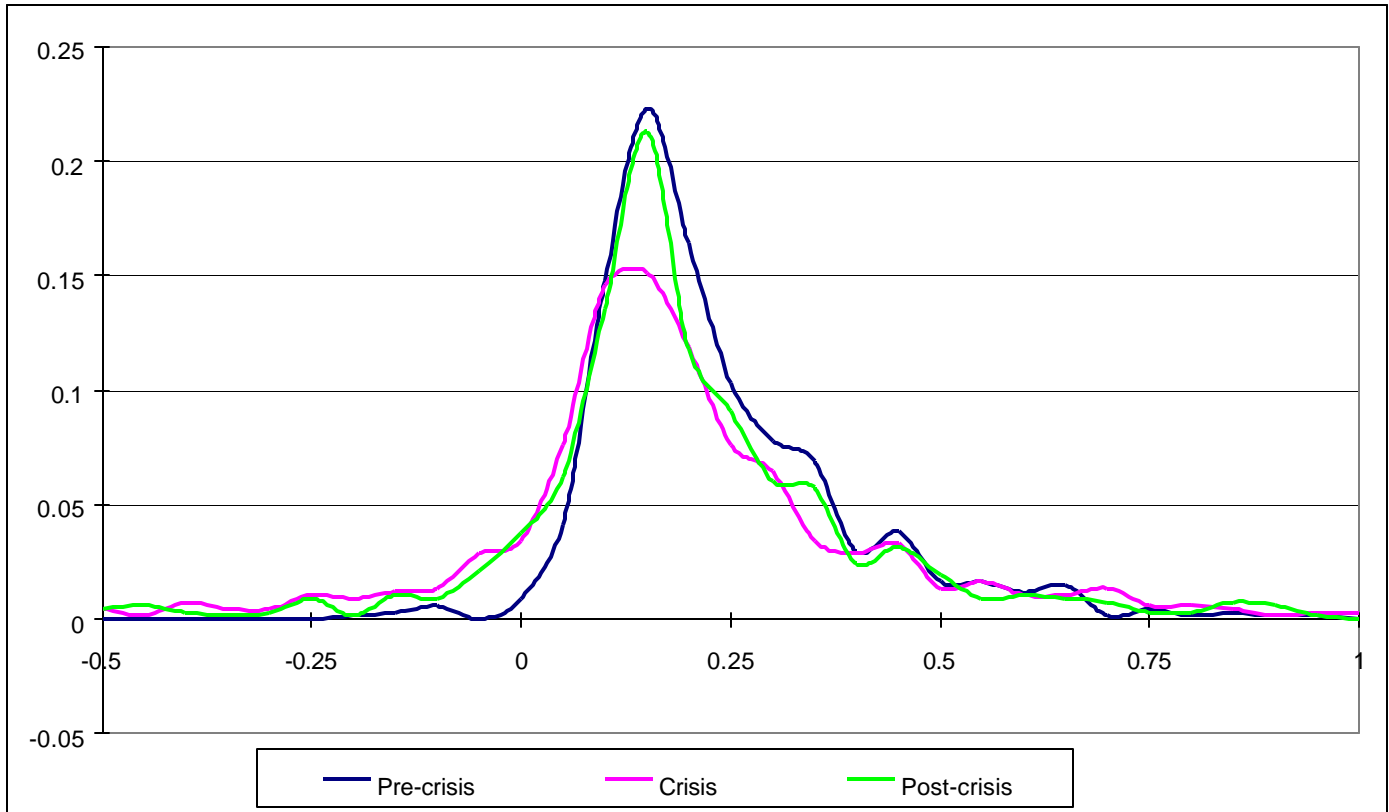
Notes: The sample includes nine countries: Czech Republic, Finland, Indonesia, South Korea, Malaysia, Mexico, Philippines, Sweden, and Thailand. The figure presents the distribution of EBITDA-to-sales averaged across all firms in the nine countries. The figure is smoothed.
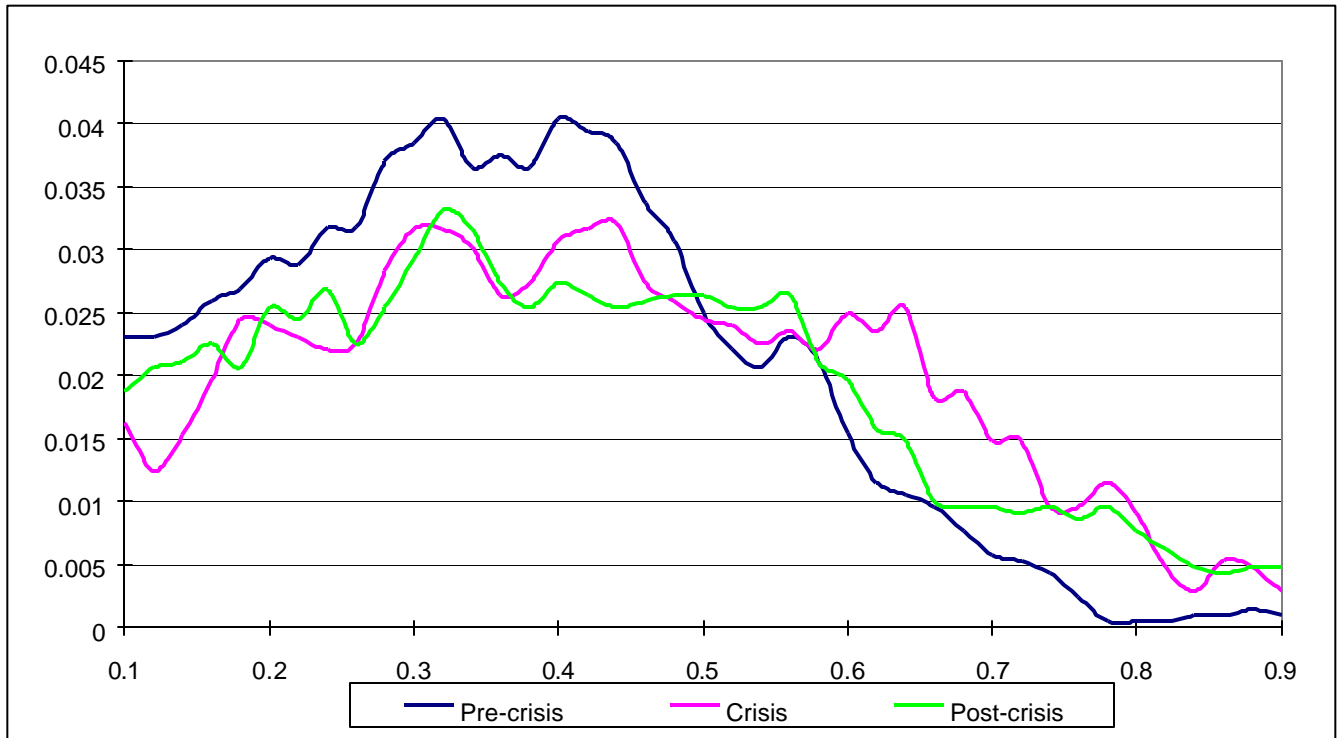Source: WorldScope.

Figure 3:   Interest Coverage across Periods
(fraction of firms)
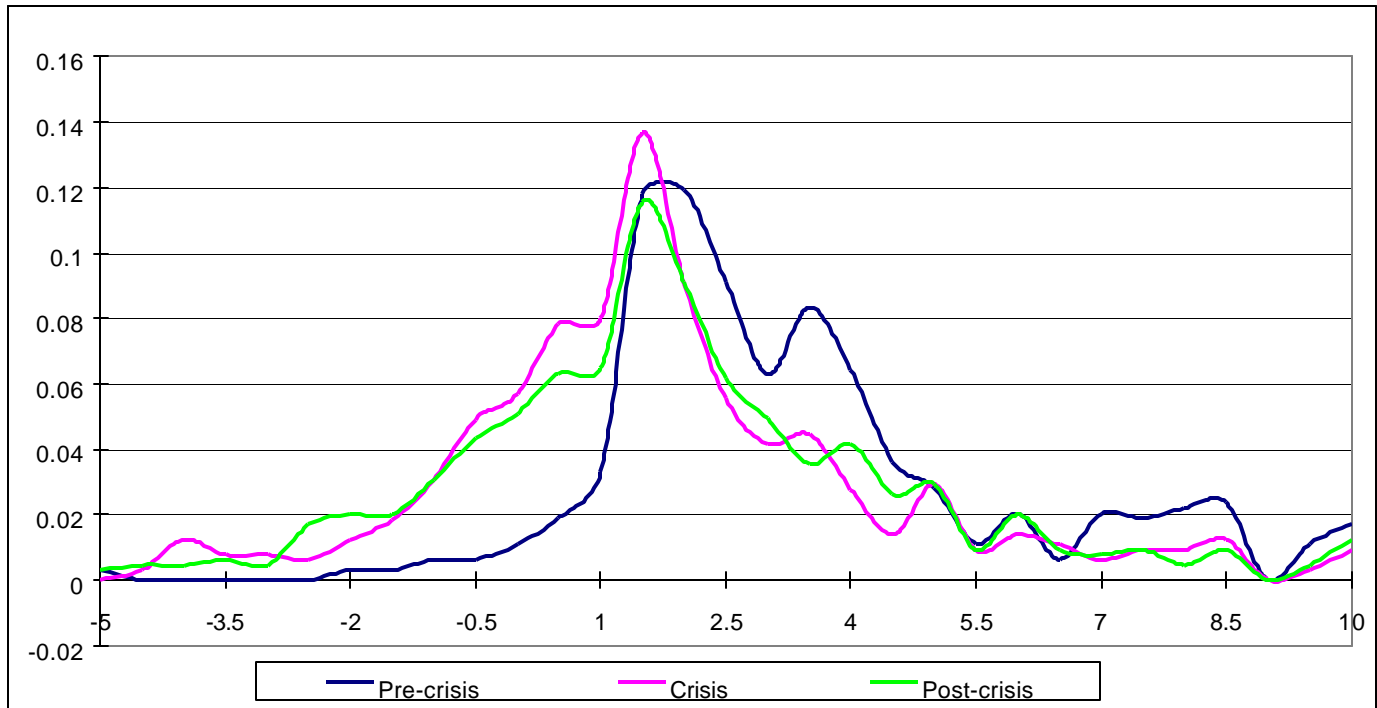
Notes: The sample includes nine countries: Czech Republic, Finland, Indonesia, South Korea, Malaysia, Mexico, Philippines, Sweden, and Thailand. The figure presents the fraction of firms with specific interest rate coverage (income before tax and adding depreciation as a ratio to interest payments) across all firms in the nine countries. The figure is smoothed.
Source: WorldScope.

Figure 4: Leverage across Periods
(fraction of firms)

Notes: The sample includes nine countries: Czech Republic, Finland, Indonesia, South Korea, Malaysia, Mexico, Philippines, Sweden, and Thailand. The figure presents the distribution of total debt-to-assets averaged across all firms in the nine countries. The figure is smoothed.
Source: WorldScope.