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## **Getting the Dog to Bark: Disclosing Fiscal Risks from the Financial Sector**

by Timothy C. Irwin

IMF Working Papers describe research in progress by the author(s) and are published to elicit comments and to encourage debate. The views expressed in IMF Working Papers are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

**I N T E R N A T I O N A L M O N E T A R Y F U N D**

**IMF Working Paper**

Fiscal Affairs Department

**Getting the Dog to Bark: Disclosing Fiscal Risks from the Financial Sector**

**Prepared by Timothy C. Irwin**

Authorized for distribution by Richard Hughes

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**Abstract**

Fiscal reporting is intended to warn of fiscal crises while there is still time to prevent them. The recent crisis thus seems to reveal a failure of fiscal reporting: before the crisis, even reports on fiscal risk typically did not mention banks as a possible source of fiscal problems. One reason for silence was that the risk arose partly from implicit guarantees, and governments may have feared that disclosure would increase moral hazard. The crisis cast doubt, however, on the effectiveness of silence in mitigating risks. This paper discusses how fiscal risks from the financial sector could be discussed in reports on fiscal risk, with a view to encouraging their mitigation.

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## I. INTRODUCTION<sup>1</sup>

One of the goals of fiscal reporting is to provide an early warning of looming fiscal problems so that corrective action can be taken before a crisis occurs (IMF, 2001a, p. vii; 2007, p. 1; 2012, p. 9). In the past decade and a half, the IMF, the World Bank, and others have accordingly put considerable effort, in both country-specific technical assistance and cross-country analytical work, into improving governments' fiscal reporting, and their reporting of fiscal risks in particular (e.g., IMF 2001a, 2001b, 2007, 2012; Brixi and Schick, 2002; and Cebotari and others, 2009). The idea is that better reporting will lead to better risk management, including the mitigation of some risks at their source, the shifting of other risks to the private sector, and gradual improvements in public finances so that the remaining risks can be absorbed without endangering the government's credit.

The crisis that began in the late 2000s thus revealed a failure of fiscal reporting (among other things). In advanced economies, public finances were ravaged, as governments bailed out banks and other financial institutions whose liabilities proved to be implicitly government-guaranteed and as tax revenues plunged relative to precrisis forecasts. Yet, before the crisis, fiscal reports provided no warnings of such problems. Given the nature of the problems, indicators of the government's debt and deficit could not easily have done so. Nor is it reasonable to expect governments to have forecast the crisis. But even reports on fiscal risk, which are specifically intended to explain how public finances could turn out to be worse than forecast, typically did not mention banks as a possible source of problems. In other words, the dog failed to bark.

Several factors contributed to the absence of warnings. One, no doubt, was the tendency of governments, like companies, to downplay possible problems. In advanced economies, governments may also have thought that the chance of a financial crisis was extremely low and that the risks were too small to be worth discussing. In addition, much of the risk arose from guarantees that were implicit (that is, not written in law or contract), and governments may have feared that disclosure would strengthen the guarantees, weakening their own ability to resist demands for bailouts and worsening moral hazard (risk-taking by banks and their creditors caused by the belief that they will be bailed out). Finally, during the crisis, if not before, governments may have feared that publishing bad news would start a bank run.

Although it is impossible to know what would have happened if budget reports had called attention to the fiscal risks created by banks—perhaps things would have been worse—the crisis has cast doubt on the efficacy of silence as a strategy for reducing the risks. In a recent

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review of the risks, the IMF thus called for more disclosure, while at the same time recognizing the problem of moral hazard (IMF, 2015). It argued that governments should “routinely report[] to the public the risks to the sovereign from banks as part of a broader discussion of fiscal risks, taking care not to exacerbate moral hazard,” noting that “public discussion of fiscal risks from the banking sector could help build support for reforms to tackle the problems,” but also that “disclosures could have unintended consequences, particularly if no credible measures are taken to limit fiscal risks” (IMF, 2015, pp. 34, 32).

This paper considers how governments should report the fiscal risks created by banks and other financial institutions, taking account of moral hazard and other possible problems with disclosure. In doing so, it aims to supplement the literature on the disclosure of risks cited above by examining the disclosure of a particular set of risks. It argues that there are good reasons for caution in the reporting of these risks. A prudent government would generally not assert that it had implicitly guaranteed any liabilities, unless it deliberately wanted to reinforce its commitment. Nor would it present a table of implicit guarantees alongside a table of explicit guarantees, as though the two were equivalent. During a crisis, its reporting would be particularly circumspect. Nevertheless, the paper concludes that it is possible to discuss the risks prudently. It sketches the elements of possible disclosures and offers an illustrative disclosure for a hypothetical country.

Although the fiscal risks created by banks vary from country to country because of the differences in financial sectors and government policies, some standard indicators of the risks could be reported by most governments. The government’s maximum theoretically possible loss could be indicated by the total consolidated liabilities of the financial sector, which could be broken down into components that were more or less likely to be implicitly guaranteed, such as deposits versus other liabilities. Possible indicators of the likelihood of a crisis include: (i) the stock and recent growth of credit, (ii) the level and recent growth of asset prices, as well as comparisons of current prices to estimates of fair values, (iii) gross external debt and recent current-account deficits, and (iv) indicators of the creditworthiness and liquidity of banks, including credit ratings, bond yields, and credit-default-swap spreads. Where available, estimates of the market value of implicit guarantees (such as those published by the IMF and OECD) could also be reported. Finally, governments could discuss the steps they had taken, or were planning to take, to mitigate the risks.

## **II. REPORTING OF THE RISKS BEFORE AND AFTER THE CRISIS**

In theory, indicators of the government’s debt and deficit could give some warning of the expected fiscal cost of a possible financial crisis. Phaup (2009), for example, argues that the U.S. government should recognize in its accounts the cost of implicit guarantees of the obligations of Fannie Mae and Freddie Mac. International standards for fiscal statistics and government accounts also provide some conceptual support for including implicit guarantees

in government debt.<sup>2</sup> But the valuation of most implicit guarantees is very uncertain, and probably too unreliable to recognize in conventional measures of the debt. In any case, no government appears to take this approach.

In practice, it is reports on fiscal risks that are expected to sound the relevant warnings. In some countries, there are reports or chapters specifically about fiscal risks (e.g., Australia and New Zealand before the crisis and Finland more recently). In others, budget documents discuss the subject in various degrees of detail and comprehensiveness. In the United States, the annual budget report *Analytical Perspectives* discusses in detail risks related to government credit and insurance programs. In Europe, fiscal risks are mentioned in governments' annual updates of their Stability and Convergence Programmes.

Before the crisis, however, these reports were silent on most of the risks created by banks. Any explicit guarantees were typically disclosed. In the United States, for instance, *Analytical Perspectives* discussed the government's deposit insurance in some detail, as well as other kinds of explicit insurance and guarantees. Reports on fiscal risks in Australia and New Zealand disclosed a wide variety of possible sources of higher spending or lower revenue, including explicit guarantees and indemnities (e.g., Government of Australia, 2005). But neither the Australian nor the New Zealand government discussed implicit guarantees or the risks created by the financial sector more generally.<sup>3</sup> (Neither Australia nor New Zealand suffered a financial crisis as severe as those of Europe or the United States, but both introduced guarantees for financial institutions at the height of the crisis, and both experienced a serious deterioration of public finances.)

In Europe, most precrisis Stability and Convergence Programme updates only briefly mentioned risks.<sup>4</sup> The newer members of the European Union typically said more about risks than the older members, though they too usually said nothing about implicit guarantees. Even the most risk-sensitive reports generally did not discuss the risks of financial crisis or their

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<sup>2</sup>These standards treat some contingent obligations as creating liabilities that must be recognized on the balance sheet; put options, financial guarantees, and groups of standardized guarantees are examples. Nor do obligations have to be written in laws or contracts to count as liabilities; *constructive* liabilities are in principle recognized in fiscal statistics when a "long and well-recognized custom" creates "a valid expectation of payment" (United Nations and others, 2009, paragraph 3.34, p. 42). See also the references to constructive obligations in International Public Sector Accounting Standard 19, "Provisions, Contingent Liabilities, and Contingent Assets" (IPSASB, 2013, vol. 1).

<sup>3</sup>Describing its exposure to explicit financial guarantees in 2005, the Australian government wrote: "Strategies to manage these exposures aim to ensure the underlying strength and viability of the entities, so that the guarantees are not triggered. Similar strategies may be adopted in relation to entities not subject to explicit guarantees" (Government of Australia, 2005, p. 3).

<sup>4</sup>Council Regulation (EC) No 1466/97 of July 7, 1997, Article 3(2)(d) required governments to report "how changes in the main economic assumptions would affect the budgetary and debt position."

possible fiscal costs. An exception is Estonia's report for 2003/04. Estonia had recently reported a current-account deficit of 13.7 percent of GDP, and its report confronts the risk of crisis:

According to international experience, a large current account deficit can lead to financial and currency crises, if coupled with various other indicators . . . Dynamic economic activity and investment, accompanied by large capital inflows, can result in over-optimism and cause an overheating of the economy. As seen from the experience of Asian crisis, weak financial sector can carry a risk of economic instability.

But the report does not mention possible fiscal costs of a crisis and concludes that there is no real problem.

The reporting of the U.S. government is another partial exception. The chapter on credit and insurance in the 2006 *Analytical Perspectives* discussed risks related to Fannie Mae and Freddie Mac, two government-sponsored entities (GSEs) whose liabilities were not explicitly government-guaranteed. The chapter implies that it would have been an error for investors to think that Fannie's and Freddie's debt benefited from implicit government guarantees:

Should a financial crisis affecting the GSEs and other financial actors develop, the market's misperception of Government backing of GSE securities could affect its course and resolution (Government of the United States, 2005, p. 94).

Also worth mentioning are central banks' reports on financial stability. The Bank of England's *Financial Stability Review December 2005*, for example, starts by saying "The U.K. financial system remains healthy," but it goes on to mention possible problems:

Nevertheless, in the longer term, some significant downside risks remain. Previous Reviews have noted the continuing accumulation of debt by many borrowers and the aggressive "search for yield" across financial markets . . . Previous experience suggests that such developments could herald future problems if assessments of risk were to change sharply (Bank of England, 2005, p. 9).

Like other reviews of financial stability published by central banks, the report does not, however, discuss the possible fiscal consequences of problems in the financial sector.

Since the onset of the crisis, governments have discussed the actual direct and indirect effects of the financial crisis on public finances, but there has been no widespread change in the reporting of the risks of future fiscal problems from the financial sector. There have, however, been some notable developments. In its 2012 Stability Programme update, for example, the Italian government acknowledged that banks can cause fiscal problems for governments and reported indicators of the size and riskiness of the Italian financial sector

(Government of Italy, 2012, pp. 51–53).<sup>5</sup> The U.S. Financial Stability Oversight Council, which is charged with eliminating expectations of bailouts, reports every year on the state of the U.S. financial sector and the government’s risk-mitigating policies. It also cites credit-rating agencies’ estimates of the value of implicit government guarantees of banks (e.g., U.S. FOOSC, 2014, pp. 4, 115–17). Perhaps the fullest discussion of the fiscal risks created by banks in a general report on fiscal risks comes from Finland. In this report, the Ministry of Finance explains the problem of implicit guarantees, noting, among other things, that deposit insurance in Finland is not legally underwritten by the government, but that “it is obvious that the State has an implicit liability related to deposit guarantee[s]” (Finnish Ministry of Finance, 2015, p. 37). The report also describes the Finnish banking sector and presents indicators of its size, concentration, funding sources, nonperforming loans, leverage, and capital-adequacy ratios. It states that new regulations will “materially decrease implicit liabilities . . . but not eliminate them altogether” (p. 34). Other relevant reports include Dutch Court of Audit (2012) and Government of Ireland (2014).

### III. ARGUMENTS FOR AND AGAINST DISCLOSURE

Statements of fiscal risk cannot be expected to prevent crises—they are only reports—but they may help encourage the mitigation of the risks. Bringing fiscal risks to light can in general spur mitigating action (IMF 2009, p. 14; 2012, p. 9), and spotlighting the fiscal risks of implicit guarantees in particular may encourage governments to tackle problems in the financial sector before they become problems for taxpayers.

Unpublished reports on fiscal risks can inform officials and politicians, and, unless leaked, create none of the risks of published reports. Published reports, however, help the public understand the problems and can help build support for policies that would otherwise be unpopular or be opposed by powerful lobbies (Bixi and Schick, 2002, p. 12). They can also demonstrate that the government is aware of and dealing with the problem of implicit guarantees, and they can be used to express the limits to the government’s willingness to protect creditors.

Reports on the fiscal risks created by the financial sector would not duplicate central banks’ financial-stability reports. Where central banks already produce such reports, a report on fiscal risks would probably reveal no new information about the health of the financial sector, but it would reveal the information in a different context to a somewhat different audience, and make clear that the risks were not ones that only a central bank should worry

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<sup>5</sup>Recent guidelines from the European Commission on the preparation of public reports on Stability and Convergence Programme updates say that “In order to assess the extent of possible risks to the budgetary outlook, information should . . . be provided on implicit liabilities related to . . . private debt to the extent that it may represent a contingent implicit liability for the government . . .” (European Commission, 2012, p. 14).



about. It would be where the government described the *fiscal* risks of a financial crisis and explained its approach to mitigating those risks.

There are, however, three possible reasons for not reporting the risks created by banks, or for reporting them with caution, namely the possibilities that

- The risks are insignificant.
- Disclosure would trigger a bank run.
- Disclosure would increase moral hazard or weaken the government's ability to resist claims for compensation.

### **A. Insignificance**

Before the crisis, governments in advanced economies may have considered the fiscal risks created by the financial sector to be insignificant, if they thought of them at all. The question here is not whether governments should have forecast the crisis; it would be unrealistic to expect that.<sup>6</sup> But reports on fiscal risks are intended to discuss how fiscal outcomes could differ from baseline fiscal projections; they are not predictions. Still, the number of factors that could cause future fiscal outcomes to differ from forecasts is infinite, so reports on fiscal risk have to focus on those factors that seem most important. It could be argued that the risks of implicit guarantees were (and perhaps even that they are now) too small to warrant disclosure.

Two factors determine whether implicit guarantees are significant: the probability of the guarantees' being called and the costs that arise if they are called. As a rule of thumb, risks that entail a large fiscal cost if they are realized should be reported even if the probability of their being realized is low, while risks with a low cost if realized might be reported only if the probability of their realization was moderate or high. In reality, the situation is more complex, because the possible cost of many risks varies continuously, with each degree of possible cost having its own probability. Nevertheless, not discussing implicit guarantees is reasonable if there is no possible outcome that has both a sufficiently large possible cost and a sufficiently high probability.

Current judgments about the risks that existed before the crisis are contaminated by hindsight bias, the tendency to think that the past was more predictable than it really was (Fischhoff, 1975), but there appears to have been good evidence even then that financial crises were too important to ignore. The introduction to a collection of papers on fiscal risk published in

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<sup>6</sup>On the one hand, severe crises are extreme, infrequent events, whereas rational forecasts are moderate. On the other, when most people believe that a financial crisis will happen, their beliefs are already causing it to happen: they are withdrawing their money from banks, refusing to roll over loans, seeking to sell their risky assets. So while crises can be predicted by mavericks, it is unlikely that governments, whose forecasts tend to reflect a broad consensus, will forecast a financial crisis.

2002 took explicit and implicit guarantees of banks as the first example of a fiscal risk, and reported that financial crises could increase government debt by as much as 50 percent of GDP (Bixi and Schick, 2002, p. 3). An IMF report on the analysis of debt sustainability published in 2003 said that explicit or implicit guarantees of the financial sector were usually the government's most important contingent liabilities (IMF, 2003, p. 30).

It is true that crises were most common in emerging markets, but the crises of Japan, Finland, Norway, and Sweden in the late 1980s and early 1990s showed that advanced economies were not immune to them.<sup>7</sup> Even the United States, which had not had a devastating financial crisis since the depression, had experienced the bailout of unguaranteed creditors of Continental Illinois bank in 1984, the savings-and-loan crisis of the 1980s and early 1990s, and the crisis of Long-Term Capital Management in 1998. More generally, a database available in 2003 revealed that there were 28 banking crises in advanced economies in the 33-year period ending in 2003 and that 23 of the 30 such economies experienced at least one crisis.<sup>8</sup> It also showed that many of the crises had a significant gross fiscal cost or were associated with a deep recession that would have cut into tax revenue.

The probability of future financial crises is impossible to estimate with confidence, and it may be quite small. Yet the evidence of the last 50 years ago does not support the view that it is so small as to be negligible. Given the severity of financial crises, there appears to be no justification on grounds of insignificance for not reporting the fiscal risks caused by banks.

## **B. Bank Runs**

Fear of starting a bank run is another reason for not discussing the fiscal risks created by banks. By announcing that a particular bank was in trouble, the government could trigger a run on the bank's deposits and other liabilities, especially if those liabilities were not explicitly government-guaranteed. The nature of bank runs is such that they may occur even if the bank is probably solvent and the government merely states that the bank is in some danger. On these grounds, Cuikerman (2009) recommends that central banks conceal information about troubled banks. (See also Blinder and others, 2008, p. 916.) This concern may not have been in people's minds in the mid-2000s, but was clearly relevant during the crisis.

The possibility of triggering a bank run implies that governments should be very cautious about disclosing the problems of a particular bank. It does not, however, rule out all public reporting of the risks created by the financial sector. First, while public reporting of risks during a crisis should be especially circumspect, the time at which the reporting is likely to

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<sup>7</sup>See Gorton (2012, pp. 29–31) and Reinhart and Rogoff (2009, p. 160).

<sup>8</sup>More recent evidence, not available to governments before the crisis, can be found in Laeven and Valencia (2013).

be most valuable is during booms or normal economies times, when there is little danger of a bank run. Second, much can be reported without referring to individual banks and, if particular banks are mentioned, there is no need to disclose private information. In countries in which the central bank regularly publishes a report on financial stability, a report on fiscal risks published by a ministry of finance could be expected to draw almost exclusively on information already published by the central bank. Third, when information is reported routinely as part of annual or semiannual reports on risk, it is less likely to be perceived as signaling a problem than when disclosure is ad hoc.

### **C. Moral Hazard and Claims for Compensation**

A third reason for silence is to avoid making implicit guarantees firmer. Implicit guarantees are unlike explicit guarantees in that they are vague. There are cases in which governments tacitly but clearly signal to markets that they will stand behind a bank or other enterprise, but often it is merely assumed that a government will be reluctant to let the entity fail. In such cases, implicit guarantees are not really guarantees at all, because whether a government will “honor” them depends on the circumstances. The U.S. government intervened to rescue Bear Stearns, for example, but not Lehman Brothers, perhaps because there was weaker legal authority and less political support for a second rescue. Likewise, the New Zealand government let several small finance companies fail in 2007, but when the crisis worsened, it guaranteed the liabilities of the surviving ones. The problem is that by discussing implicit guarantees a government could unintentionally make them firmer. This would weaken its position in any negotiation or litigation about a bailout. It would also increase moral hazard (the increase in risky lending that occurs when lenders are insured against losses), further increasing the government’s expected costs.

This concern is related to advocacy of “constructive ambiguity.” Discussing the tradeoff between the social costs of allowing a financial panic to occur and the social costs of encouraging reckless lending, Kindleberger (1978, chap. 9) argues that leaving investors in doubt about whether they will be rescued may be the best option. Freixas (1999) presents a formal model in which central banks do best to adopt a strategy that is partly random and thus unpredictable. The same reasoning suggests that governments should not precisely specify the circumstances in which they will protect banks’ creditors.

It is also possible to imagine cases in which discussing an implicit guarantee would clearly be harmful. Suppose that the government knows that it would probably rescue a troubled bank, but for some reason believes that the bank’s managers and creditors are unaware of this. Then raising the possibility that the bank’s debt was implicitly guaranteed would encourage the managers and lenders to assume more risk than was socially optimal.

For these reasons, advice on disclosing implicit guarantees has been very cautious. Reports that have encouraged governments to publish information on fiscal risks have generally not

included an unambiguous recommendation to disclose implicit guarantees. Budina and Petrie (2013, p. 192), for example, state that “Particular care must be taken about whether, and how, to disclose implicit fiscal risks.”<sup>9</sup>

Yet the crisis casts doubt on the effectiveness of silence in mitigating moral hazard. It did not create a kind of natural experiment that allows us to compare the effects of disclosure and silence, but it does suggest that silence is ineffective. It is clear that a government in the middle of a financial crisis may commit public money to protect depositors and other bank creditors, irrespective of the government’s legal obligations and even if it has not publically discussed the possibility of doing so. What causes a government to intervene is its analysis of the costs and benefits of intervention at the time, which is probably affected only slightly if at all by whether it has previously discussed implicit guarantees in a report on fiscal risks. If a single, small, and politically unconnected bank is on the verge of failing during a period of economic calm, the government may well judge that the costs of intervention exceed the benefits. If a systemically important bank is on the verge of failure during a panic, the government’s calculus will be different. Investors presumably recognize this, so moral hazard presumably depends mainly on investors’ forecasts of governments’ assessments of costs and benefits.

Thus, concerns about increasing expected fiscal costs do not preclude all discussion of implicit guarantees, but rather call for careful disclosure. In a discussion of fiscal risks published during good times, the government might disclaim all responsibility for liabilities that it had not explicitly guaranteed. It would also avoid saying anything that would unintentionally weaken its position in a negotiation or court case. But it could acknowledge that in a crisis it might, but would not necessarily, choose to assume certain liabilities to stop a panic. The discussion would probably be “constructively ambiguous” in the sense of keeping the government’s options open.

#### **IV. WHAT SHOULD BE REPORTED?**

Any report on the fiscal risks created by the financial sector should of course be country-specific. Some of the reporting that would make sense in an economy with a large and innovative financial sector would be unnecessary where the sector was small and conservative. Within a given country, reporting would differ during booms and busts. The reporting would also vary according to the policies the government had put in place to mitigate the fiscal risks of financial crises. A government that had introduced credible policies to prevent future bailouts might assert it had reduced or even eliminated implicit guarantees (for example by pointing to credit ratings or market-based measures that showed that supposedly too-big-to-fail banks did not benefit from any apparent advantages vis-à-vis

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<sup>9</sup>See also IMF (2001b, Box 8; 2007, pp. 47–48); Cebotari and others (2009, p. vii); and Everaert and others (2009, p. 7).

other banks). Such a government might focus on describing its risk-mitigating policies. Other governments might use the report to explain and build support for the risk-mitigating policies that they were developing. Nevertheless, certain information and indicators could be reported in most countries at most times. This section attempts to describe a possible common core of reporting, focusing on what is appropriate during times of prosperity.

The discussion could start by explaining the nature of the fiscal risks created by the financial sector, noting that a financial crisis could create a situation in which the government's least unattractive option was to provide financial support to banks even if it had no legal obligation to do so. If the country had experienced financial crises in the recent past, the report could refer to those crises and describe any support that was then given to banks, along with estimates of the eventual net fiscal cost of the crises. Where possible, the report could refer to analyses of market data or to credit ratings that indicated whether some banks' liabilities benefited from implicit government guarantees. As noted earlier, the government might disclaim legal responsibility for liabilities it had not explicitly guaranteed and stress that it would not necessarily provide any financial support in future. (Of course, this claim might not be credible if the government's other policies made it clear that the economic and political costs of bank failure would be very high.)

The heart of the report would discuss the current state of the risks created by the financial sector. These include the possibility of a recession caused or exacerbated by problems in the financial sector and the risks created by explicit guarantees, such as government-provided deposit insurance. The most difficult risks to describe would be those of implicit guarantees. The discussion would not treat such guarantees as being in any sense equivalent to explicit guarantees: it would not include a table headed "implicit guarantees" alongside a table of explicit guarantees. But some of the elements of the discussion might parallel the typical reporting of explicit guarantees. In the case of explicit guarantees, governments usually disclose the amount of guaranteed debts as an indication of the government's exposure (i.e., the worst-case scenario). They sometimes also disclose information that helps assess the probability of the guarantees' being called. Sometimes, they estimate the *values* of the guarantees (that is, the risk-adjusted expected net present value of the associated cash flows). By analogy, reports on implicit guarantees could provide information relevant to an assessment of the government's exposure, the likelihood of calls on the guarantees, and guarantee values.

### **A. Indicators of the Government's Exposure**

A rough indicator of the government's exposure is given by the liabilities of the financial sector. This amount could be divided into the part that was backed by explicit government

guarantees and the part that was not.<sup>10</sup> Liabilities not backed by explicit government guarantees could be further divided into those related to privately owned banks and those related to state-owned banks, the latter typically benefitting from firmer implicit guarantees than the former. The liabilities could also be divided into deposits and nondeposit liabilities and classified according to the size and systemic importance of the bank—deposits and the liabilities of large banks with a multitude of financial links to other large firms typically benefitting from firmer guarantees. As with the disclosure of the face value of explicit guarantees, these amounts would not indicate the probability of a crisis or its expected fiscal costs, only the costs of a worst-case scenario.

### **B. Indicators of the Probability of Crisis**

Estimating the probability of a financial crisis is much harder than indicating the government's exposure, but research on previous crises suggests that certain indicators, though they do not allow confident predictions of crisis, can reveal whether the risk of crisis is higher than usual. An idea of those indicators can be seen in the features of a stylized crisis—features that not all crises share, but which are common to many.

The archetypal crisis follows the bursting of a debt-fueled bubble in asset prices.<sup>11</sup> After a period of caution, good news of some kind causes investors' confidence to rise. The news might be a new technology or a financial innovation, perhaps following financial liberalization. Whatever the cause, investors bid up the price of shares, houses, commercial property, or other assets. Higher asset prices make lenders' collateral more valuable, which makes existing loans seem safer. Increasing confidence and greater collateral leads to more lending, which reinforces confidence and leads to further increases in asset prices, investment, and lending, which in turn boosts economic growth and reduces the government's deficit and debt-to-GDP ratio. As asset prices rise relative to the cash flows they generate, more borrowers can repay their loans only by refinancing, but optimism allows refinancing. Some of the financing comes from foreign investors attracted to the investment opportunities, and the capital inflows cause the exchange rate to appreciate and show up in current-account deficits. For a while, the process is self-reinforcing. Asset prices exceed traditional measures of fair value, but the belief that what goes up must continue to go

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<sup>10</sup>For an example of a similar approach, see Marshall, Pellerin, and Walter (2015), who divide the liabilities of financial firms in the United States into those that are explicitly government-guaranteed, those that past experience suggests are implicitly guaranteed, and those that appear to be unguaranteed.

<sup>11</sup>Elements of this stylized account of a crisis can be found in John Stuart's Mill's *Principles of Political Economy*, Bk. 3, chap. 12, §3 (Mill, 2006, pp. 540–44). The account here draws mainly on more recent work that looks prescient in the light of the crisis, including Kindleberger (1978, esp. chap. 2); Minsky (1977, esp. pp. 12–15); Galbraith (1990, chaps. 2, 8); Shiller (2000); and Aliber (2005).

up prevails. Optimists become richer than skeptics. Eventually, however, the process goes into reverse. The bubble bursts and many debts cannot be repaid.

After the bubble bursts, it may seem obvious that it had to burst: that what goes up must come down. This confidence will of course partly reflect hindsight bias. Yet indicators consistent with the stylized account above have shown whether a crisis is more or less likely than usual, and will remain useful, unless next time is different.

The stylized account suggest reporting the following indicators:

- Current-account deficits, external debt, and real appreciation of the currency<sup>12</sup>
- Growth in the prices of shares, houses, and commercial property and estimates of those prices relative to fair values<sup>13</sup>
- The stock and recent growth of credit provided by banks to the rest of the economy<sup>14</sup>
- The leverage and liquidity of banks and other leveraged lenders, as well as the level of their nonperforming loans and their ability to withstand shocks to interest rates, the value of collateral, the availability of funds, and other risk factors.

Also relevant are credit ratings and market prices. Rating agencies publish indicators of the creditworthiness of banks that incorporate a range of information, including the indicators mentioned above. There are also market measures such as bond yields and CDS (credit-default-swap) spreads and measures inferred from these indicators of the probability of a set of large banks simultaneously defaulting.<sup>15</sup> There might also be relevant contracts in prediction markets. All these could be mentioned.

The report could also discuss estimates of the government's own credit risk. When governments have moderate debts and deficits, high yields on their bonds or poor sovereign credit-ratings may reflect a belief that the government has large unrecognized liabilities, possibly including implicit guarantees of the financial sector. Though the recent crisis saw many governments get into trouble despite previously having high credit ratings and low bond yields, these measures do have predictive power.

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<sup>12</sup>See, e.g., Eichengreen (2003, chap. 9); Gourinchas and Obstfeld (2012); Reinhart and Rogoff (2009, chap. 10).

<sup>13</sup>See, e.g., Reinhart and Rogoff (2009, chap. 10); IMF (2013, p. 50).

<sup>14</sup>See, e.g., Gourinchas and Obstfeld (2012) and Schularick and Taylor (2012, pp. 1042–1059), as well as the advice in IMF (2013, p. 50).

<sup>15</sup>One example of such an indicator is found in Bank of Italy (2011, Section 3.1).

Many other indicators could be reported. Detailed reports on the stability of the financial sector usually include many measures of banks' profitability, leverage, and liquidity and may include the results of stress tests that estimate whether banks would survive various shocks.<sup>16</sup> Other indicators have been suggested by research. For example, it has been argued that crises are preceded by longer than usual chains of financial intermediation and shorter debt maturities (Shin, 2010), and the stylized account of crises given above also suggests that crises may be preceded by frequent use of expressions such as "economic miracle" and "financial innovation" (see Galbraith, 1994; Minsky, 1977, p. 13). While all these and other indicators could be reported, a section on the financial sector in a report on fiscal risks need not be as comprehensive and detailed as central banks' reports on financial stability or the FSAP (Financial Sector Assessment Program) reports produced jointly by the IMF and World Bank.

### **C. Estimates of the Value of Implicit Guarantees**

It is possible to go beyond the approach discussed so far and to estimate the market value of implicit guarantees. One way to do this starts with the recognition that guarantees are essentially put options and can therefore be valued as such (e.g., Gray, Merton, and Bodie, 2006). In particular, if it can be assumed that the government's implicit guarantee protects creditors but not shareholders, the value of the guarantee can be estimated by comparing banks' actual borrowing costs with the borrowing costs that would normally be expected given the volatility of the banks' share prices (IMF, 2014, pp. 111–13). Another approach makes use of the fact that credit-rating agencies often publish not only a standard credit rating, which takes account of any implicit guarantee, but also a counterfactual rating that would apply in the absence of government support (e.g., Schich and Kim, 2012; Ueda and Weder di Mauro, 2013; IMF, 2014, pp. 113–14). The difference between the actual rating and the counterfactual rating, combined with information on the typical relationship between ratings and interest rates, yields an estimate of the annual value to the banks of the implicit guarantee.<sup>17</sup>

### **D. Mitigating Measures**

Governments may also want to explain what they are doing to mitigate the risks they are disclosing, and the discussion could end with a sketch of relevant policies. Monetary and fiscal policy could be mentioned, as well as policies designed to reduce the demand for assets during a boom, such as increased property taxes or taxes on the sale and purchase of

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<sup>16</sup>See, for example, the IMF's database of Financial Soundness Indicators at <http://fsi.imf.org/>.

<sup>17</sup>It would also be possible to estimate the government's expected cash flows and its cash-flow- and value-at-risk; that is, estimates, with a given degree of confidence, of the most the government could spend and lose, respectively, in a specified period of time.



property. Also relevant would be any changes designed to reduce the bias in favor of debt financing created by typical tax policies. Many of the policies are likely to be specific to the financial sector. They might include the following:<sup>18</sup>

- Limits on banks' leverage that are designed to ensure that banks can withstand losses without becoming distressed—in particular minimum ratios of equity to assets (either total assets or assets weighted according to an estimate of their riskiness)—limits that might vary with the economic cycle.
- Requirements that banks have some “contingent” debt capital that automatically converts to equity when their share price falls below a threshold.
- Rules designed to ensure that banks can survive temporary liquidity crises, such as minimum reserve ratios or limits on the use of short-term wholesale funding.
- Rules that limit banks' operational risk-taking, such as restrictions on the amounts they can lend to any single borrower or sector and on the value of mortgage loans as a proportion of the value of mortgaged property.
- Requirements that banks disclose their finances to their depositors and other creditors, with the aim of helping creditors better monitor banks' creditworthiness.
- Policies that aim not to reduce the risk of banks' failing but the risk that failures will cause problems for the government, such as limits on banks' size, living wills, and mandatory separation of retail banking and payment services from other activities.

The government might also want to set out some of the principles that would guide any bank interventions. Those principles might include ensuring that creditors would be protected only if that was deemed to be in the national interest, that shareholders would be wiped out, and that management would be replaced.

Box 1 provides an illustrative discussion of financial-sector risks in a report on fiscal risks.

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<sup>18</sup>Two discussions of such policies are Crowe and others (2011) and Osiński, Seal, and Hoogduin (2013).

### Box 1. Illustrative Discussion of Financial-Sector Risks in a Report of Fiscal Risks

*The following is an attempt to show what a discussion of the fiscal risks created by the financial sector might look like. It is written as though it were part of a larger report that considered a variety of fiscal risks.*

The financial sector is another source of fiscal risk. As the recent global financial crisis has shown, problems in the sector can generate large costs for governments. Some of the possible costs are direct: in a crisis, governments may inject capital in troubled banks, guarantee their liabilities, or otherwise protect creditors from losses. These direct costs can be caused by calls on government guarantees or claims under deposit-insurance programs, which the government has no legal option but to meet. In addition, governments sometimes choose to protect creditors even when they are not legally required to do so, to prevent worse financial problems. In addition, financial crises usually create indirect fiscal costs because they reduce economic output and therefore tax revenues. Although our country came through the recent global financial crisis in good shape, the banking crisis of the 1970s, which had an estimated gross fiscal cost of 10 percent of GDP, is a reminder that these problems can occur here as well.

This section of the report therefore reviews the fiscal risks posed by the financial sector. It presents estimates of the liabilities of the sector, guaranteed and unguaranteed, and provides some indications of the severity of the risks. It also outlines the government's policies for mitigating the risks. More information on the health of the financial sector, and on many of the issues discussed here, can be found in the central bank's most recent report on financial stability.

The government bears risks related to the financial sector because of deposit insurance and, for the reasons outlined above, because of the importance of the sector to the economy. Total insured deposits under the deposit-insurance scheme are about 40 percent of GDP. (The table below sets out some of the main indicators discussed in this section of the report and compares them with the values reported in last year's report on fiscal risks and with the average value in a group of comparator countries). The total liabilities of the financial sector are about 300 percent of GDP. This figure gives a crude indication of the maximum possible liabilities the government might be asked to assume in an extremely unlikely, indeed virtually impossible, worst-case scenario. Although it is not an estimate of the government's losses under any remotely likely scenario, it shows that the maximum possible costs of a financial crisis are much larger than the maximum possible costs associated with many of the other risks discussed in this report.

	Current value	Value reported last year	Average current value in reference group
<b>Exposure</b>			
Total liabilities of the financial sector (percent of GDP)	300	280	180
of which government-guaranteed	40	38	50
<b>Asset-price growth</b>			
Growth of house prices in last five years (percent)	60	32	5
Growth of commercial-property prices in last five years (percent)	50	44	10
Growth of share prices in last five years (percent)	100	60	50
Growth of credit in last five years (percent)	40	38	7
<b>Soundness of banks</b>			
Capital-adequacy ratio	16.0	15.4	14.0
Capital as percentage of assets (not risk weighted)	7.4	7.2	9.0
Nonperforming loans as percentage of total	2.7	2.8	2.5
<b>External accounts</b>			
Average current-account deficit in last five years (percent of GDP)	3.0	3.5	1.0
Gross external debt (percent of GDP)	40	40	30
Increase in real effective exchange rate in last five years (percent)	15	16	-1
<b>Measures of government creditworthiness</b>			
Average credit rating (1 is best)	1	1	4
CDS spreads on five-year government borrowing (basis points)	30	35	100

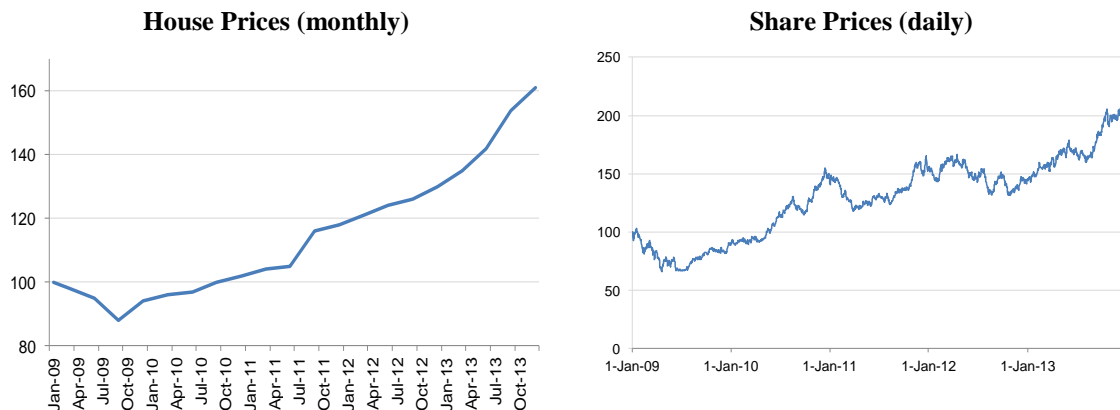
**Box 1. Illustrative Discussion of Financial-Sector Risks in a Report of Fiscal Risks  
(Continued)**

For the avoidance of doubt, it should be understood that the government stands fully behind insured deposits, but has no responsibility for any liabilities it has not insured or guaranteed. It will seek to ensure that if any problems arise in the financial sector those problems have no adverse consequences for taxpayers.

One current cause for concern is the level of house prices, which have risen by approximately 60 percent in the last five years (see left-hand panel of figure below). The growth of prices has also accelerated this year. Although some of the increase may be explained by growing incomes and lower interest rates, the ratios of prices to incomes and prices to rents have also risen and are now higher than their historical averages and higher than in most other countries. During the same period, the price of commercial property has increased by about 50 percent.

Credit has also been growing faster than the economy. International experience suggests that financial crises are more likely to occur after a period in which total borrowing in the economy has increased quickly. In our country, the total credit extended by all financial institutions has risen by 40 percent in the last five years. The ratio of lending to GDP is now well above its average level over the last 30 years.

**House and Share Price Indexes, 2009–13**  
(January 2009 = 100)



As the central bank's most recent report on financial stability shows, banks have a lot of capital (more than regulation requires) and are well protected from the effects of any temporary shortages of liquidity in international markets. Nonperforming loans remain a small proportion of the total. Nevertheless, some highly indebted businesses and households would struggle to repay their debts after a sharp fall in property prices and a sharp rise in interest rates. If sufficiently many borrowers stopped servicing their debts, some banks would need to replenish their capital. (See the section on stress tests in the central bank's report.)

Moreover, some analysis suggests that credit-ratings agencies believe that the country's banks, like those of other OECD countries, benefit from "implicit government guarantees." In particular, the banks have higher credit ratings and lower borrowing costs than appear to be justified by their intrinsic financial strength, and the difference has been attributed mainly to implicit government support.

**Box 1. Illustrative Discussion of Financial-Sector Risks in a Report of Fiscal Risks  
(Concluded)**

Share prices have also risen sharply, especially in the last year, but pose a smaller risk. While they fell during the financial crisis, they have since rebounded and are now about twice as high as they were five years ago (see right-hand panel of figure above). Price-earnings ratios and dividend yields are higher than historical averages, but remain less extreme than they were just before the crash of 2000. There is little evidence that equity investors are highly leveraged, in contrast to their counterparts in the property sector, so a sharp and sudden fall in share prices is unlikely to create big problems for banks.

International experience suggests that financial crises are more likely in countries with a lot of external debt, a history of large current-account deficits, and an appreciating exchange rate. In our case, gross external debt—that is, foreign debt contracted by either the public or private sector—is moderate, at 40 percent of GDP. Also, about half this debt is in local currency and would not become more difficult to repay if the currency were to depreciate. Although the country has recently run current-account deficits (3 percent on average over the last five years), the deficits have been declining, and this year a small surplus is forecast. The real effective exchange rate has appreciated over the last five years, but according to analysis by the IMF it remains “broadly in line with fundamentals.” (The real effective exchange rate is an inflation-adjusted weighted average of exchange rates between our currency and the currencies of our main trading partners.)

The government’s fiscal position is another point of strength. As discussed earlier in this report, public finances are in good shape. Debt remains moderate and the deficit is declining. Measured debt does not include any contingent liabilities associated with the financial sector, but the assessments of credit-rating agencies and financial markets, which incorporate analysts’ views of such risks, also imply that public finances are strong. The government retains a triple-A credit rating from all the major rating agencies, and the cost of insuring the government’s debt, as measured by the five-year credit-default-swap spread, is currently only 30 basis points. This means that it costs \$3,000 a year to insure \$1 million of the government’s debt against default, which is much less than it costs to insure most other governments’ debts.

Although the evidence is mixed, overall the risks from the financial sector raise significant concerns. Some indicators, including the external accounts, are consistent with a relatively low level of risk. But the continuing rise of property prices and the associated growth of debt are worrying. Moreover, any evidence that banks might be benefiting from free “implicit government guarantees” of their liabilities implies that taxpayers are unwittingly subsidizing banks.

The government is therefore taking further steps to mitigate the fiscal risks created by the financial sector. At the most basic level, prudent fiscal and monetary policies continue to be used to keep the economy stable. In addition, regulation continues to limit risk-taking by banks and other financial institutions. Recently, however, the government has introduced a new regulation that limits banks’ ability to make mortgage loans where the value of the loan is more than 80 percent of the value of the mortgaged property, which will help prevent unwarranted further increases in house prices. In addition, as discussed in the recent joint report by the central bank and ministry of finance, the government is introducing measures that will make it easier to resolve any future problems affecting one of the country’s banks without creating problems for the rest of the economy. The government continues to monitor the sector closely and stands ready to take further steps to mitigate the risks if necessary.

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