

**FOR  
AGENDA**

SM/09/210

August 3, 2009

To: Members of the Executive Board

From: The Acting Secretary

Subject: **Crisis-Related Measures in the Financial System and Sovereign Balance Sheet Risks**

Attached for consideration by the Executive Directors is a paper on the crisis-related measures in the financial system and sovereign balance sheet risks, which is tentatively scheduled for discussion on **Monday, August 31, 2009**. Issues for discussion appear on page 36.

The staff proposes the publication of this paper after the Executive Board completes its discussion, together with a PIN summarizing the Executive Board's discussion.

Questions may be referred to Ms. Cheasty, FAD (ext. 38706) and Mr. Das, MCM (ext. 36330).

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INTERNATIONAL MONETARY FUND

**Crisis-Related Measures in the Financial System and Sovereign Balance Sheet Risks**

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Monetary and Capital Markets Departments

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July 31, 2009

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## EXECUTIVE SUMMARY

- **Measures to support the financial system have had a limited impact on fiscal deficits so far, but sovereign balance sheets have expanded and risk exposures have risen substantially.** Moreover, interventions by institutions other than budgetary government—such as the central bank or sovereign wealth funds—have led to a blurring of policy roles.
- **This raises some key fiscal and financial management challenges, with consequences for sovereign creditworthiness.** This relates especially to the management of off-balance sheet contingent risks that arise given the extensive use of guarantee facilities. Care is also needed to ensure that efforts to address the financial (and corporate) sectors' balance sheet problems do not undermine the public sector balance sheet. Impairment of the public sector balance sheet would impede the policy flexibility needed to secure a durable economic recovery, the restoration of financial sector stability, and a return of monetary policy operations to a normal mode.
- **Proper management of financial assets and liabilities, at the sovereign level is, thus, essential to protect fiscal solvency.** Components include: (i) specifying an asset-liability management strategy within a medium-term macroeconomic framework that defines a path for fiscal consolidation and restoring monetary policy channels; (ii) to the extent consistent with financial stabilization goals, pursuing fiscal solvency by refraining from unrequited support (subsidies), maximizing recovery rates, minimizing the realization of contingent liabilities, and limiting quasi-fiscal operations; (iii) identifying and managing financial risks and resolving institutional deficiencies; (iv) upholding transparency and accounting standards; and (v) specifying debt management strategies that are robust to the potential materialization of contingent liabilities and take account of the scale of balance sheet risks, including their impact on financing costs.
- **In particular, this implies preparing the ground for an orderly unwinding of the support measures.** Besides necessary macroeconomic conditions, the timing of unwinding will also depend upon the existence of structural preconditions. Market confidence that conditions have begun to normalize is important and some agreed market indicators could be helpful. Ideally, a robust framework of sound financial regulation will have been specified. Sequencing will need to address arrangements for asset disposal, transfer of residual risks to the private sector, including from guarantee programs, and to repair balance sheets of central banks and relevant government entities.
- **The possible international ramifications of any unwinding will also need to be considered, as well as domestic coordination.** These include the scope for coordination of policies and operational aspects during the unwinding phase. To enhance credibility, there may be scope for common methodologies to assess the state of financial systems, active exchange of international experience, and sending a clear signal that conditions are normalizing. Internationally coordinated approaches would also be needed to help minimize long-term distortions, opportunities for arbitrage across borders, and the use of measures that could be construed as being protectionist.

### Box 1. Key Policy and Operational Messages

#### *Management phase*

- A comprehensive balance sheet approach is required to understand and manage the fiscal impact of public interventions in the financial sector. This approach should encompass all public entities involved in providing support (paragraph 11).
- Sovereign asset-liability management (ALM) should derive from a clear medium-term macroeconomic strategy, which specifies the path from stimulus to consolidation—timely articulation of such a strategy will be important for sustaining confidence (paragraph 18).
- To effectively manage the full extent of risks, including off-balance sheet contingent risks, and maximize balance sheet protection, the ALM strategy must be informed by a robust risk assessment—e.g., through stress testing (paragraph 20).
- A Statement of Fiscal Risks is not only an important communication tool but provides a framework for managing risks (paragraph 21).
- To deal with valuation difficulties, ALM policies should set incentives for price discovery. Too aggressive a shift away from mark-to-market valuation could be counterproductive (paragraphs 22 and 24).
- Assets should be managed under a clear mandate that: defines criteria for buying and selling; addresses valuation issues; avoids market distortions; and provides operational autonomy (paragraph 33).
- To protect fiscal solvency, governments should, where possible, refrain from unrequited support, manage and dispose of acquired assets in a way that maximizes recovery rates, and minimize the realization of contingent claims (paragraphs 17, 33, and 38).
- Budgets should reflect the full subsidy cost of guarantees—i.e., a reserve provision on the basis of expected losses (paragraph 39).
- Debt management strategies should take account of the changed risk exposure on sovereign balance sheets (paragraphs 42 and 43).
- The government should exercise its (temporary) ownership rights of financial and non-financial firms in accordance with best-practice corporate governance rules (paragraph 35). Further support should be based on targeted objectives, ensure a level playing field, and avoid protectionism (paragraph 45).

#### *Unwinding phase*

- For a credible disengagement strategy, a phased approach is likely to be required that will avoid market disruptions and maximize asset recovery rates (paragraphs 48, 59, 67, and 68).
- Monitorable indicators can help determine whether preconditions for unwinding interventions have been met (paragraphs 57 and 62). Common approaches across regulators for stress testing of financial institutions would also help (paragraph 79).
- Redundant or ineffective facilities should be closed first (paragraph 59).
- Access to support should be made increasingly unattractive, including by removing any subsidies on guarantees and otherwise transferring risks under guarantee programs to the private sector (paragraphs 58 and 67).

- Incentives for private recapitalization should be developed. For large equity sales, a pre-announced timetable or trigger indicator can help define expectations and ensure any macro-impact is accommodated (paragraphs 71 and 72).
- Central bank balance sheets, and those of other public sector entities, should be reimbursed for any losses from crisis-related interventions. Quasi-fiscal activities should be transferred to the government budget; adequate capital to maintain central bank independence over the long run should be assured (paragraphs 50 and 76).
- Funding mechanisms for deposit insurance schemes must be adequate going forward (paragraphs 69 and 76).
- The pace and scope of unwinding should be coordinated both within and across borders. Given the associated political economy considerations, close and continuing international partnerships, including with the private sector, could help make the issue of unwinding less complex and more durable (paragraph 78).

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

1. **In response to the crisis, country authorities have intervened to an unprecedented extent in the financial system.** Within four months after the fall of Lehman Brothers, some advanced economies had made commitments of more than 40 percent of GDP (28 percent, on average, in G-20 countries).<sup>2</sup> Interventions have been bold, unusually fast, and extremely diverse—guarantees, liquidity support, asset purchases, and recapitalizations. Moreover, this crisis has affected a more diverse financial sector than in traditional banking crises—investment banks, insurance companies, private equity companies, and hedge funds.

2. **Attention is now turning to balancing the defense of financial stability with more focus on safeguarding fiscal solvency.** While the crisis may not be over, and interventions may need to continue, their fiscal impact needs to be understood and contained to the extent consistent with completing the recovery.<sup>3</sup> However, the scope and diversity of the measures means that their impact on the public finances is not straightforward.

- Together with the impact of monetary and fiscal easing to support aggregate demand, the interventions have significantly affected the size and composition of government and some central bank balance sheets.
- While gross public debt has risen sharply in many countries, the acquisition of financial assets means that interventions have not yet increased net debt—nor reduced sovereign net worth—to the same extent.
- The support measures have been carried out by a wide range of public institutions (including, notably, central banks) with different reporting and oversight mechanisms.
- Complex valuation issues relating to assets and liabilities are emerging. Frozen, or volatile market conditions, and innovations in financial engineering have created technical difficulties in accounting for and valuing some assets; and reliance on guarantees makes the true impact of the support difficult to determine.
- The ultimate impact on fiscal solvency will depend on how acquired assets and liabilities are managed and disposed of. To minimize fiscal impact, assets will need to be divested at the lowest possible loss, and contingent liabilities contained.

3. **The interventions also raise several broader policy challenges.**

- The primary goal in managing the assets and liabilities resulting from interventions must be to help anchor macro-expectations, while providing incentives for the restoration of financial market stability.

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<sup>1</sup> The paper was supervised by Adrienne Cheasty and Udaibir S. Das with a team comprising: Luis Cortavarria, Vincenzo Guzzo, Allison Holland, Philippe Karam, Daehaeng Kim, Ian Lienert, Edouard Martin, Michael Papaioannou, Iva Petrova, Abdourahmane Sarr, Mark Stone, and Mauricio Villafuerte.

<sup>2</sup> The State of Public Finances—Outlook and Medium-Term Policies After the 2008 Crisis, SM/09/27; and The Acting Chair’s Concluding Remarks, BUFF/09/32.

<sup>3</sup> Such as the further recapitalization, or other types of support for bank restructuring, that might become necessary as the scale of potential balance sheet problems become clearer and the crisis continues to unfold.



- In some cases, the use of multiple public institutions has resulted in a blurring or redefining of institutional roles, and risk spillovers across the components of the sovereign balance sheet. Clarity needs to be restored about the roles of budgetary government, the central bank, and other agencies involved in crisis management.
- Rapid and continuing deleveraging has shown that cross-border implications of the crisis and responses are more significant than in past crises. In some cases, lack of domestic and cross-border coordination has hampered the consistency and efficacy of measures, raising concerns about financial protectionism.
- The right conditions and incentives are needed for an orderly unwinding of the interventions. Given the extent of the use of some measures, several of the arrangements need to be rationalized. A credible strategy should support monetary policy objectives and fiscal sustainability and restore functional independence, but should take place only when the financial system has recovered its self-sufficiency.

4. **This paper addresses institutional aspects of the complex policy agenda outlined above.** The macroeconomic challenge—which cannot be separated from the management of the fiscal stimulus—will be addressed in a separate staff paper.<sup>4</sup> Chapter II updates previous overviews of the interventions and describes their impact on the sovereign balance sheet (treating all public institutions involved as components of the sovereign);<sup>5</sup> Chapter III discusses appropriate asset-liability management given the sovereign’s expanded role; and Chapter IV considers issues related to unwinding the interventions.

## II. CRISIS-RELATED INTERVENTIONS: MODALITIES AND IMPLICATIONS

### A. The Objectives and Scope of Intervention

5. **Interventions have evolved over the crisis.** Early on, when the problem appeared to be one of bank liquidity and potential bank runs, the focus of governments and central banks was on *containment*—deposit insurance, other guarantees, lending, and liquidity facilities. As the crisis deepened, central banks introduced unconventional policy measures, and governments augmented their support packages with asset clean-up and recapitalization—as crisis *resolution* tools. By then the financial sector’s problems had fed through to the nonfinancial private sector, eliciting a shift toward real sector support.

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<sup>4</sup> The effectiveness of intervention measures for financial stability and exit from unconventional monetary policy measures are being examined in the forthcoming *Global Financial Stability Report*. The issue of ensuring fiscal solvency—which goes well beyond the proper management of the interventions discussed in this paper—was analyzed in *The State of Public Finances* (op. cit). While public debt in advanced countries is projected to increase by nearly 40 percent of GDP in 2007-2014, only 4½ percent derives from the interventions; see *Group of Twenty—Note by Staff of the International Monetary Fund on Global Economic Prospects and Effectiveness of Policy Response*, EBS/09/103.

<sup>5</sup> Initial Lessons of the Crisis, SM/09/37; and Chairman’s Summing Up, BUFF/09/37, March 6, 2009; London Summit—Leaders’ Statement, April 2, 2009; Group of Twenty—Note by the Staff of the International Monetary Fund on Stocktaking of the G-20 Responses to the Global Banking Crisis, EBS/09/29. See also the forthcoming Staff Position Note, *The State of Public Finances: Cross-Country Fiscal Monitor*, July 2009

6. **Differing circumstances have led to a wide variety of interventions.**<sup>6</sup> (See Appendix Table 3.) In countries exposed to second-round effects, including sudden capital outflows and weak external demand (e.g., Asian and East European countries), interventions focused more on domestic and foreign exchange liquidity. Some countries used state-owned financial institutions to address credit bottlenecks (e.g., France, Japan, and South Korea), including through directed lending. Other countries used sovereign wealth fund (SWF) assets rather than issuing debt. Finally, countries with weak fiscal positions and limited borrowing capacity adopted measures with low initial costs, such as guarantees, or involved off-budget entities to avoid affecting the measured fiscal balance.

7. **Countries' commitments to intervene overstate the degree of actual support.** Actual amounts used have generally been substantially lower than the amounts announced or allocated (Figure 1). This divergence reflects various factors, including over-commitment to send a strong market signal, implementation lags in recapitalization and purchase of assets, overlap in the coverage of some measures, and less severe financial conditions than originally projected when the measures were introduced. The proliferation of measures may have generated significant redundancies—overlapping facilities or measures superseded by other measures.

8. **In some cases, however, announcements have understated actual support.** This is because support was provided, in some cases, through *increased use of existing facilities* rather than by specific crisis measures. Hence, caution must be exercised in making cross-country comparisons.

9. **Announced support has been mostly extended via increased deposit insurance and other explicit guarantees** (Figure 1 and Appendix I, Table 3).<sup>7</sup> Announced liquidity facilities have been smaller, but they have seen as much, or more, take-up than guarantees.<sup>8</sup> Capital support has been widespread but smaller in size. However, as measures range from direct capital injections to purchases of financial institutions' stocks in equity markets to regulatory forbearance, they go beyond the explicit recapitalization quantified in Figure 1.

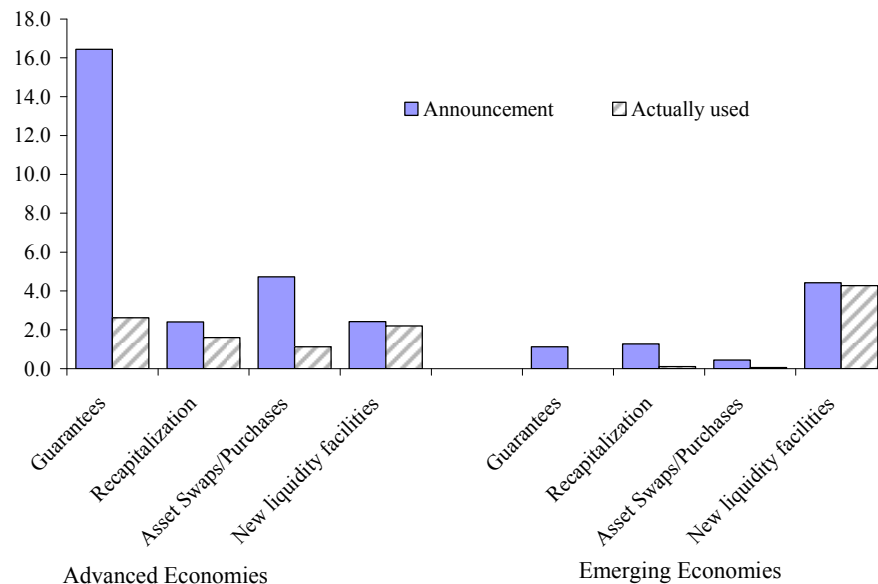
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<sup>6</sup> EU countries have agreed to follow a more standardized approach.

<sup>7</sup> Note that these measures also do not capture the extent of any increase in implicit guarantees. These contingent risks might arise given the expectations generated as a consequence of the scale of sovereign support for the financial system. However, given their implicit nature, identification is challenging.

<sup>8</sup> Appendix I, Table 3 shows two alternative measures of the use of liquidity facilities. 'Actually used new liquidity facilities' measures the take-up of facilities created to respond to the crisis. 'Change in claims on financial institutions' measures the use of *all* central bank facilities over the same period. This latter measure takes account of the fact that crisis support came to varying extents from new and pre-existing facilities in different countries, but it cannot distinguish between crisis-related support and other uses of liquidity.

Figure 1. Financial System Support: Announcements and Actual Use  
(In percent of 2008 GDP)



Sources: *World Economic Outlook*; *International Financial Statistics*; IMF staff estimates based on announcements by official agencies.

Note: Based on announcements made during January 2008–June 2009; and the latest information on the actual use as of May or June 2009. Medians of sample countries in Table 3. See Appendix I for details.

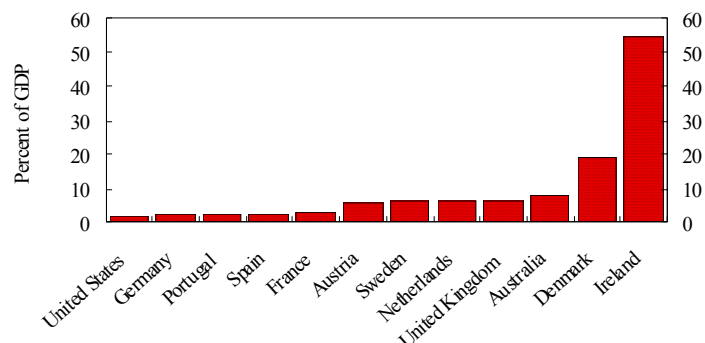
## B. Implications of Interventions for Sovereign Balance Sheets

10. **The interventions have so far had only a limited impact on measured fiscal deficits—but fiscal risks have risen substantially.** The observed widening of deficits can be traced instead mainly to automatic stabilizers and fiscal stimulus measures.

- The main direct impact of the interventions on the fiscal balance arises from the subsidy component of recapitalization (Box 2). Although in some countries recapitalizations exceed 3 percent of GDP, realized subsidies have generally been small, since governments have recorded asset transfers equivalent in value to their capital injections.

- In contrast, governments' risk exposures have increased significantly—guarantees may be called; announced lending facilities may be used; loans may not be repaid; and assets may not retain their value. To illustrate the size of such risks, the median across 12 advanced countries of government-guaranteed debt issued by banks is about 6 percent of GDP (Figure 2).

Figure 2. Bank Issuance of Government Guaranteed Debt  
(September 2008–June 2009)



Note: Unlike other countries, Ireland and Denmark guaranteed debt in existence prior to the guarantee program.

Source: BNP Paribas, Bloomberg, WEO.

11. **The impact of the risk exposure can be tracked better by examining components of a stylized sovereign balance sheet** (Table 1). The apparently limited impact on the fiscal deficit and the dispersion of the interventions across different government entities point to the need for a more comprehensive approach than the flow of fiscal accounts to discuss their budgetary impact. The portfolio adjustments resulting from interventions cannot just be considered in terms of their (short-term) fiscal costs, but need to be assessed in terms of the potential risks they pose to the size and composition of sovereign net worth (see Appendix II for the analytical framework). It should be noted that, so long as the roles, objectives and resources available to each institution are clearly defined and consistent, then a comprehensive sovereign balance sheet approach would remain consistent with maintaining the degree of independence of each institution, particularly as it relates to the central bank.

### **Box 2. Fiscal Accounting for Crisis-Related Interventions<sup>1/</sup>**

#### **Direct support**

The impact of an intervention on the fiscal deficit and government net worth depends on what the government receives in exchange for its support. When the government receives an asset equal in value to the price it pays for it (e.g., distressed assets in exchange for cash or government securities), then the fiscal deficit and net worth are unchanged.

However, if the operation entails an element of unrequited capital injection—e.g., where the government pays a higher price for the assets than their estimated value—then the fiscal deficit increases and the government's net worth declines.

- *Unrequited recapitalizations* represent a direct subsidy to recipient financial institutions, and hence increase the fiscal deficit directly.
- *Asset swaps, asset purchases, and lending* that are made at fair value (i.e., do not involve any element of unrequited recapitalization) represent balance sheet adjustments (cash or paper is exchanged for a claim of equivalent value) with no impact on the deficit. The same is true of direct lending and use of liquidity facilities. In both cases, credit risk increases.

#### **Contingent support**

- *Deposit guarantees and wholesale guarantees* (e.g., on interbank loans) are contingent liabilities and increase fiscal risks.

Under accrual accounting standards, the fiscal accounts should reflect the expected cost of the guarantee if it can be satisfactorily estimated and is 'likely' to materialize (this usually means a probability of 50 percent or higher). If materialization is unlikely or if the payments cannot be well-estimated, they should nonetheless be disclosed transparently in Notes to Accounts. In cash accounting, guarantees are shown in full only when the cash spending takes place.

In countries with accrual budgets—or accrual elements—the value of the guarantee may be provisioned for in the annual budget or in guarantee funds. For example, in the U.S., annual appropriation bills include estimates of the net present value of expected cash flows of guarantees.

<sup>1/</sup> Further information is available in FAD/STA, 2009, *Guidance Note on Reporting the Fiscal Impact of Bank Restructuring*.

12. **Some of the new risk exposure is evident in the expansion of many government balance sheets.** Government assets have expanded considerably in some economies (e.g., Ireland, Latvia, Netherlands, United Kingdom, and United States (Figure 3)). Initially, plans envisaged purchasing 'high-quality', conservatively collateralized debt or preferred shares.

Subsequently, governments took greater credit risk, including through interventions in nonfinancial enterprises. Some have been preemptively building up their cash balances, including through prefinancing operations.<sup>9</sup> Government balance sheets have generally expanded in countries with the largest actual recapitalizations.

**Table 1. Stylized Sovereign Balance Sheet**

Type of Intervention	Assets	Liabilities
<i>Liquidity facilities</i>	Repo (+) / uncollateralized loans (+) Central bank swaps (+) / other swaps (+) <sup>2/</sup> Foreign exchange loans (+) Foreign exchange reserves (-)	Currency in circulation (+/-) <sup>1/</sup> / Bank reserves (+) Central bank swaps (+) / other swaps (+) <sup>2/</sup>
<i>Capital injections</i>	Preference / ordinary shares (+) Warrants (+) Convertible bonds (+) Subordinated bank debt (+)	Tbills / Tbonds (+)
<i>Purchase of assets</i>	Troubled assets (+) Corporate bonds / commercial paper / other fixed income securities (+) Other financial assets (+)	Tbills / Tbonds (+)
<i>Guarantees</i>	Guarantee fund (+)	
<i>Other financing of interventions</i>	Assets held in SWFs (-)	
		----- Contingent claims (++) <sup>3/</sup>

1/ The impact on currency in circulation will be the net of any domestic liquidity provision and any sales of foreign exchange

2/ Swaps will be reported as assets or liabilities depending on the sign of their estimated value.

3/ Off-balance sheet item.

13. **Central bank balance sheets have also expanded (Figure 4).** In several advanced countries, this expansion has been particularly sharp—the Riksbank (Sweden), the Bank of England, the Federal Reserve (USA), and the Swiss National Bank—and more marked than that of the government balance sheet. This reflects the scale of the liquidity support and additional unconventional measures undertaken. In particular, quantitative and credit easing—the purchase of government or private securities respectively by the central bank—have both expanded the balance sheet and changed its composition. Cross-central bank FX swaps also expand the balance sheets of both providers and recipients of foreign exchange.

<sup>9</sup> For instance, Ireland has issued bonds while maintaining liquid assets in the National Pension Reserve Fund in order to reduce rollover risk and to provision for possible bank recapitalizations.

Figure 3. Evolution of Government Balance Sheets

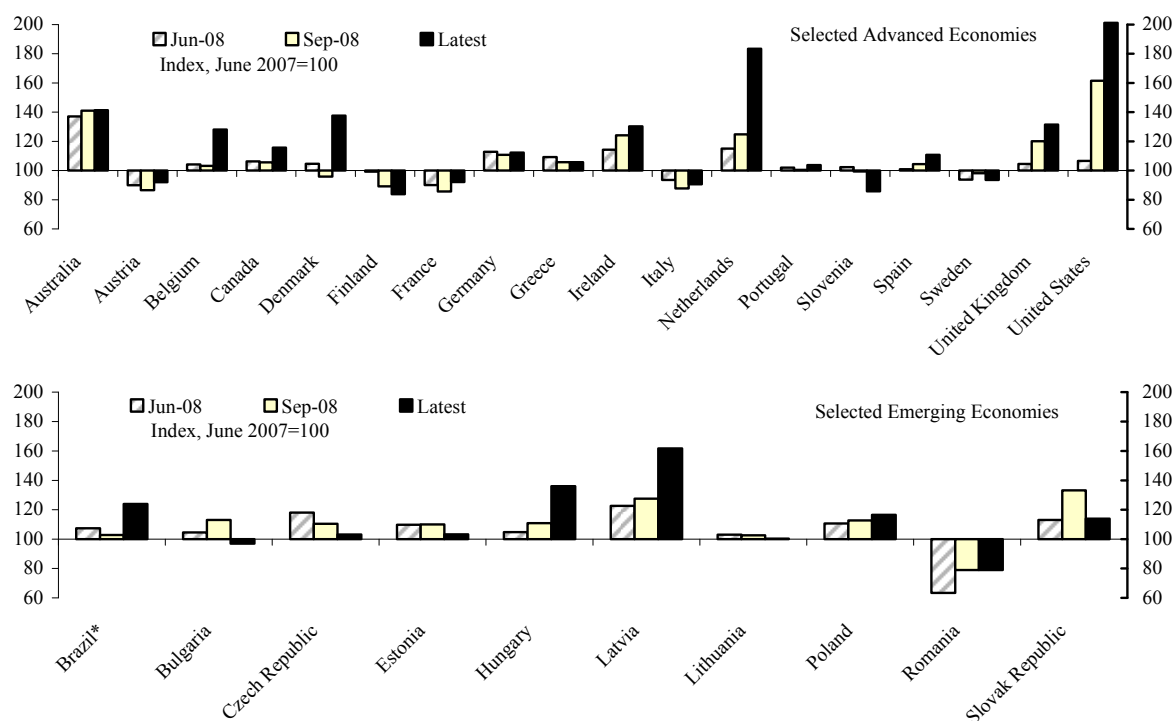
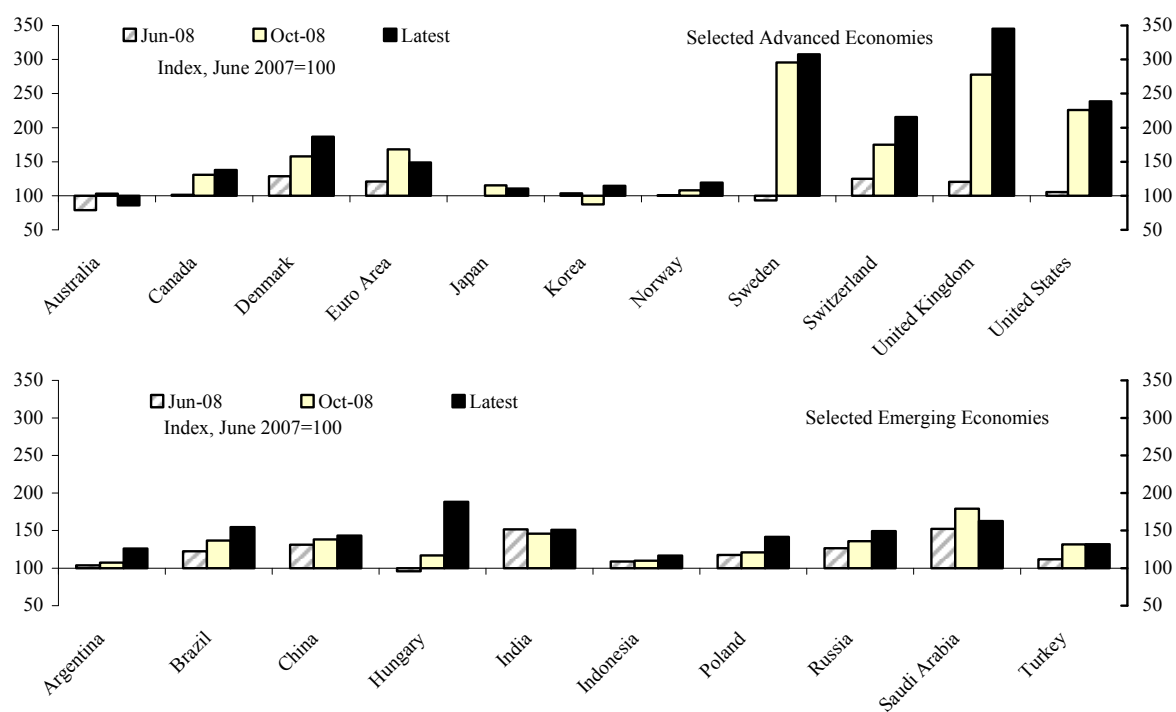


Figure 4. Evolution of Central Bank Balance Sheets



\* Central government financial assets

Note: General government financial assets as of 2008Q4. Central bank total assets as of April or May 2009.

Source: *International Financial Statistics* ; Country authorities; and *Haver Analytics* .

14. **Increases in emerging markets' (EM) central bank balance sheets, although significant, have, on average, been more limited.** Overall, the scale of their interventions has tended to be smaller—only a few have implemented credit easing and, with policy interest rates not at or near zero, no EM country has introduced quantitative easing.<sup>10</sup> Some central banks have taken measures to provide foreign exchange liquidity, generally through foreign exchange sales, which lead to balance sheet compression unless offset by liquidity injections.<sup>11</sup>

15. **Besides central banks, interventions have resulted in changes in the balance sheets of other government-owned or -controlled institutions.** Some countries used nonbudgetary government agencies such as deposit insurance agencies, SWFs or state-owned banks—thereby further blurring institutional roles. SWFs have funded intervention measures using various modalities, with differing impacts on their investment objectives and balance sheets.<sup>12</sup> In some cases, to do this, investment rules were changed, potentially exposing SWF balance sheets to new counterparty and market risks.

### III. MANAGING THE EXPANDED ROLE OF THE SOVEREIGN

16. **The effects of the intervention measures on sovereign balance sheets pose important management problems going forward.** Governments with higher debt have less policy scope, given diversion of resources to debt service, and crowding out. Similarly, the scale and scope of central bank interventions could raise concerns about the central bank's independence, undermining monetary policy credibility. Increased credit risk exposure makes the public finances more vulnerable to poor private sector performance, and risks associated with the mismatch between sovereign assets and debt and other liabilities have also risen.

17. **Until the interventions are dismantled, they need to be managed effectively.** This requires protecting government net worth and safeguarding the solidity of central bank balance sheets, including minimizing the realization of risks, while ensuring that related goals are achieved—a return to financial stability, sustained economic recovery, optimal allocation of assets and liabilities across component institutions of the sovereign, and ensuring adequate economic space for the private sector. The implications of these goals for sovereign asset-liability management (ALM) are discussed next.<sup>13</sup>

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<sup>10</sup> The use of unconventional central bank measures in EMs is documented in Stone, Mark, Kotaro Ishi, and Etienne Yehoue, 2009, *Systemic Liquidity Easing Measures Recently Undertaken by Emerging Market Country Central Banks: Easing or Teasing?*, IMF Working Paper (forthcoming).

<sup>11</sup> Although a number of EMs have entered into FX swap agreements, few of these have been drawn.

<sup>12</sup> In several cases, resources from the SWFs have been invested in domestic bank deposits (e.g., 1 percent of GDP in Russia and 6 percent of GDP in Kazakhstan) and stock market liquidity support (3½ percent of GDP in Kuwait). In addition, resources have been pledged for recapitalization (nearly 5 percent of GDP in Ireland, 3 percent of GDP in Kazakhstan, and nearly 6 percent of GDP in Qatar).

<sup>13</sup> Sovereign ALM means a comprehensive approach where the desired structure and composition of the state's financial liabilities is determined taking account key characteristics of all of its financial assets, regardless of which public institution holds them.

## A. A Framework for Sovereign Asset-Liability Management

### Managing expectations—clarifying the medium-term strategy

18. **A clear medium-term macroeconomic strategy is key for maintaining confidence in fiscal solvency, price and financial stability.** Articulation of the medium-term path from intervention and stimulus to consolidation cannot be delayed without calling into question policymakers’ ability to steer the course—with implications for risk premia, access to borrowing, and perhaps social stability.<sup>14</sup> However, that strategy will necessarily be constrained by the need to maintain interventions as long as necessary, and the speed with which they can be dismantled effectively.

19. **Clarity about macro-goals is a precondition for articulating an appropriate ALM framework.** Deficit and debt targets, and the timetable for returning to a “normal” mode of monetary operations will define the goals of sovereign ALM. The framework should then specify: operating principles, anticipated financing needs (gross and net), a framework for asset purchase and disposal, and either a timetable for large disposals (privatizations of nationalized financial enterprises) or a process for arriving at a schedule.

### Dealing with risk

20. **Given the high level of uncertainty, risk assessment must play a central role in informing the ALM strategy.** Such assessments require elaboration of alternative scenarios which (i) encompass short- and long-term costs; (ii) stress test for various macroeconomic shocks; (iii) demonstrate the consequences of different assumptions about prices and asset recovery rates for the sovereign balance sheet; and (iv) make a range of assumptions about the materialization of contingent liabilities.<sup>15</sup>

21. **Information about the risks associated with interventions should be published.** Transparency and accountability will be key to maintaining confidence in fiscal solvency, and is particularly important for contingent claims and other risks where reporting systems are generally less developed. A useful venue would be a comprehensive Statement of Fiscal Risks, to be submitted to the legislature as part of the annual budget.<sup>16,17</sup> Such a statement, designed to provide a framework for managing contingent liabilities, should report on the

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<sup>14</sup> This is particularly the case for countries which abandoned their fiscal rules, thereby losing their anchor for expectations. Macro-strategies will be discussed in forthcoming board papers.

<sup>15</sup> See *Disclosing Fiscal Risks in the Post-Crisis World*, FAD Position Note, July 2009. Also IMF, 2007, *Manual on Fiscal Transparency*; *Fiscal Risks—Sources, Disclosures and Management*, SM/08/154; and IMF, 2006, *Public Private Partnerships, Government Guarantees, and Fiscal Risk*.

<sup>16</sup> Currently, seven countries (Australia, Brazil, Chile, Colombia, Indonesia, New Zealand, and Pakistan) consolidate information on fiscal risks in a single published document. Other countries produce statements with partial coverage (e.g., on guarantees only).

<sup>17</sup> The extent to which central banks will disclose equivalent information will depend on the specific accounting standards they have adopted. Currently, central banks in 31 countries have adopted IFRS.



valuation of acquired assets and all explicit guarantees, including any difference between the purchase and market value and estimates of potential losses.<sup>18</sup>

## Accounting and valuation

22. **Assessing value accurately is crucial for understanding the impact of the interventions on fiscal solvency.** As some uncertainty about valuation is unavoidable, ALM policy design should focus on incentives for price discovery. In asset acquisition, a balance needs to be found between too high a price, which risks fiscal solvency and taxpayer anger, and too low a price, which would deter institutions from participating and undermine the objective of the operation. In addition, there is also an adverse selection incentive for financial institutions to offer governments their worst assets. Different approaches to address this problem have been adopted. Some have sought full market-based solutions, using auctions to determine the prices.<sup>19</sup> However, the limited extent to which some of these programs have been used indicates private sector reluctance to take losses even at market-determined prices. Other mechanisms might include: requiring beneficiaries of support (e.g., through asset transfers) to retain a certain share of ownership; charging fees for participation in support schemes (asset swaps or guarantees); and incorporating stop-loss provisions or clauses permitting *a posteriori* adjustments to fees or payments for asset purchases.<sup>20</sup>

23. **Adherence to accepted accounting standards will enhance countries' accountability.** Although some gaps may exist, International Public Sector Accounting Standards (IPSAS), together with International Financial Reporting Standards (IFRS), provide a relatively comprehensive accounting framework for measuring the impact of crisis-related interventions.<sup>21</sup> These standards are increasingly adopted by countries in their own “generally accepted accounting principles” (GAAP).

24. **Most GAAPs require “fair value” asset valuation.**<sup>22</sup> When financial instruments are traded in an active and liquid market, the market price provides the best evidence of fair value (IPSAS 15). However, where markets are illiquid or shallow, then other approaches,

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<sup>18</sup> Methodologies such as contingent claims analysis (CCA) may be useful here (Appendix IV).

<sup>19</sup> E.g., the U.S. Public-Private Investment Program (PPIP); purchases by the Fondo de Adquisición de Activos Financieros (FAAP) in Spain.

<sup>20</sup> Examples of valuation in practice include the German bad-bank model, with valuation based on the latest audited financial statements of the bank selling the assets, where the bank and its auditors play the decisive role in the asset valuation. Here, reputational risk for the auditors should create incentives to value the assets fairly. In Sweden's 1991 crisis, when transferring assets from banks to the AMCs, the government applied cautious market values, thus putting a floor under the valuation of such assets. It was believed that this strategy restored demand and liquidity, and thus put a break on falling asset prices. See Jonung, L., 2009, *Swedish model for resolving the banking crisis of 1991–93. Seven reasons why it was successful*, DG ECFIN, European Commission Economic Papers 360 (February 2009).

<sup>21</sup> Standards that apply in evaluating the impact of intervention measures include IPSAS 15—Financial Instruments: Disclosure and Presentation, and IPSAS 19—Provisions, Contingent Liabilities and Contingent Assets (see <http://www.ifac.org/PublicSector>). The IPSAS Board is aligning its standards with those of the IFRSs issued by the IASB, the equivalent private sector accounting standards body.

<sup>22</sup> Neither IFRS nor US GAAP endorse the suspension of “fair value” because of illiquid markets; both have provided guidance and disclosures for calculating “fair value” in such situations.

such as discounted future cash flows, or the price at which similar types of assets trade, can be used to determine “fair value.” Recent developments have led to pressures for a retreat from marking-to-market.<sup>23</sup> However, too aggressive a shift away from marking-to-market valuation could be counter-productive, since it could lead to second-guessing by rating agencies and investors.<sup>24</sup> Recent proposed IFRS amendments to accounting for financial instruments retain a preference for “fair value” and limit alternatives to simple debt instruments held for their underlying cash flows. While there might be a case for a different approach where assets are being held to maturity, as a rule it is better for governments to ‘know the worst’ and use full information when making policy decisions.

## Reviewing policy mandates

25. **The variety of intervening institutions has, in a number of cases, blurred their roles.**<sup>25</sup> Such a blurring undermines the accountability of the institutions for delivering their core mandates, and can impede their operational ability to do so.<sup>26</sup> Hence, either in the near-term or as part of disengagement, a goal of sovereign ALM must be to reclarify institutional responsibilities. This may require redistributing assets and liabilities across the institutions that comprise the sovereign balance sheet.

- **A key concern is that the roles of fiscal and monetary policy, in some cases, have become blurred.** Quasi-fiscal activities (QFAs) of central banks are opaque and difficult to prioritize; and can complicate the pursuit of their primary monetary policy objectives. Best practice is to channel all subsidies through the central government budget, subjecting them to the prioritization of the budget process, and leaving the central bank unencumbered.
- **Likewise, SWFs with a previously clear foreign investment mandate have become involved in supporting the domestic economy.** The same is true, in a few cases, of public pension funds. To the extent that these institutions have long-term goals, their involvement in short-term support is likely to create substantial asset-liability mismatches. Risks would be minimized and accountability best served by transferring to the budget responsibility for short-term support, and investing long-term public savings according to arm’s-length commercial principles.

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<sup>23</sup> See *Global Financial Stability Report*, International Monetary Fund (October 2008), for more discussion of these issues.

<sup>24</sup> The emergence of large NPLs in the mid-1990s in Japan was deemed in part the result of the nonexistence of mark-to-market accounting for bank assets, which may have enticed banks to hide bad assets (Hoshi, Takeo and Anil K. Kashyap, 2008, *The Japanese Banking Crisis: Where Did It Come From and How Will It End?*, NBER Working Paper No. W7250).

<sup>25</sup> For example, some debt management offices have been directly involved in operations providing support for the financial system (e.g., the Swedish National Debt Office). Similarly, some public pension funds have invested in assets outside the scope of their traditional investment mandate (e.g., Ireland’s National Pension Reserve Fund).

<sup>26</sup> For an earlier discussion of the importance of the clear responsibilities of public agencies in the financial sector (ministry of finance, central bank, and supervision authorities) and of the effective coordination of their activities, particularly in times of stress, see Peter Hayward, 2002, *The Financial Sector—The Responsibilities of the Public Agencies*, in Enoch, Charles, et al *Building Strong Banks through Surveillance and Resolution*, IMF.

## B. Managing the Central Bank Balance Sheet

26. **Interventions by central banks necessitate a recasting of balance sheet management practices.** The extent to which central banks need to change their practices, and risk management policies, will be driven by the form and magnitude of the policy interventions (Appendix III). In general, central bank crisis intervention measures have tended not only to increase the size of central bank balance sheets, but also increase the maturity of assets, especially in advanced countries—for example, tenors of liquidity facilities have been extended, and government bonds and other long-term assets purchased outright. Balance sheet management practices should be revised as necessary to address the potential risks and mismatches created.<sup>27</sup>

27. **Credit easing measures have exposed central bank balance sheets to direct credit risk that should normally be borne elsewhere.** As a result, the potential impairment of central bank balance sheets might in the future affect the ability to implement monetary policy effectively, and raise concerns about their financial and operational independence. More generally, support for the private sector in the form of direct lending or credit easing is a fiscal responsibility which the government should normally finance and be accountable for. The most effective way to manage such QFAs would be for central banks to shed the new credit exposures they have taken on, either by shrinking their balance sheets or by transferring the risky assets to the government. Some of this is already underway, e.g., the U.K. Treasury's assumption of the Bank of England loan to Northern Rock. Transfer of impaired assets from the central bank balance sheet to the government will have the benefit of transparently recognizing their quasi-fiscal cost.<sup>28</sup>

28. **Management of liquidity easing instruments will be driven by a mixture of considerations related to monetary policy and market conditions.** When policy interest rates are zero or near zero, monetary policy can also have an impact by adapting the terms of the instruments that provide domestic liquidity—e.g., changing the tenor or the collateral base. However, market conditions will determine usage of these facilities. Similarly, where facilities have been introduced to provide foreign exchange liquidity, e.g., central bank swaps, usage will also be dictated by market conditions. In both cases, the terms of access to central bank lending and liquidity facilities, including haircuts, imposition of margin calls, and appropriate spreads should continue to be set with a view to protecting the central bank balance sheet.

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<sup>27</sup> For example, the Bank of Japan introduced quantitative easing in 2001, but managed this within the “banknote rule” which kept the outstanding stock of government paper below the stock of currency outstanding. Thus, reserves—a short-term liability—remain matched by other shorter-term assets.

<sup>28</sup> An alternative approach could be for the government to explicitly indemnify the central bank against any losses (e.g., the U.K.'s Asset Purchase Facility (APF) and Special Liquidity Scheme (SLS)).

## C. Managing the Government Balance Sheet

### Management of crisis-related assets

#### *Institutions*

**29. Institutional frameworks for sovereign asset management are still evolving.**

These potentially involve centralized asset management companies (AMCs), decentralized arrangements, and/or some sort of intermediate approach. The most appropriate approach will reflect the potential market appetite for troubled assets and degree of market development.

**30. Establishing a centralized AMC can be efficient in certain circumstances.** It can provide important economies of scale or help overcome coordination problems where institutions have been closed, expertise is limited and there are many claims on the same borrower. Centralized AMCs were used in Indonesia, Korea, and Malaysia following the Asian crisis.<sup>29</sup> More recently, countries have used existing AMCs (for instance, Korea's KAMCO), while others have announced new ones (e.g., Ireland's National Asset Management Agency (NAMA)). Where an AMC is controlled by central government (preferably subordinate to the Ministry of Finance), but not operating as a market producer, its financial statements should be reported and consolidated with the government's. Otherwise, its financial statements would be consolidated in the public sector, with the value of the government's investment (i.e., the net worth of the AMC) reported on the central government balance sheet.<sup>30</sup>

**31. Decentralized asset management may facilitate private involvement.** This can enhance private participation as investors may choose the pool of loans in which they would like to participate—loans from less troubled institutions may be more attractive and have a higher probability of upside gain. This approach may also be attractive for banks that want to exchange problem assets for cash and equity. In some cases, the good bank/bad bank model has also been tried with distressed assets being separated from the financial institution's core business and managed independently.

**32. In cases where receivership or nationalization is unavoidable, it should be handled within the AMC framework.** Nationalized institutions should be managed according to best-practice corporate governance rules: (i) they should be subject to the same capital requirements and regulatory oversight as their non-nationalized peers; (ii) there must be a clear commitment to operate them transparently on a commercial basis, supported by

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<sup>29</sup> See Lindgren, Carl-Johan, et al, *Financial Crisis and Restructuring: Lessons from Asia*, IMF OP 188, and Woo (2000), *Two approaches to resolving nonperforming assets during financial crises*, IMF WP/00/33.

<sup>30</sup> See IMF, (2008), *Government Finance Statistics (GFS): Companion Materials and Research*, <http://www.imf.org/external/pubs/ft/gfs/manual/comp.htm>, for clarification of coverage and sectorization of the public sector.

appropriate provisions, for instance, maintaining the operational independence of the board; and (iii) a clear exit strategy to return them to private operation should be developed.<sup>31</sup>

### *Governance*

33. **Regardless of the institutional set-up, public participation, whether full or partial, should be governed by clear and transparent rules.** A mandate should be clearly specified that: (i) establishes criteria for acquiring and selling assets; (ii) addresses valuation issues; and (iii) avoids market distortions and provides operational autonomy isolated from political interference. For example, the mandate of U.K. Financial Investments, Ltd (UKFI) specifies that it will develop and execute an investment strategy for disposing of assets in an orderly and active way, while protecting taxpayer value, maintaining financial stability by paying due regard to asset price impact, and promoting competition.

34. **Public participation needs to be managed taking account of taxpayer costs, shareholder incentives, and flexibility for unwinding.** To minimize risk to taxpayers and the dilution of existing common shares, early interventions tended to take the form of preferred shares (e.g., the U.S. Capital Purchase Program).<sup>32</sup> These do not imply government “ownership” in the way that common stock does, but can convey voting rights under some circumstances. Even where governments take only limited voting rights, they should apply appropriate constraints in relation to paying dividends, bonuses, or subordinated debts. Moreover, trigger mechanisms may be attached to convert preferred shares to common stock to enable increased control—e.g., if the institution fails to meet performance terms. To limit taxpayers’ costs, consideration might also be given to imposing a haircut on unsecured creditors. Given that assessments of recapitalization needs are in the process of being fully determined, establishing a contingency plan for further recapitalization would help avoid costly *ad-hoc* measures.

35. **The government should exercise its ownership rights in accordance with established principles of corporate governance.**<sup>33</sup> While the government should not be involved in the day-to-day management of the institutions it controls, it should be an active owner, being represented at shareholder meetings and voting transparently. Treatment of other shareholders should be equitable and respectful of their need to receive complete information. The government should ensure that it has access to reporting and monitoring systems that allow it to assess the institution’s performance. Finally, the government needs to ensure that remuneration schemes foster the institution’s long-term interests and can attract qualified professionals.

36. **Distressed assets should be managed by personnel with appropriate expertise.** Where a centralized AMC is established, it is likely that staff will need to be recruited from

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<sup>31</sup> In Sweden, the take-over of two nonprofitable banks in the early 1990s was done with a clear intention to re-privatize. The benefits of a quick triage of banks into categories by their viability on the basis of capitalization is illustrated by the success of Sweden’s action.

<sup>32</sup> Preferred shares may be more appropriate if there are reasonable expectations that banks can independently raise capital in the near future.

<sup>33</sup> OECD Guidelines on the Corporate Governance of State-Owned Enterprises, 2005.

the private sector. Where external asset managers are used, they should be selected in a competitive process—with strict rules regarding conflict of interest, fiduciary duties, and reporting. In addition, the process should have due regard for the competencies and past performance of the asset managers, in particular in relation to government contracts.<sup>34</sup>

### Managing guarantees

37. **Guarantees have been widely used.** Typically they can be implemented rapidly and, when successful, they are costless. However, they can create perverse incentives for insolvent banks by allowing them to postpone the required restructuring and potentially bias operational decisions towards riskier behavior. Moreover, a guarantee may not be credible if the government is financially constrained. Indeed, the existence of a large guarantee may precipitate a shock if investors bet against it. The cost, or value, of a guarantee, is particularly difficult to assess.<sup>35</sup>

38. **Charging a fee can help address some of the problems above.** By affecting demand for a guarantee, a fee helps to set the right incentives, and reveal the true value of the guarantee. Fees can be adjusted over time to reflect actual cost (Box 3 and Appendix IV).<sup>36</sup> Ideally, guarantees would be self-financing—with fees set to generate sufficient income to cover potential losses. For example, in Sweden, fees raised from bank guarantees will be transferred to the newly established Stabilization Fund.<sup>37</sup>

39. **Proper government accounting is key to making the right decisions about guarantees.**

- **Cash accounting is inadequate for a government wishing to monitor its guarantees as it does not recognize guarantees until payment is made.** Accrual accounting requires guarantees to be recognized when the probability that they will be called is likely *and* the expected called amount can be reasonably measured.<sup>38</sup>
- **Countries use a combination of valuation methods,** depending on the type and characteristics of the guaranteed asset or liability, as well as other available

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<sup>34</sup> For example, more than 100 asset managers applied for the U.S. PPIP program, and strict requirements were needed to select 9 of them. Furthermore, a public bid process was used to select experts to manage troubled assets accumulated during the banking crisis in Uruguay and Nicaragua.

<sup>35</sup> These considerations also apply to any implicit guarantees that may have arisen.

<sup>36</sup> To avoid subsidies, a fee should be set at market cost, if possible, rather than the expected cost to government—which does not include the risk premium the private sector would have to pay on the market.

<sup>37</sup> This fund has been established to finance government support measures. An initial capital injection has been provided through a special budget appropriation. It will also incorporate the deposit insurance fund. Banks and other credit institutions will pay an annual fee to the fund. Further, charges for bank guarantees and any returns on measures will be transferred to the fund.

<sup>38</sup> The net present value of the amount expected to be called is a liability on the balance sheet and an expense in the operating statement when the probability that a contingency will materialize exceeds 50 percent. Amendments to international accounting standards are currently proposed which would require the expected called amount to be included in financial statements even for probabilities of occurrence below 50 percent.

information—market data, option pricing, simulation models, or, other risk scenarios (see Appendix IV on the possible application of Contingent Claims Analysis).

- **Although valuation is uncertain, budgets should reflect the full subsidy cost of the guarantee as it accrues over time**—i.e., a reserve provision on the basis of expected losses.<sup>39</sup> Even under cash accounting, governments should provision for potentially called guarantees. Any fees/premia paid would offset or reduce the impact of such a reserve on the government's income statement.

40. **Since quantification is difficult, fiscal management will be facilitated by building flexibility in the budget to respond to calls on guarantees.** Mechanisms to improve flexibility include contingency appropriations, supplementary budgets, and guarantee funds.

### Box 3. Managing Wholesale Guarantees

The wholesale guarantee schemes introduced in September-October 2008 vary considerably across countries, except in EU countries where EC guidelines have generally been applied.

**Institutional arrangements.** In most cases, both within the EU and outside, governments support wholesale funding markets by allowing private financial institutions to issue government-guaranteed debt. In Austria and France a separate government-controlled agency was established to raise funding, which could then be on-lent to eligible private financial institutions. In the U.S. the FDIC provided wholesale bank guarantees through its Temporary Liquidity Guarantee Program at no extra cost to taxpayers.

#### Safeguards

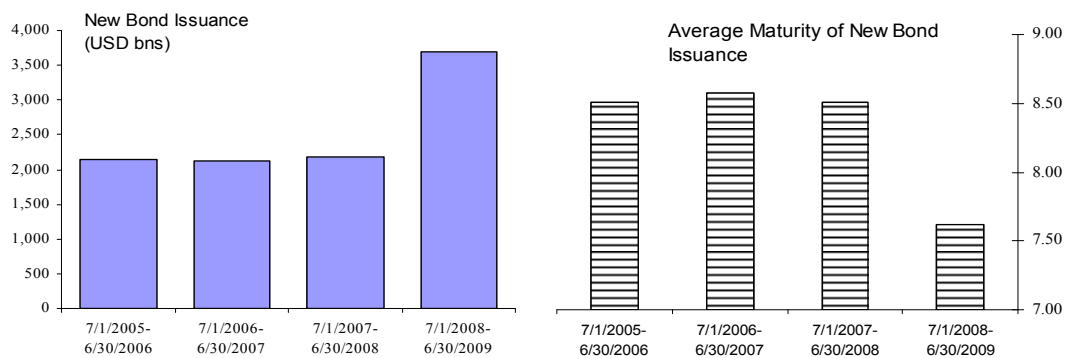
- *Fees.* Fees charged for government guarantees on wholesale funding are typically based on issuer credit ratings (Australia, Canada, and New Zealand), or credit default swap premiums (EU countries). The fee structure could also reflect the term of the instrument issuance—requiring a term premium (New Zealand, U.S.)—or, the denomination of the debt (Canada). Various countries have lowered/raised fees after market testing.
- *Deadline.* Most governments set a deadline for availability of the guarantee. While EU guidelines permit schemes that accept applications for up to two years, countries generally set an application deadline of the end of 2009. Canada, the United Kingdom, and the United States, set considerably shorter periods, though in each case the application cut-off date has since been extended.
- *Eligibility.* The instruments eligible for guarantees were generally limited to a maturity of up to three or five years. Governments have typically restricted the offer of a guarantee to senior unsecured debt instruments, and to debt issued by certain financial institutions. For example, in Ireland, the Netherlands, and the U.K., the guarantee is only available to institutions with a significant presence in their financial systems. In the U.K., eligibility also depends on an institution raising, Tier 1 capital by a certain amount, by government subscription or otherwise.

<sup>39</sup> This is particularly important if guarantee fees are being received and recorded as revenue; otherwise the guarantee will appear to improve the fiscal position.

## Liability management

41. **Actual recapitalizations and asset purchases have required an increase in debt issuance**—with a few exceptions where SWF assets have been used.<sup>40</sup> The scale and composition of this issuance contributes to balance sheet risk, thus raising significant liability management challenges. The interventions appear to have been largely financed by short-term debt (Figure 5). This reflects a number of factors: (i) the high demand for short-dated assets given current uncertainties and flight-to-quality; (ii) the expected temporariness of the interventions; (iii) the low opportunity cost of reducing average debt duration when interest rates are expected to stay low; and (iv) the relative cost differential vis-à-vis longer-dated debt. International bond offerings have also increased, particularly by advanced countries, as debt managers seek to tap a wider range of investors.<sup>41</sup>

Figure 5. New Bond Issuance—Advanced Countries



Source: Dealogic, WEO classification

42. **These issuance choices have changed the risk exposure of sovereign debt portfolios.** Shorter maturities have increased interest rate risk. Debt managers need to weigh that risk taking account of the potential for monetary tightening and the anticipated holding period of the assets. In some instances, it may be prudent to restructure or refinance this debt using longer-dated maturities where cost-effective. For example, the Netherlands and the U.S. have already begun to reverse the reductions in average maturity of their debt. And while the increase in exchange rate risk, as a consequence of financing these interventions, may still be low, it should be monitored, and mitigated through liability management operations where necessary.<sup>42</sup>

<sup>40</sup> For example, the recapitalization of banks generated large and immediate financing needs in H2 2008. This financing need also reflected the broader fiscal implications of the economic slowdown.

<sup>41</sup> Advanced economies tapped international capital markets 50 times during July 1, 2008-June 30, 2009, compared with 19 deals in the previous 12 months, and the number of issuers accessing the markets has grown from 10 to 15 (source: Dealogic. Data excludes EUR issues by eurozone states under an international bond prospectus).

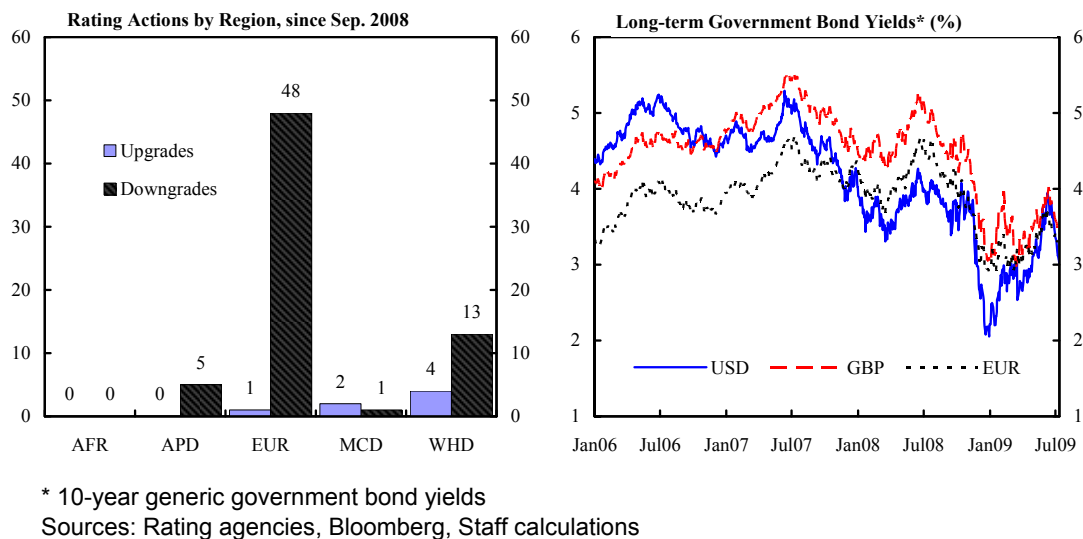
<sup>42</sup> EMs are likely to have some scope to increase their FX exposure given significant steps taken in recent years to reduce this source of vulnerability.



43. **The debt management strategy needs to be robust to the risk that contingent liabilities will materialize.** To manage this, debt managers might avoid excessive bunching of maturities. The potential volume of new liabilities should be analyzed, using, for example, quantitative methods such as the Contingent Claims Analysis (CCA) framework.<sup>43</sup> More generally, as the characteristics of acquired assets are clarified, and assessments of likely holding periods updated, the ALM strategy should be reviewed to see if ALM considerations require a change in the structure of the debt portfolio.

44. **Debt managers also need to take into account the outlook for financing costs.** In particular, the potential impact of increased balance sheet and fiscal risks on markets' and rating agencies' perception of credit risk affects that outlook (Figure 6). While improved market confidence may be favorably influencing spreads, there are some early signs that longer-term yields are beginning to increase, and term premia, reflected in the steepness of yield curves, are at historically high levels (Figure 6 and Appendix V).

Figure 6. Factors Affecting Financing Costs



#### D. Maintaining a Competitive Environment

45. **Governments need to maintain a level playing field between institutions, and support market-based financial intermediation.** To ensure fair competition across institutions, support should not leave “bad” institutions in a better position than those which did not have to be supported. This means, for example, that guarantees for interbank funding, bond issues, and other wholesale funding should not be costless.<sup>44</sup> Further, governments need to resist lending targets as part of interventions. More generally, programs for purchasing

<sup>43</sup> Note, the authorities may introduce endogeneity risk-the fact of extending guarantees or acquiring assets will affect market-derived measures of risk. In general, caution should be applied in using market data in a crisis.

<sup>44</sup> Paul Tucker, 2009, *The Repertoire of Official Sector Interventions in the Financial System: Last Resort Lending, Market-Making, and Capital*, Bank of Japan, May 28–29.

assets should not discriminate between institutions according to, for example, their nationality.

46. **Discriminatory/protectionist measures should be dismantled as soon as possible.** The extent of cross-border activity means that support targeted at domestic institutions can be destabilizing.<sup>45</sup> From an international perspective, discrimination is a negative-sum game. While there may be legitimate distinctions between domestic and foreign participants (owners/investors/ depositors) in the financial system, interventions that favor domestic over foreign firms should be avoided.<sup>46</sup> Attempts to limit fiscal costs by restricting support to only domestic firms can create financial instability (e.g., bank runs) if the intervention is taken as a signal that some firms are safer than others. Moreover, the long-run cost of deterring foreign presence could be greater for the economy than the up-front fiscal cost.

47. **Hence, care should be taken to limit interventions within government capacity-to-pay based on targeted objectives rather than nationality.** Maintaining a level playing field may require increases in deposit insurance limits, and guarantees on interbank loans to be extensive and fully inclusive. At a minimum, retail deposit guarantees need to be universal within a jurisdiction and guarantees ought to be consistent across borders to limit arbitrage.<sup>47,48</sup> Several of these measures could best be effected within an internationally agreed approach.<sup>49</sup> In this context, a set of proposed high-level principles for coordination on cross-border crises was developed under the auspices of the Financial Stability Board, and is currently under implementation in several countries.<sup>50</sup>

#### IV. UNWINDING SOVEREIGN INTERVENTIONS

48. **Developing a credible strategy to unwind the interventions would enhance their effectiveness.**<sup>51</sup> Financial stability will depend inter alia on private sector confidence that the public finances and monetary policy are anchored in a sound, medium-term framework that limits fiscal, debt and inflation risks. An unwinding strategy would also reassure that, while

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<sup>45</sup> European Commission, 2009, “Communication from the Commission—The Recapitalisation of Financial Institutions in the Current Financial Crisis.”

<sup>46</sup> In practice, most wholesale guarantee packages have been restricted to domestic institutions. This may reflect the challenge of determining appropriate burden sharing across countries.

<sup>47</sup> For instance, Ireland’s blanket deposit guarantee attracted outflows from British banks. The European Commission has sought to minimize these negative spillovers by setting (in principle) a two year maximum on such facilities—European Commission, 2009, *Communication from the Commission—The application of State aid rules to measures taken in relation to financial institutions in the context of the current global financial crisis.*”

<sup>48</sup> John Murray, 2009, When the Unconventional Becomes Conventional—Monetary Policy in Extraordinary Times, BIS Review 61/2009, pp. 1–10.

<sup>49</sup> Ben S. Bernanke, 2008, *Policy Coordination Among Central Banks*, Speech at the Fifth European Central Bank Central Banking Conference, *The Euro at Ten: Lessons and Challenges*, Frankfurt, Germany, January 13.

<sup>50</sup> See [http://www.financialstabilityboard.org/publications/r\\_0904c.pdf](http://www.financialstabilityboard.org/publications/r_0904c.pdf).

<sup>51</sup> On June 13, G-8 Ministers of Finance discussed the need to prepare appropriate strategies for unwinding the measures once recovery is assured, and asked the IMF to undertake the necessary analytical work. (<http://www.reuters.com/article/usDollarRpt/idUSLD42204420090613>).

crisis-related policies entail considerable discretion, the authorities will ensure fair play among investors and troubled firms.<sup>52</sup>

49. **Some interventions have already begun to be unwound.** Some support facilities are not being used, because others are more attractive, or as firms get access to more normal credit conditions. In the U.S., some financial firms are repaying government capital injections to free themselves from government restrictions (demonstrating that these restrictions are having the desired effects).<sup>53</sup>

### A. Defining the Challenge

50. **Successfully reversing public interventions in the financial system will require difficult macroeconomic adjustments as well as ALM operations.**<sup>54</sup> Besides eliminating financial sector support, countries need to bring public debt ratios down to sustainable paths and end monetary easing without impairing the recovery. This paper focuses only on the ALM aspects relevant for a durable unwinding of interventions.

- **From a fiscal solvency perspective,** a successful unwinding means disposing of acquired assets while maximizing cost recovery rates, and avoiding guarantees being called.
- **From a monetary management perspective,** unwinding means restoring traditional transmission mechanisms, and will involve restricting or closing unconventional lending facilities, removing targeted support for specific credit markets, and implementing measures to preserve central bank independence over the long run.
- **From a governance perspective,** exit involves a reduction of government control, a re-endorsement of core policy responsibilities—for fiscal policy to be conducted transparently via the budget, monetary policy via an independent central bank—and the specification of a robust regulatory framework.
- **From a financial market perspective,** the private sector’s role in the financial system must be restored, with private investors bearing fully the risks and rewards for their actions. This favors a price- and incentives-based approach to disengagement.

51. **Past crises indicate that unwinding crisis-related interventions is complex and often protracted.** Experience shows that the process may remain incomplete for decades,<sup>55</sup>

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<sup>52</sup> Governments appear to be concerned about this and some have taken steps to limit or monitor their use of discretion. The European Commission has been actively involved in reviewing EU member states’ crisis response measures. New Zealand has published guidelines on the use of discretion in the choice of beneficiaries of some of its financial sector programs. Extensive public reporting on crisis measures and results (e.g., Canada, the United Kingdom and United States), and oversight commissions (e.g., France and United States) are also used to enhance transparency and accountability (OECD, 2009).

<sup>53</sup> Although “voluntary” exit would not be advisable where banks remain vulnerable.

<sup>54</sup> For a discussion on the difficulties in getting exit right, see Deutsche Bank Global Markets Research, July 2009, *Exit Risks*.

<sup>55</sup> In Japan’s 1997 banking crisis, the cumulative amount of recoveries during (1997–2008) was 53 percent of the gross fiscal cost, substantially larger than the rate (less than 1 percent) based on recoveries collected only during the first five years following the start of the crisis (Laeven, Luc and Fabian Valencia, 2008, *Systemic*

and that costs may not be easily recovered. In past crises, advanced economies recovered 55 percent of costs, while EMs recovered only 15 percent.<sup>56</sup> Successfully unwinding these interventions will be further complicated by the need to take into account cross-border implications of any strategy—preferably by cooperative management.

52. **Past experiences also highlight the importance of a clear communication strategy in anchoring fiscal and monetary expectations.**<sup>57</sup> In many cases, it may be appropriate for any unwinding to be preceded by a clear announcement outlining the authorities' intentions.

## B. Sequencing and Timing

53. **Views differ on appropriate sequencing.** The challenge is to map a cautious course between unwinding interventions too early—jeopardizing achievements in securing financial stability or prematurely slowing the recovery—and leaving them too long—risking inflation and new asset price bubbles. Where fiscal or inflationary pressures are significant, there may be a strong incentive for fiscal consolidation or monetary tightening before financial sector problems are fully resolved. In these cases, proper account should be taken of the risks any consolidation or tightening could pose to the financial system.

54. **In this regard, sequencing requires coordination, as spillovers from unwinding some measures could compromise the success of unwinding others.**<sup>58</sup> Consequently, sequencing should take into account the interlinkages with other policy developments and interventions. Countries should identify up front the key agents to be consulted as part of any discussion on exit.<sup>59</sup>

55. **An important precondition is confidence that economic and financial market conditions have normalized.** In particular, as the process of unwinding itself may disrupt the markets, the authorities need to tailor the timing and speed to ensure that markets are robust enough to withstand it. This suggests that more normal liquidity conditions need to have been restored and valuations of financial assets should have stabilized.

56. **Ideally, the operating environment for financial institutions would be clear and perceived as stable.** Any intended changes to the prudential regime would have been set out, with a clear plan for setting aside any regulatory forbearance. The framework for future crisis interventions would also be well developed. Adequate governance arrangements, in particular regarding board and management competencies and responsibilities, and for risk

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*Banking Crises: A New Database*, IMF WP/08/224). This suggests that success in meeting the goals defined above will have to be assessed over varying time horizons.

<sup>56</sup> The State of Public Finances... op. cit.

<sup>57</sup> E.g., Japan's announcements regarding the conditions precedent for an unwinding of unconventional monetary policy measures, such as the statement by the Bank of Japan in March 2006.

<sup>58</sup> Recently, in some instances (e.g., the U.K.), guarantee schemes have been extended so that they do not expire at the same time as liquidity schemes, recognizing the overall burden that might represent for the market.

<sup>59</sup> Ben S. Bernanke, 2009, *The Crisis and the Policy Response*, Speech at the Stamp Lecture, London School of Economics, London, England, January 13.

control, should be in place. Governments should also examine tax systems to eliminate any incentives that encourage excessive financial risk-taking.

57. **Monitorable indicators that are linked to the initial objectives may be helpful in determining the appropriate timing** (Table 2 and Appendix V). Authorities should not simply rely on a set of observable market indicators, but take account of a broad set of macroeconomic policy considerations and information, including communications with market participants, when identifying the appropriate time for unwinding a specific measure. However, setting clear criteria in advance would help address temptations to maintain interventions for longer than necessary. At a minimum, these indicators could indicate when an intervention measure should be subject to a fuller review.

58. **Some measures may unwind automatically.** Intervention measures with built-in price/cost incentives are likely to phase out naturally as conditions normalize. In particular, where central banks have provided support by extending liquidity within their existing operational framework, the use of these facilities is likely to decline as liquidity and other conditions improve. Others may have a set quantitative limit, or sunset clauses. Identifying expiration dates can be helpful for managing expectations and modifying the behavior of beneficiaries. However, if it is playing an important role in financial stabilization, an expiring facility may have to be extended. Moreover, care is needed when setting deadlines (especially in laws, which cannot be changed easily), as they can create distortions or increase the vulnerability of an institution or the system as the expiration date approaches.

**Table 2. Examples of Intervention Measures and Potential Indicators of Exit**

Intervention Measure	Objective	Indicator
Expanding collateral base; extending liquidity operations	Liquidity support	LIBOR-OIS spread, CDS spreads, interbank rates relative to policy rates, volumes of interbank transactions.
Expanded deposit insurance guarantees	Depositor confidence	Dynamics of bank deposits and deposit rates.
Asset swap arrangements; asset purchase operations	Freeing up credit	Bank lending rates and spreads, credit growth, CDS spreads.
Bank recapitalization programs	Bank solvency	NPLs, CAR, stress tests, bank leverage, ROE.

59. **Experience to date points to some practical guidelines for sequencing.**

- **Sovereigns should take stock of their interventions and identify which ones are redundant or ineffective—with a view to closing these first.** Redundant facilities tend to be little-used; however, not all little-used facilities are redundant, since they may be playing a preemptive role (e.g., in shoring up market confidence). Determining which interventions are ineffective is similarly challenging.<sup>60</sup> An event

<sup>60</sup> The effectiveness of various government interventions in restoring market confidence is analyzed in the forthcoming issue of the *Global Financial Stability Report*. Preliminary analysis suggests that the announcements of recapitalization measures, coupled with aggressive liquidity provision, are particularly effective in environments of high market uncertainty. See also IMF Staff Position Note (SPN/09/12), *The Economics of Bank Restructuring: Understanding the Options*, by Landier, Augustin and Kenichi Ueda.

study could assess financial market reaction to the announcement of specific policy initiatives (although the counterfactual is not easy to establish).

- **A gradual approach might be required in many instances.** Recognizing that, *a priori*, it may not be possible to identify whether improvements in financial conditions can be sustained in the absence of support, a gradual approach would allow the authorities to test the hypothesis.<sup>61</sup> It would also help avoid abrupt valuation effects, while strengthening market-based incentives for exit and creating time for coordination across institutions and borders.
- **Access to support should be made increasingly less attractive.** This may occur automatically as conditions normalize. For instance, declines in short-term interest rates are already making the penal interest rates attached to some facilities uncompetitive.<sup>62</sup> And dividend payments on some preferred shares are required to escalate after a certain period, or subject to a trigger event, to encourage repurchase.
- **Relatedly, risks under guarantee programs should be gradually transferred to the private sector** by establishing and calibrating fee based incentives, lowering the ceiling on pay-outs, and increasing the required collateral or ownership stakes.
- **Institutional arrangements for asset disposal should be clarified.** Asset managers should be given clear mandates regarding the objectives and conditions that should drive asset disposals. A limit on the scope to defer the recognition of losses could be considered.

60. **Disengagement is likely to follow a typical path.** Unwinding of ineffective or redundant measures, short-term liquidity and confidence building measures, such as some guarantee schemes, might occur first, while the disposal of equity and impaired assets might take longer (Figure 7 provides an illustrative scenario—the actual profile for a given country could be quite different). For example, in the previous crisis in Turkey, two and a half years after its introduction the authorities announced that the blanket guarantee for depositors and creditors would be replaced with a more limited deposit insurance scheme (July 2003), but that change was not implemented for another year. Over the same period (of about three years), the Turkish authorities unwound their equity stake in all but one bank; however, only after about four years (August 2004) was the first sale of troubled assets undertaken.<sup>63</sup>

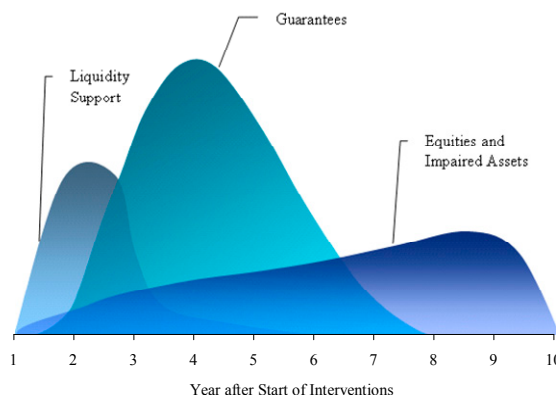
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<sup>61</sup> The opposite would also be true, i.e., where limited improvements in market conditions have been observed, it would allow the authorities to test whether that reflected the continued public involvement.

<sup>62</sup> For example, the Federal Reserve's two programs supporting liquidity in the commercial paper market charge interest rates well above comparable short-term interest rates. And under the Temporary Liquidity Guarantee Program, banks must pay 100 basis points per annum for guarantees on debts with maturities of over one year. As a result of this unattractive pricing, use of these programs has declined substantially in recent months. Indeed, there are no outstanding loans under the Primary Dealer Credit Facility.

<sup>63</sup> See Moghadam, Reza, et al, 2005, Turkey at the Crossroads: From Crisis Resolution to EU Accession, IMF OP 242.

Figure 7. Illustrative Intensity of Unwinding Interventions



### C. Unwinding Individual Intervention Measures

#### Liquidity support

61. **The unwinding of central bank crisis-related operations will depend on their maturities and their impact on the balance sheet.**<sup>64</sup> Short-term operations of the central bank can be expected to mature, and drop off the balance sheet, naturally in response to market forces. Exiting from longer term obligations will require taking into account balance sheet management, monetary policy operations and financial market considerations.

62. **The use of some liquidity support measures has already declined.** Some central banks' claims on banks and nonbanks diminished in the first half of 2009 compared to end-2008 (Figure 8). This drop in demand reflects an easing of market liquidity conditions.

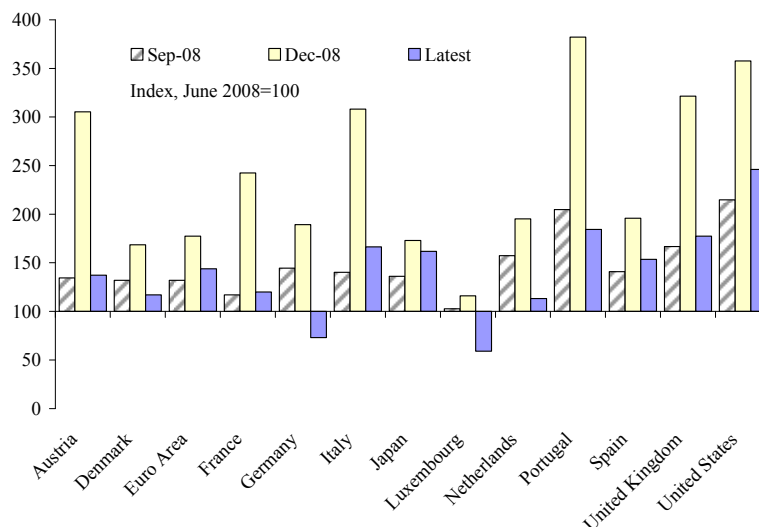
63. **Options for changing monetary conditions will depend on the specific monetary operations framework.**<sup>65</sup> To tighten liquidity conditions more actively, central banks can use their existing facilities—reverse repo, deposit, open market operations (using either central bank bills or, if arrangements allow, Treasury bills). These operations can communicate not just ongoing but also forward-looking policy intentions. Care will need to be taken so that they are implemented after money markets normalize to avoid any undue widening of spreads of related assets.<sup>66</sup>

<sup>64</sup> Unwinding any directed lending facilities by other public institutions and state-owned financial institutions will also pose a challenge. It is likely that such facilities represent an effective subsidy, and political economy considerations affect the life of such facilities.

<sup>65</sup> Ben S. Bernanke, 2009, *The Fed's Exit Strategy*, The Wall Street Journal, July 21.

<sup>66</sup> For instance, the tightening of collateral announced by the ECB in September 2008—with effect from February 1, 2009—was perceived by the markets as premature. See ECB, 2008, *Biennial Review of the Risk Control Measures in Eurosystem Credit Operations*.

Figure 8. Central Bank Claims on Financial Institutions



Note: Central bank claims on depository corporations and other financial corporations.  
Source: International Finance Statistics, and Monetary authorities.

64. **A central bank's decision to exit foreign exchange swaps will depend on its strategy for insuring against foreign exchange shocks.** Liquidity-receiving central banks may want to maintain these swaps as a potential source of foreign exchange in a time of stress.<sup>67</sup> Similarly, authorities may want to maintain access to the Fund's Flexible Credit Line, even if they do not plan to draw on it. Alternatively, exiting from these programs could be seen as a sign of strength, assuming reserves or other instruments provide a sufficient buffer.

65. **Maintaining a large stock of crisis-related securities on central banks' balance sheets poses a risk to their financial and operational independence.** There may be pressure to maintain large holdings of government and private sector securities that fall outside a central bank's normal investment operation. Such pressure could compromise central bank independence. While the extension of liquidity facilities has proved profitable to date, risk exposures have increased and arrangements should be in place to preserve the integrity of central bank capital;<sup>68</sup> any profit transfer arrangements should be consistent with that.

66. **In considering whether, and how, these crisis-related securities should be sold, timing will be an important factor.** Careful consideration will be required of the need to

<sup>67</sup> Several swap agreements have already undergone temporary deadline extensions.

<sup>68</sup> Capital provisions could take the form of minimum capital levels that require the government to allocate marketable securities to the central bank to supplement its capital as needed.



minimize the impact of asset sales on the asset price level, the desired stance of monetary policy, and the flexibility of the central bank balance sheet.<sup>69</sup>

## Guarantees

### 67. **Risks/liabilities related to guarantees should be gradually transferred to the private sector.**

- **The fee structure of guarantees, if market based, will help provide the right incentives for their use.** Thus, to avoid paying charges, it would be expected that the private sector will naturally cease using guarantees when they are no longer needed. However, in many countries market conditions have necessitated low or no fees, thereby providing substantial subsidies; a schedule should be established to eliminate any subsidies.
- **Where feasible, guarantees should be (re)structured to minimize moral hazard.**<sup>70</sup> This could imply shifting to partial coverage or gradually reducing the level of coverage. For instance, 100 percent insurance of deposits/borrowing eliminates savers'/creditors' incentives to do due diligence on banks/borrowers and should be removed. Likewise, guarantee beneficiaries may be asked to post collateral or maintain an ownership stake of a certain size.
- **Discontinuing wholesale guarantees could be guided by the use of and need for liquidity support measures.** However, some weaker banks may require support for a longer time, and possibly require a more extensive stabilization plan, involving further restructuring through liquidation or sale of specific parts of the bank. Resolving these weaker banks would then allow the guarantee scheme to be discontinued.

68. **Establishing concrete timetables for removal of wholesale guarantees may be difficult.** As Figure 9 indicates, most wholesale debt guarantee facilities are expected to be withdrawn within two years; however, some countries have already extended their deadline (e.g., the U.S. and U.K., Figure 9).<sup>71</sup> One consideration in determining when a facility should be withdrawn is whether there is clear evidence that banks can issue debt without guarantees.<sup>72</sup> Also, as in the case of liquidity support measures, guarantees provide confidence, even if not being used actively, and it may be expedient to maintain them for longer—as long as the subsidy element is minimized. Finally, even if the facility is withdrawn, the impact on the sovereign balance sheet will be of longer duration reflecting the maximum maturity of debt eligible to be issued under the guarantee. As Figure 9 indicates,

<sup>69</sup> For example, asset sales may need to be executed in small tranches to avoid an impact on the asset prices and a sharp steepening of the yield curve. Instead, the central bank may decide to issue its own securities to mop up liquidity. Such a strategy, however, implies maintaining the existing credit risk on the central bank balance sheet, while also adding the cost of issuing securities.

<sup>70</sup> Although moral hazard may now be unavoidable given precedents set by the extent to which governments have intervened in this crisis.

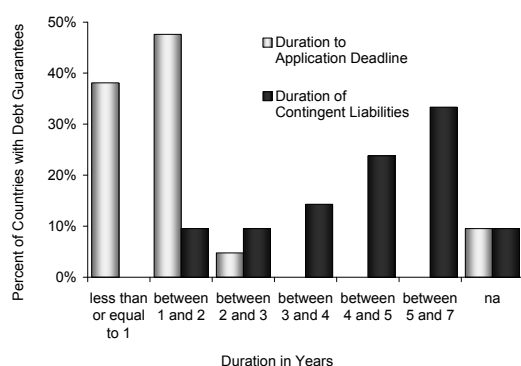
<sup>71</sup> Although in the case of the U.K. the extension of the facility window only allows previously guaranteed debt to be rolled over. The quantity of debt guaranteed will not be increased.

<sup>72</sup> This must take into account the fact that the risk weighting on bank debt will increase from zero with the government guarantee, which will impact demand for bank debt significantly.

these contingent liabilities could remain on the sovereign balance sheet for an average of an additional five years.

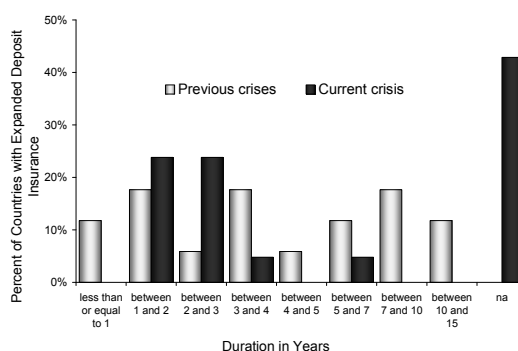
69. **Experience has shown that withdrawal of expanded deposit insurance is also challenging.**<sup>73</sup> No clear pattern of removal of expanded deposit insurance was observed in past crises (Figure 10). Moreover, even with some scaling back of deposit insurance, the subsequent level of coverage may still substantially exceed pre-crisis levels. In those cases, there is a need to ensure that the post-crisis expanded insurance schemes remain credible through adequate funding.

Figure 9. Preannounced Duration Wholesale Guarantees



Note: The sample comprises 21 advanced countries. Source: BIS.

Figure 10. Duration of Expanded Deposit Insurance Guarantees



Note: The sample size of previous crises is 4 advanced countries and 12 EMs. The sample size for the current crisis is 21 advanced countries. Sources: Laeven, Luc, and Fabian Valencia, 2008, IMF Working Paper 08/224 and BIS.

## Sales of equity and other assets

70. **Unwinding capital injections is subject to a broader array of considerations.** Depending on how the government is exercising its ownership stake, capital injections tend to have less effect on market incentives. From a fiscal solvency perspective, the timing of the sale should aim at maximizing recovery rates. A too rapid, or poorly executed, sale of public equity holdings may fail to attract scarce private bank capital and could depress prices. For example, UKFI has recognized that it may require several transactions over a period of years to divest its stake in Royal Bank of Scotland and Lloyds Banking Group.<sup>74</sup> On the other hand, there may be important political risk if public involvement persists for too long. To minimize the risk that divestment undermines financial stabilization, criteria for reducing ownership stakes should be set that include an assessment of the bank's capital adequacy.

<sup>73</sup> As of now, 12 out of 21 advanced countries have not yet announced deadlines for removal of their expanded deposit guarantees. In some cases, the expansion of deposit insurance coverage reflects the extent to which a scheme was out of date and the extension of coverage was long overdue.

<sup>74</sup> See, UKFI, 2009, UKFI Strategy: Market Investments and Annual Report and Accounts 2008/09.

71. **Incentives for private recapitalization of banks are important.** Recapitalization measures with built-in incentives may also be beneficial. These could include step-up clauses, call options, redemption clauses, or restrictive dividend policies (European Commission, 2009).<sup>75</sup> If the funds in the support schemes are expensive enough—without being prohibitive—to limit profits or otherwise constrain operations, this would trigger a voluntary exit as soon as market conditions improve sufficiently.<sup>76</sup>

72. **For reprivatization of nationalized institutions (or other large equity sales), pre-announcement may be particularly important.** Pre-announcement would set expectations for the behavior of the institution and for potential investors, and permit any potential macro-impact of the sale to be accommodated appropriately in macro-policies. However, as the privatization of a financial institution is a particularly delicate matter, determining the appropriate degree of pre-announcement is challenging. Any failure to achieve the sale would reignite concerns regarding the solvency and viability of the institution. Furthermore, bank privatization requires special scrutiny of potential buyers prior to their participation in the public bid to ensure that they meet minimum fit and proper requirements. Consequently, prior to any pre-announcement, it will be imperative to test market appetite for bank shares. However, the government's medium-term strategy could include an indicative timetable for divestment, or, if more appropriate, specify some triggers (e.g., a certain recovery of share value—though care would have to be taken to design triggers that do not create moral hazard).

73. **The unwinding of asset facilities established to help restructure or repair balance sheets of financial institutions may have to be gradual.** Asset sales need to be timed taking into consideration the scale of sale relative to capacity and the robustness of the market, so as to help minimize price volatility. In some instances, returns might be maximized if the asset is held until maturity. Performing assets held to maturity will generate a cash flow, while in cases where assets have to be written off, losses need to be accounted for transparently.

74. **Finally, the criteria that will govern asset disposal should be determined and publicly disclosed.** These should include provisions for the speed of disposal, based on the quantity, quality and type of equity and other asset holdings, as well as on market demand for such assets. Transparent and appropriate tax policies (e.g., concerning mergers, acquisitions, treatment of bad loans) can also help facilitate private sector solutions. In the case of AMCs and other external asset managers, these issues should have been clearly set out in their management mandates.

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<sup>75</sup> For example, trigger mechanisms might convert preferred shares to more marketable common stock, allowing the government recover its investment more readily.

<sup>76</sup> The process of unwinding capital injections in banks has already begun in some jurisdictions. For example, in early June, 10 of the largest U.S. financial institutions participating in the Capital Purchase Program (CPP) were also cleared by the Treasury as eligible to repay funding received (\$68 billion out of \$199 billion disbursed under the program).

## D. Additional Considerations

### Use of proceeds

75. **If an asset sale generates proceeds, an important fiscal policy question is how best to use them.** Unless public debt was assessed to be low before the crisis, the presumption is that the government should seek to shrink its balance sheet and repay debt as the first priority, rather than increasing expenditure, cutting taxes, or purchasing other assets. The operational question of how best to repay debt is also important. To manage any asset-liability mismatch, it may be necessary to re-adjust the structure of the debt portfolio. Depending on the redemption profile and the financing need, judgment will be needed on whether simply to set proceeds against refinancing needs as they fall due, or, whether any liability management operations—e.g., buybacks—are needed to achieve the new portfolio structure. The decision should also reflect debt managers’ assessment of the general robustness of financing conditions.

### Restoring balance sheets

76. **The authorities also need a plan to restore the balance sheets of entities used to implement the interventions—though this may need to be gradual.** The central bank and other entities such as deposit insurance funds, special purpose vehicles (SPVs), public pension funds and SWFs may need to be compensated for losses.

- **Central banks.** Even with efforts to transfer QFAs to government, it remains possible that a number of central banks (and other public banks) will suffer some losses and write downs as credit risks materialize. In past crises, lack of fiscal space has frequently inhibited governments from recapitalizing central banks. However, for the sovereign, recapitalization is an accounting transfer, implying no deterioration in its overall balance sheet. Hence, the paramount consideration in deciding how much recapitalization is needed should be the effective maintenance of monetary policy independence.
- **Deposit insurance companies.** The balance sheets of deposit insurance companies should be reviewed in light of the crisis and decisions about the appropriate level of deposit insurance going forward. This is likely to require a more general review of the funding arrangements for deposit insurance.
- **Special purpose vehicles and AMCs.** For any SPV or AMC set up to manage assets, including any on the central bank’s balance sheet,<sup>77</sup> potential losses should be recognized and provisioned for in the government’s budget. Where losses need to be recognized only on winding up, and where there is some chance that recovery rates on retained assets might improve, this creates an incentive to keep the SPV or AMC running. Decisions about whether to maintain the SPV or AMC should weigh its operating costs (and any moral hazard) against the potential asset recovery.
- **Sovereign wealth funds and public pension funds.** SWFs and public pension funds that have provided crisis-related support should revert to investments consistent with their

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<sup>77</sup> For example, the Federal Reserve’s Maiden Lane LLC, Maiden Lane II LLC and Maiden Lane III LLC, and the Bank of England’s Asset Purchase Facility Fund Limited.

original mandate. It could be important to communicate this publicly, given, for instance the possible impact on the sovereign credit rating. To the extent that the investments used to extend support entail subsidies or other QFAs, it would be appropriate to transfer these to budgetary government. These adjustments are unlikely to be perceived as urgent, but are important for transparency. If the funds have incurred losses, this raises the question of whether they should receive transfers from the government (above what would be implied by existing funding and withdrawal rules) to accelerate their recapitalization. The answer depends on whether the statutory goal of these funds would be imperiled by the losses suffered. In many cases SWF were set up as a tool to maximize the yield of existing public resources. In these cases, restoring their wealth to pre-crisis levels—which would require, other conditions being equal, issuing debt or raising taxes for this purpose—does not seem to be justified. However, in the case of pension funds—or SWFs playing equivalent roles—it may be prudent to consider a recapitalization, or at least to clarify that the government intends to use other available resources to meet the associated liabilities as they fall due.

77. **It could be important to review the governance framework of the institutions that carried out interventions.** The use to which an institution was put may point to a need to strengthen its legal framework, or amend its goals or institutional arrangements (e.g., to protect the funds and investment strategy of an SWF). Central banks are a particular concern as the scale of needed recapitalization could raise contention, be challenged by legislatures, and hence hamper central bank independence in the absence of strengthened legal protection.

#### **E. Role of Domestic and International Coordination**

78. **Coordination of policy and operational aspects of unwinding will be important both within and across countries.** Interventions are often interconnected, especially those made with a similar policy objective. At the national level, such interrelationships can be hard to disentangle, given the political economy of the crisis. A properly coordinated inter-agency plan would improve the credibility of the unwinding measures and should be a key element in a strategy to (re-)absorb liquidity, restore fiscal and debt sustainability, and return to predominantly private sector-led financial intermediation.

79. **Possible cross-border spillovers of national decisions suggest the need for coordination also at the global level.** Several factors drive this need. First, as countries entered the crisis at different points and with different vulnerabilities, their plans to unwind are also like to vary. If not adopted in a consistent manner, these could increase the potential for cross-border arbitrage and perverse financial behavior. Second, individual countries acting on their own may find managing the spillover effects difficult. Also, as unwinding will have implications for structural reform agendas, sharing of international experience could help. Third, where stress tests and similar assessments are used as an indicator of feasibility of exit, they need to be robust to global market conditions. This suggests an agreement by regulators and assessors on a common methodology, coupled with a joint endorsement of the results and statements on the adequacy of the state of financial health.<sup>78</sup>

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<sup>78</sup> For example, the Committee of European Banking Supervisors is conducting a coordinated system-wide stress test exercise which should help reestablish market confidence in the banking system.

80. **International level cooperation does not imply synchronization across countries.** However, through a multilateral cooperative mechanism, agreement could be reached on basic principles, such as those outlined in this paper, so that the strategy is progressive and credible and is implemented in a manner that reassures that risks to inflation and fiscal solvency are contained, and that a durable transition back toward private intermediation in financial markets is possible. Regular consultations, exchange of information, and strengthened coordination on policies would thus be key. The IMF can facilitate this by monitoring macro-financial risks and vulnerabilities, tracking the impact of sovereign ALM policies, assessing whether preconditions for unwinding are met, giving operational guidance on balance sheet restructuring and macroeconomic unwinding, serving as a convening forum, and contributing to a coordinated communications strategy.

## V. ISSUES FOR DISCUSSION

81. **The paper is centered on a message that fiscal solvency considerations need to be taken into account in designing crisis-related interventions and in managing acquired assets.** This issue will become central as the balance of risks shifts from financial stability to fiscal concerns. *Do Directors agree with the operational principles that the paper proposes for safeguarding solvency?*

82. **The paper emphasizes the need for clear policy assignments across public institutions, and in particular a need to re-clarify responsibilities for fiscal and monetary authorities.** *Do Directors agree that quasi-fiscal activities should be transferred to government and handled transparently through the budgetary process?*

83. **To date, the direct impact of crisis-related interventions on fiscal deficits has been small.** The paper argues that a comprehensive sovereign balance sheet approach is important for understanding the implications of the crisis, and designing future policy responses. *Do Directors agree that such an extension of the analytical framework is advisable?*

84. In the expectation that the growth in sovereign balance sheets will take some time to unwind, **the paper emphasizes the need for announcing, as soon as possible, a clear comprehensive medium-term strategy, to anchor asset-liability management to well-defined paths for deficit and debt reduction.** *Do Directors see such an emphasis on medium-term planning as feasible and appropriate?*

85. **While making the point that the timing of the exit is unlikely to be fully controllable, the paper offers some practical guidance:** closing redundant facilities; making support less attractive as conditions normalize; transferring risks to the private sector, including from guarantees; and clarifying arrangements for asset disposal. *Do Directors agree with these guidelines? To what extent might further attempts to control exit be fruitful?*

86. **Given the globalization of the financial system, cross-border cooperation is seen as important,** both to avoid financial protectionism and to effect as smooth an exit as possible. *In what areas do Directors see cooperation as most important?*

## **Appendix I. Financial System Support Measures: Announcements and Actual Use**

87. Table 3 summarizes: (i) the amounts announced for financial system support measures during January 2008–June 2009; and (ii) the latest information on amounts actually taken up (May or June 2009). The data on the pledged amounts are based on announcements by official agencies, supplemented by information from financial market sources, including investment and commercial banks, rating agencies, and private consultancies. Some announced measures have yet to be approved by legislatures and may change. The amounts of the support measures taken up are estimated by IMF staff, relying primarily on information from official government sources. The coverage of the data is as follows:

- Deposit insurance includes only additional provisions announced in the context of the crisis.
- Guarantees include the amounts covered by guarantees for asset loss or financial institutions' debt, such as senior unsecured debt.
- Recapitalization includes the amounts pledged to purchase shares or hybrid capital instruments that constitute tier I capital. Ad-hoc recapitalizations have also been included.
- Asset swaps and purchases include the amounts committed to purchase assets held by financial institutions or exchange for government debt.
- Direct lending and crisis liquidity facilities include direct lending by the government or the central bank to the private sector and liquidity facilities established to mitigate the impact of the crisis.

88. Where a total pledged amount is not specified, the latest publicly available information about the outstanding amount has been used.

**Table 3. Financial System Support: Announcements and Actual Use 1/**

(In percent of 2008 GDP unless otherwise indicated)

Country	Deposit Insurance		Guarantees		Recapitalization		Asset Swaps/Purchases		Direct Lending and Liquidity Facilities		
	DI limit in US\$	Pledged DI provisions	Pledged	Actually used	Pledged	Actually used	Pledged	Actually used	Direct lending and liquidity facilities 2/		Change in claims on financial institutions 3/
									Pledged	Actually used	
Australia	unlimited		N/A	9.2			0.7	0.5			0.0
Austria	unlimited	3.2	30.1	6.8	5.3	1.7					...
Belgium	132,193		26.4	26.2	4.8	4.7					...
Canada			13.5	0.0	0.0	0.0	9.2	4.7	3.2	2.6	2.3
Cyprus	132,193								13.2	...	...
Czech Republic	66,097										0.0
Denmark	129,428		unspecified	...	6.2	...					9.3
Euro Area											7.6
Finland	66,097		24.1	...	1.9	...					...
France	92,535		16.4	6.0	1.4	0.8			1.2	...	...
Germany	unlimited		16.2	...	3.4	...	0.4	...			...
Greece	132,193		6.2	1.2	2.1	1.7			3.3	1.8	...
Hong Kong SAR	unlimited								0.0		...
Iceland	unlimited	31.6			24.2	...					13.3
Ireland	132,193		198.1	0.0	5.9	3.8	43.5	...			...
Italy	136,544		unspecified	...	0.7	0.0			2.3	...	...
Japan	104,203		7.3	2.0	2.4	0.0	13.8	0.0	8.4	0.9	3.8
Korea	36,635		14.5	0.1	2.3	0.8	5.5	0.3	0.2	0.2	2.2
Luxembourg	132,193		10.8	...	7.7	...					...
Netherlands	132,193	0.0	33.9	7.1	6.2	5.2			7.5	7.5	...
New Zealand	578,567		unspecified	...							4.0
Norway	294,641				2.0	0.0	13.8	4.8	2.0	0.0	0.0
Portugal	132,193		12.0	2.6	2.4	1.5	0.0	...	0.0	...	...
Singapore	unlimited	55.4									...
Slovak Republic	unlimited										...
Slovenia	unlimited		29.0	...					2.4	...	...
Spain	132,193		18.3	2.6	0.0	...	3.9	1.8	0.0	...	...
Sweden	64,229	0.5	39.8	...	0.4	...			4.0	...	12.5
Switzerland	86,449		unspecified		1.1	1.1	7.9	7.9	0.0	...	8.0
Taiwan, Province of China	unlimited		unspecified	...							...
United Kingdom	78,588		49.7	38.6	3.9	3.9	0.0		26.6	16.2	3.3
United States	250,000	0.0	10.9	...	5.2	2.2	0.6	0.4	25.9	4.2	5.3
<b>Advanced Economies (median)</b>	<b>132,193</b>		<b>17.3</b>	<b>2.6</b>	<b>2.4</b>	<b>1.5</b>	<b>4.7</b>	<b>1.1</b>	<b>2.4</b>	<b>2.2</b>	<b>3.9</b>

Sources: *World Economic Outlook*; *International Financial Statistics*; IMF staff estimates based on announcements by official agencies.

1/ Based on announcements made during January 2008 – June 2009. The actual use is based on the latest information available as of May or June 2009. See Appendix I for details.

2/ Direct lending and liquidity provisions by a variety of public agencies, including central banks, treasuries, public corporations, and state-owned banks.

3/ Actual changes in central bank claims on financial institutions from July 2007 to the latest available. For the euro area countries, see Euro Area line.



**Table 3. Financial System Support: Announcements and Actual Use 1/ (concluded)**

(In percent of 2008 GDP unless otherwise indicated)

Country	Deposit Insurance		Guarantees		Recapitalization		Asset Swaps/Purchases		Direct Lending and Liquidity Facilities		
	DI limit in US\$	Pledged DI provisions	Pledged	Actually used	Pledged	Actually used	Pledged	Actually used	Direct lending and liquidity facilities 2/		Change in claims on financial institutions 3/
									Pledged	Actually used	
Argentina									0.8	...	-0.2
Brazil	26,350						0.3	0.1	5.8	4.3	1.8
Bulgaria	67,215				0.7	...					0.0
Croatia	73,462										-1.0
Estonia	66,097										0.0
Hungary	65,258		1.1	0.0	1.1	0.1			9.5	4.9	1.2
India	2,051				0.4	0.0			8.0	4.0	0.3
Indonesia	181,624		0.1	0.0							0.0
Jordan	unlimited										-0.6
Kazakhstan	41,610	0.4			3.0	...	2.3	...	9.8	...	2.7
Kuwait	unlimited								2.8	...	0.0
Latvia	66,097		2.9	...	1.3	...					1.7
Lithuania	132,193										0.0
Malaysia	unlimited										-9.2
Mongolia	unlimited								2.3	...	3.5
Nigeria									3.1	...	7.4
Philippines	10,324										-0.3
Poland	66,097		2.7	...	1.3	...					1.1
Qatar					5.9	...	0.4	...			1.5
Romania	66,097										3.2
Russia	25,693	0.4			1.2	0.5	0.5	0.0	8.6	6.0	8.0
Saudi Arabia	unlimited								1.2	0.6	...
Turkey	32,523		0.1	...					0.3	...	2.5
Ukraine	16,558										8.5
United Arab Emirates	unlimited				4.6	...			12.6	...	2.5
<b>Emerging and Developing Countries (median)</b>	<b>65,677</b>		<b>1.1</b>	<b>0.0</b>	<b>1.3</b>	<b>0.1</b>	<b>0.4</b>	<b>0.1</b>	<b>4.4</b>	<b>4.3</b>	<b>1.2</b>

Sources: *World Economic Outlook*; *International Financial Statistics*; IMF staff estimates based on announcements by official agencies.

1/ Based on announcements made during January 2008 – June 2009. The actual use is based on the latest information available as of May or June 2009. See Appendix I for details.

2/ Direct lending and liquidity provisions by a variety of public agencies, including central banks, treasuries, public corporations, and state-owned banks.

3/ Actual changes in central bank claims on financial institutions from July 2007 to the latest available. For the euro area countries, see Euro Area line.

**Table 4. Changes in Government and Central Bank Balance Sheets from 2007 to 2008**  
(In percent of GDP)

Country	Government Net Worth	Government Financial Assets	Central Bank Assets	Country	Government Net Worth	Government Assets	Central Bank Assets
Australia	3.4	2.9	5.8	Argentina	...	...	2.4
Austria	-1.7	2.0	9.7	Brazil	...	...	10.3
Belgium	-0.6	4.8	12.0	Bulgaria	0.9	-3.6	1.8
Canada	3.2	11.4	1.5	Croatia	...	...	-1.6
Cyprus	3.5	-6.6	0.0	Estonia	-4.0	-2.5	3.8
Czech Republic	-7.5	-5.1	0.8	Hungary	1.5	5.7	9.8
Denmark	0.7	9.0	13.0	India	...	...	2.6
European Central Bank	...	...	4.2	Indonesia	...	...	-2.1
Finland	-20.9	-21.7	2.2	Kazakhstan	...	...	9.1
France	-7.9	-1.7	12.5	Kuwait	...	...	1.6
Germany	-2.0	1.3	1.6	Latvia	-4.8	8.2	3.1
Greece	...	...	12.6	Lithuania	-3.8	-6.8	-2.3
Ireland	-11.4	7.8	32.9	Poland	-3.4	-0.8	3.0
Italy	-2.5	-0.5	2.0	Qatar	...	...	0.1
Japan	-10.5	-6.4	3.3	Romania	...	...	3.0
Korea	...	...	-1.1	Russia	...	...	11.5
Luxembourg	...	...	49.5	Saudi Arabia	...	...	28.7
Netherlands	2.2	16.1	0.8	Turkey	...	...	4.3
Norway	...	...	15.8	Ukraine	...	...	15.4
Portugal	-4.5	0.6	3.0				
Slovak Republic	3.6	0.0	-34.3				
Slovenia	-11.8	1.5	3.1				
Spain	-3.9	-12.2	2.8				
Sweden	-6.1	0.6	15.9				
Switzerland	...	...	16.4				
United Kingdom	-5.0	5.1	10.1				
United States	...	4.1	9.4				
<b>Advanced Economies (median)</b>		<b>1.3</b>	<b>4.2</b>	<b>Emerging and Developing Countries (median)</b>		<b>-1.7</b>	<b>3.0</b>

Sources: *International Financial Statistics*; *World Economic Outlook*; *Haver Analytics*; and Monetary authorities.

**Table 5. Financial System Support: Amounts Used**

Country	Recapitalization		Asset Swaps/Purchases		Direct Lending and Crisis Liquidity Facilities		Guarantees	
	Amount announced	Amount used	Amount announced	Amount used	Amount announced	Amount used	Amount announced	Amount used
	(In percent of 2008 GDP)							
Australia			0.7	0.5			N/A	9.2
Austria	5.3	1.7					30.1	6.8
Belgium	4.8	4.7					26.4	26.2
Canada			9.2	4.7	3.2	2.6	13.5	0.0
France	1.4	0.8			1.3	N/A	16.4	6.0
Greece	2.1	1.7			3.3	1.8	6.2	1.2
Ireland	5.9	3.8					198.1	0.0
Italy	0.7	0.0			2.5	N/A		
Japan	2.4	0.0	13.8	0.0	8.4	0.9	7.3	2.0
Korea	2.3	0.8	5.5	0.3	0.2	0.2	14.5	0.1
Netherlands	6.2	5.2			7.5	7.5	33.9	7.1
Norway	2.0	0.0	13.8	4.8	2.0	0.0		
Portugal	2.4	1.5					12.0	2.6
Spain			3.9	1.8			18.3	2.6
Switzerland	1.1	1.1	7.9	7.9				
United Kingdom	3.9	3.9			26.6	16.2	49.7	38.6
United States	5.2	2.2	0.6	0.4	25.9	4.2	10.9	N/A
<b>Advanced Economies (median)</b>	<b>2.4</b>	<b>1.6</b>	<b>6.7</b>	<b>1.1</b>	<b>3.2</b>	<b>2.2</b>	<b>16.4</b>	<b>2.6</b>
Brazil			0.3	0.1	5.8	4.3		
Hungary	1.1	0.1			9.5	4.9	1.1	0.0
India	0.4	0.0			8.0	4.0		
Indonesia							0.1	0.0
Russia	1.2	0.5	0.5	0.0	8.6	6.0		
Saudi Arabia					1.2	0.6		
<b>Emerging Market Economies (median)</b>	<b>1.1</b>	<b>0.1</b>	<b>0.4</b>	<b>0.1</b>	<b>8.0</b>	<b>4.3</b>	<b>0.6</b>	<b>0.0</b>
	(In percent of the amount announced)							
Australia				71.3				N/A
Austria		32.7						22.6
Belgium		97.6						99.2
Canada				51.5		80.5		0.0
France		57.0				N/A		36.6
Greece		82.0				55.0		20.0
Ireland		63.6						0.0
Italy		0.0				N/A		
Japan		1.0		0.1		10.5		27.2
Korea		33.0		4.8		100.0		0.9
Netherlands		83.0				99.2		21.0
Norway		0.0		34.7		0.0		
Portugal		62.5						21.8
Spain				44.6				14.4
Switzerland		100.0		100.0				
United Kingdom		100.0				60.8		77.7
United States		41.9		63.8		16.4		N/A
<b>Advanced Economies (median)</b>		<b>59.8</b>		<b>48.0</b>		<b>57.9</b>		<b>21.4</b>
Brazil				43.5		74.2		
Hungary		9.3				52.3		0.0
India		5.0				50.0		
Indonesia								0.0
Russia		40.6		0.0		69.5		
Saudi Arabia						51.4		
<b>Emerging Market Economies (median)</b>		<b>9.3</b>		<b>21.7</b>		<b>52.3</b>		<b>0.0</b>

Sources: *World Economic Outlook*; *International Financial Statistics*; IMF staff estimates based on announcements by official agencies.

## Appendix II. The Sovereign Balance Sheet Framework

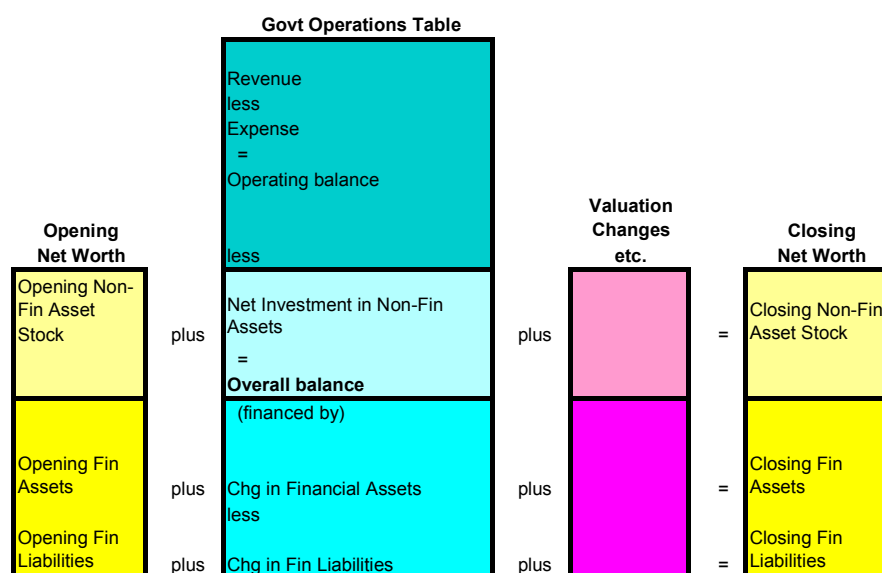
*This Appendix describes the integrated framework for government balance sheets, as depicted by the GFSM 2001, and the institutional components of a sovereign balance sheet.*

### The GFSM 2001 integrated framework

89. **Reconciling flows and stocks.** Fiscal policy has traditionally been analyzed only in terms of annual flows (revenue, expenditure, deficit, financing)—the government operations table. This approach gives an incomplete picture of the public finances, an assessment of which also requires recording stocks (debt and other liabilities, financial and nonfinancial assets, including sovereign wealth funds). Opening and closing balances need to be reconciled. Since government net worth can be affected not only by taxing and spending, but also by valuation changes (and other shocks), these too need to be recorded and the linkages made explicit.

90. **Gradual adoption of government balance sheets.** The stylized depiction of GFSM 2001, below, specifies an international-standard presentation for statistical recording of government balance sheets (Figure 11). Full implementation of the GFSM 2001 system requires accrual accounting; however, countries with cash-based systems can also use the presentation as a general framework for analysis. Countries that currently produce data in line with this presentation typically focus on the financial components of the balance sheet. Technical assistance from the Fund's Statistics Department is supporting this effort.

Figure 11. Government Balance Sheet: The GFSM 2001 Integrated Framework



### Institutional components of a sovereign balance sheet

91. **The need to go beyond traditional units of government** (Figure 12). The GFSM 2001 framework can be applied to any level(s) of government; most compilations to date

have focused on central or general government as a starting point. But the crisis-driven mobilization of resources from all areas of the public sector underscores the need to take a whole-of-government perspective, to understand the impact of the interventions on the public finances, and point to appropriate policy directions. Hence, there is growing advocacy for expanding the government balance sheet to encompass all components of the sovereign as shown below.

92. **The sovereign balance sheet and strategic ALM.** The concept of a sovereign balance sheet is based on a view that the government should take a comprehensive view of all the resources available to it, and manage them strategically, taking into account their combined implications. The GFSM organizational framework, when applied to the whole-of-government, helps to motivate a discussion of whether the management of sovereign assets and liabilities is achieving government objectives.

Figure 12. Sovereign Balance Sheet—Institutional Coverage

	Non-Financial		Financial		Total		Net Worth
	A	L	A	L	A	L	(A-L)
Sovereign/"Whole-of-Government"							
General Government							
Central Government							
Including:							
Budgetary central government							
Other central government agencies							
e.g., Deposit insurance fund							
SWF							
AMC							
Pension fund							
Subnational Governments							
Central Bank							
State enterprises (financial/non-financial)							

93. **Use of a sovereign balance sheet for analysis does not compromise institutional independence.** To say that the sovereign should take a comprehensive approach is *not* the same as saying that any one component of the sovereign should control others. As long as the roles, objectives, activities, and resources available to the various government institutions are clearly defined and consistent (i.e., the sovereign architecture is adequate and appropriate), then a comprehensive approach is consistent with differing degrees of independence of different institutions.

**Table 6. Impact of Different Types of Public Interventions on Components of the Sovereign Balance Sheet 1/**

	Types of interventions			
	Liquidity provisions	Lending operations	Capital injections	Purchase of assets and assumption of liabilities
I. Central Government's balance sheet				
<b>Nonfinancial assets</b>				Purchase of unsold homes (+)
<b>Financial assets</b>				
Domestic				
Currency and deposits 2/	Government deposits in commercial	Lending operations in cash (-)	Financing (-)	Financing (-)
	Financing (-)			
Securities other than shares			Purchase of subordinated debt (+) Purchase of hybrid bonds and/or convertible notes (+)	Purchase of troubled assets (+) Purchase of commercial paper and corporate bonds (+)
Loans		Lending operations by the government		Purchase of loan portfolios (+) Purchase of insured mortgages (+) Purchase of troubled assets (+)
Shares and other equity			Purchases of preferred shares/silent participations (+) Purchase of ordinary shares (+)	Equity participation in special purpose vehicles (+) Purchase of stocks (+) Purchase of troubled assets (+)
Others				
Foreign				
Monetary Gold and SDRs				
<b>Liabilities</b>				
Domestic				
Currency and deposits				
Securities other than shares				
Government bonds 2/	Financing (+)	Lending operations in bonds (+)	Financing (+)	Financing (+)
Others				Assumption of liabilities (+)
Loans				Assumption of liabilities (+)
Others				
Foreign				

1/ A (+) sign indicates that the public intervention will increase the government/central bank's asset or liability. A (-) sign indicates that the corresponding asset/liability will decline.

2/ The financing of the operations is reported as "Financing" and is expected to comprise mainly withdrawal of cash reserves or issuance of government bonds.

**Table 6. Impact of Different Types of Public Interventions on Components of the Sovereign Balance Sheet  
(concluded)**

	Types of interventions			
	Liquidity provisions	Lending operations	Capital injections	Purchase of assets and assumption of liabilities
II. Central bank's balance sheet				
<b>Financial assets</b>				
Domestic				
Currency and deposits				
Securities other than shares				
Government bonds	Local currency and foreign exchange repo operations (+) Liquidity swaps(+) Quantitative easing (+)	Lending operations in government bonds (-)		
Others	Liquidity swaps (+) Uncollateralized lending facilities (+) New credit facilities accepting a broader set of collateral (+) Credit easing (+)			
Loans		Lending operations by the central banks (+)		
Others				
Foreign				
Currency and deposits	Foreign exchange repo operations (-) Foreign exchange loans to companies Swaps with other central banks (+)			
Loans	Foreign exchange loans to companies			
Financial derivatives	Swaps with other central banks (+) 3/			
Others				
Monetary Gold and SDRs				
<b>Liabilities</b>				
Domestic				
Currency and deposits	Local currency repo operations (+) New credit facilities (+) Uncollateralized lending facilities (+) Swaps with other central banks (+) Quantitative easing (+) Credit easing(+)	Lending operations in cash (+)		
Financial derivatives	Swaps with other central banks (+) 3/			
Others				
Foreign				
Currency and deposits				
Securities other than shares		Lending operations in central bank bonds (+)		
Loans				
Others				

3/ Swaps with other central banks will be reported as assets or liabilities depending on the sign of the estimated value of the obligation to unwind the currency exchange at maturity.

### Appendix III. Central Bank Balance Sheet Effects from Crisis Interventions in Advanced and Emerging Market Economies

*The swelling of central bank balance sheets in some advanced countries is attributable to large increases in bank reserves arising from unconventional measures and to cross-central bank foreign exchange swaps. Emerging economy central balance sheets have generally not substantially increased.*

#### Advanced countries

94. **Advanced country central banks began to intervene in August 2007.** Most began to ease policy interest rates in the fall of 2007 using well-established instruments and operations. Several central banks (the Fed, ECB, Bank of England) took liquidity easing actions aimed at stressed institutions and key financial markets. These operations were for the most part sterilized, leaving balance sheets generally unchanged through August 2008. There may have been an implicit increase in credit risk exposure by large advanced country central banks, depending on the pricing of collateral used in liquidity facilities.

95. **The ratcheting up of the crisis in September 2008 accelerated the easing of policy interest rates and saw the introduction of a new and wider set of unconventional measures.** The Fed and Bank of England introduced new facilities to provide liquidity to stressed markets and to the system as a whole. All advanced country central banks reduced policy rates in the fall of 2008, with rates eventually falling to 50 basis points or less for Canada, Israel, Japan, Sweden, Switzerland, the United Kingdom, and the United States. Quantitative easing was explicitly implemented by the Fed, Bank of Israel, Bank of England, and Bank of Japan, and announced by the Bank of Canada. The Fed, Bank of England, Bank of Japan implemented credit easing measures. The global tightening in dollar liquidity prompted the Fed to provide dollar liquidity to ten advanced country central banks, most of whom distributed the liquidity to local counterparts. These more unconventional measures have, in several cases, greatly increased the size of the balance sheets, and in a few cases increased their direct credit risk exposure.

#### Emerging market countries

96. **Balance sheet changes have, for the most part, been less significant for emerging economy central banks, reflecting their more limited policy options.** The first phase of the crisis through August 2008 had minimal impact on most emerging economies. Many emerging economy central banks continued to raise their policy interest rates through the summer 2008 in response to continuing inflationary pressures.

97. **In September 2008, the policy focus shifted abruptly to offsetting a sharp foreign and domestic currency liquidity squeeze.** In addition to standard open market sales of foreign exchange, many emerging market countries introduced new foreign exchange facilities, eased terms on existing facilities and liquidity limits, and relaxed reserve requirements (Table 7). In a few cases, foreign exchange liquidity was directly provided to key sectors and institutions. As a result, official reserves fell for most emerging market central banks during late 2008 and early 2009. Some emerging market country central banks



benefited from the provision of foreign exchange liquidity from advanced country central banks.

98. **For some EMs, the shrinking of central bank balance sheets from international reserve sales was offset by domestic liquidity provision and easier monetary policy.** The impact of foreign exchange sales was in some cases offset by measures such as a broadening of general liquidity provision terms, liquidity support for specific markets, and the lowering of reserve requirements. By late 2008, when the extent of the global downturn became clear, most emerging market country central banks lowered policy interest rates. However, the use of credit easing and quantitative easing measures has been very limited, reflecting the more limited scope of emerging economy central banks for quasi-fiscal activities and their greater vulnerability to external shocks.

**Table 7. Emerging Market Central Banks: Examples of Domestic Liquidity Easing and Foreign Exchange Measures**

Type	Examples of Measures
<b>Foreign exchange easing measures</b>	
Introducing foreign exchange liquidity provisions	Brazil (September 2008) – The central bank announced plans to sell one month dollar liquidity lines. Philippines (October 2008) – The central bank approved the opening of a dollar repo facility.
Easing of liquidity limits	Turkey (October 2008) – The central bank began daily dollar selling auctions. India (October 2008) – The central bank allowed local banks to borrow funds from their overseas branches up to an amount equal to 50 percent of their Tier 1 capital or \$10 million, whichever is higher.
Relaxation of reserve requirements	Indonesia (October 2008) – The FX swap tenor was extended from a maximum of 7 days to one month. Indonesia (October 2008) – The central bank reduced the foreign exchange reserve requirement for commercial banks by 2 percent to 1 percent. Serbia (October 2008) – The central bank reduced required reserves against foreign assets. Turkey (December 2008) – The central bank reduced FX reserve requirements.
<b>Domestic liquidity easing measures</b>	
Broadening of general liquidity provision terms	Philippines (October 2008) – The eligible collateral for the central bank's standing repo facility was expanded to include foreign currency denominated sovereign debt securities. Indonesia (October 2008) – The eligible collateral for the central bank's standing repo facility was expanded to include performing private sector loans. Chile (October 2008) – The central bank broadened the list of eligible collateral for monetary operations to include commercial papers.
Liquidity support for markets	Israel (February 2009) – The central bank announced that it would transact open market operations with government debt of different types and maturities. Korea (November 2008) – The central bank announced that it would provide up to \$3.3 billion to a bond fund to purchase commercial papers.
Relaxation of reserve requirements	Indonesia (September 2008) – The central bank extended the maturity of its short-term liquidity facility to up to three months, from a maximum of 14 days. Nigeria (September 2008) – The central bank reduced reserve requirements from 4 to 2 percent. China (September – December 2008) – The central bank continued to reduce reserve requirements. Hungary (October 2008) – The central bank reduced reserve requirements from 5 to 2 percent. Indonesia (October 2008) – The central bank reduced reserve requirements for rupiah deposits from an average of 9 percent to 7.5 percent.

Source: Mark Stone, Kotaro Ishi, and Etienne Yehoue, 2009, "Systemic Liquidity Easing Measures Recently Undertaken by Emerging Market Country Central Banks: Easing or Teasing?," IMF Working Paper (forthcoming); and Monetary Authorities.

## Appendix IV. Using the CCA Framework to Estimate the Cost of Government Guarantees<sup>79</sup>

*This Appendix describes how the contingent claims analysis (CCA) framework can be used to estimate government contingent liabilities, determine risk-based guarantee fees, and assess the scope for risk transmission to the government.*

99. Government guarantees can be valued based on the CCA framework, which is a framework for valuing contingent liabilities. The value liabilities are derived from assets; as assets change the value of equity and risky debt changes. Asset value is uncertain and may fall below the value of maturing debt liabilities. Default occurs when asset value falls below a given “default barrier,”  $B$ . The expected losses (EL) due to default can be calculated as the value of an implicit put option on the assets with an exercise price equal to  $B$ . Thus, the Value of Risky Debt ( $D$ ) = Default-Free Debt ( $B$ ) – Expected Loss due to Default (EL).

100. Several widely used techniques have been developed to calibrate the CCA models for financial institutions using a combination of balance sheet information plus forward-looking information from equity markets.<sup>80</sup> The expected loss, EL, can be calculated for each institution. A key question is what fraction of total expected losses is being implicitly guaranteed by the government? Government financial guarantees benefit the bank’s debt holders, but do not affect equity values in a major way. If we denote  $\alpha$  as the fraction of total expected loss covered by the implicit government guarantee, then  $\alpha EL$  is the fraction of bank default risk covered by the government and  $(1 - \alpha)EL$  is the risk retained by banks. Thus, the Value of Risky Debt (with the government guarantee is equal to the Default-Free Debt –  $(1 - \alpha)EL$ . This framework allow one to calculate the time-varying contingent liabilities of the government ( $\alpha EL$ ).<sup>81</sup> The magnitude of systemic risk jointly posed by financial institutions can be estimated using “Systemic CCA” which measures the governments liabilities and an institution’s contribution to systemic risk (and the underlying joint default risk) by considering the correlation (or more correctly, dependence) structure between institutions.

101. Once the value of the government’s contingent liabilities are calculated a key issue is to determine the right price for government guarantees. There are different types of guarantee structures, for example a guarantee on all debt or only on new debt. In general, the price should be sufficiently low to stimulate broad participation and prevent the singling out of

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<sup>79</sup> Prepared by Dale Gray and Andy Jobst.

<sup>80</sup>See Bodie, Zvi, Gray, Dale F. and Robert C. Merton, 2007, *Contingent Claims Approach to Measuring and Managing Sovereign Risk*, Journal of Investment Management, Vol. 5, No. 4 (Fourth Quarter 2007), and Gray, Dale F., and Samuel Malone, 2008, *Macrofinancial Risk Analysis*, New York: John Wiley & Sons.

<sup>81</sup> The risk retained by the bank is reflected in credit default swap (CDS) prices and the implicit losses can be inferred from CDS prices,  $EL_{CDS}$ . Using these relationships, it can be seen that  $\alpha = 1 - EL_{CDS} / EL$ . For example, applying this procedure to Freddie Mac and Fannie Mae up to September 5, 2008, just before the conservatorship, the expected costs of the contingent liability are \$160 billion, with a 25 percent chance of being over \$215 billion, and 10 percent chance of being over \$300 billion.

weak institutions but yet reasonably high to discourage excessive debt substitution (from old unsecured debt to new guaranteed debt). It is possible to use the estimate the government's contingent liability associated with the guarantee and convert this into a spread which gives the *risk-based premium* to charge to the institutions who are receiving the guarantee. The financial guarantee fee (FGF) for each institution in basis points can be calculated as follows:

$$FGF = -\frac{1}{T} \ln\left(1 - \frac{\alpha EL}{Be^{-rt}}\right). \text{ Note that the contingent liabilities from the Systemic CCA can be}$$

used to assess the fair value risk-based guarantee fees commensurate with each bank's contribution to systemic risk.

102. It is useful to look at the economic, i.e. risk-adjusted, balance sheets of the financial sector and how it is linked to and interacts with the government's economic balance sheet.<sup>82</sup> The risk exposures between sectors can be measured and analyzed by looking at the risk exposures between sectors. For example, distressed banks can lead to large government contingent liabilities, which in turn reduce government assets and lead to higher risk of default on sovereign debt. In Figure 13 below, the economic balance sheet items in italics reflect the risk exposures of the government to the financial sector. The government has provided financial guarantees associated with expected losses due to default, it may have provided asset guarantees, it may have injected capital and have an equity stake in the banks. All of these are the government's risk exposures to the financial sector. These in turn affect the economic value of the government's assets and may affect the government's own default risk and borrowing spreads. Risk interactions and feedbacks can be analyzed with this framework.

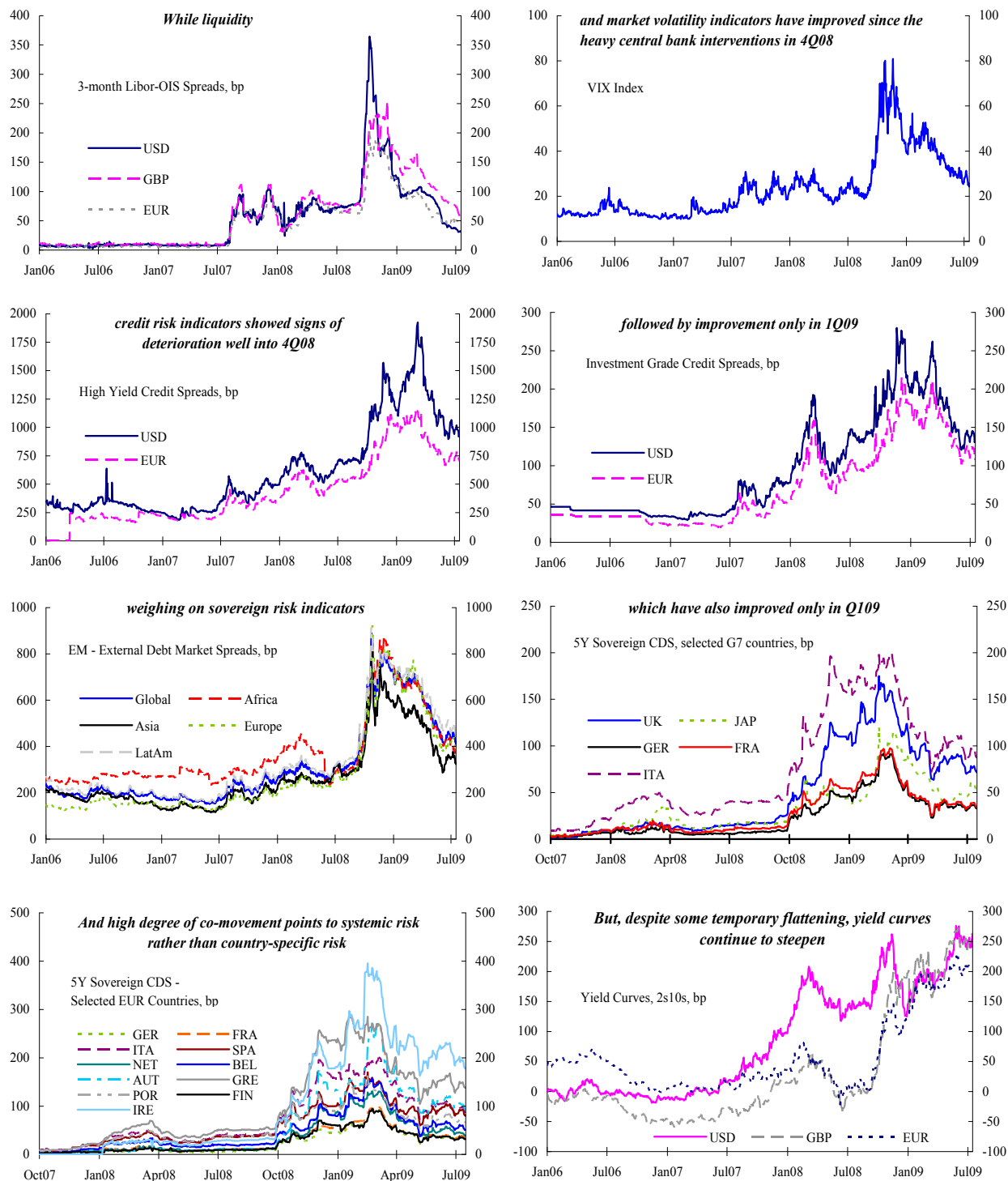
Figure 13. Sectoral Balance Sheets: Stylized Representation

FINANCIAL SECTOR	GOVERNMENT
<b>ASSETS</b>	
Assets/Loans + Liquid Assets/Reserves + <i>Asset Guarantees</i>	Present value of (Fiscal Surplus and Guarantee fees) + <i>Equity (government owned)</i> + <i>Contingent Financial Support from CB</i>
<b>LIABILITIES</b>	
- <i>Equity (non-government)</i> - <i>Equity (government owned)</i>	- Credit owed to CB - <i>Asset Guarantees</i>
- Default-free Debt & Deposits + (1- $\alpha$ ) * <i>Expected Losses due to Default in Financial Sector</i>	- $\alpha$ * <i>Expected Losses due to Default in Financial Sector</i>
- Present value of Guarantee fees - CB Liquidity Support & Loans	- Default-free Sovereign Debt + <i>Expected Losses due to Sovereign Default</i>
<b>ASSETS MINUS LIABILITIES</b>	
0	0

<sup>82</sup> There are three types of accounts for any entity, including a financial institution or a government: flow/income accounts, accounting balance sheets, and economic risk-adjusted balance sheets. All three need to be analyzed. In the economic risk-adjusted balance sheet of financial institutions or government, assets always equal liabilities. In simple terms the Assets+Guarantees - (Default-free Debt-Expected Loss due to Default) = 0.

## Appendix V. Governments' Crisis-Related Interventions and Financial Market Reaction: Selected Indicators

*This Appendix depicts the evolution of various financial market indicators since January 2006. Recent data indicate a gradual return to normal conditions. The continuing co-movement supports the case for coordination in unwinding intervention measures*



Source: Bloomberg, IMF Staff