INTERNATIONAL MONETARY FUND

Companion Paper—The State of Public Finances: Outlook and Medium-Term Policies After the 2008 Crisis

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In consultation with other departments

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March 6, 2009

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EXECUTIVE SUMMARY

This paper provides data and analysis underpinning the main findings of the Board paper on "The State of Public Finances: Outlook and Medium-Term Policies After the 2008 Crisis."

The first four chapters focus on the fiscal impact of government interventions in the financial sector. Chapter I provides guidance on how financial sector support should be reported in the fiscal accounts. The chapter covers both direct interventions (e.g., loans, recapitalization, and purchase of troubled assets) as well as indirect interventions (e.g., government guarantees or quasi fiscal costs). Chapter II provides a summary of financial sector support operations announced through mid-February 2009 in both advanced and selected emerging markets. Chapter III presents an econometric model of "recovery rates" for government interventions (the ratio between amount of receipts recovered from the management and sales of assets acquired through financial support operations and initial budgetary outlays) based on the experience in both advanced and emerging markets during previous banking crises. This is an important input for assessing the net cost of direct government interventions in the financial sector, although estimates are subject to a high degree of uncertainty. Chapter IV illustrates two complementary approaches that can be applied to estimate the likely cost of contingent liabilities from government guarantees to the financial sector.

The next two chapters address the fiscal impact of the economic recession. Chapter V outlines the methodology that has been applied in the main paper to estimate the fiscal impact from automatic stabilizers and other nondiscretionary factors (e.g., the revenue effect from exceptional declines in asset prices). Chapter VI summarizes information on fiscal stimulus packages announced in G-20 countries through mid-February 2009 to boost economic activity.

The last two chapters look at the response of interest rates to increases in debt—an issue that will gain prominence as the financing needs of governments will increase sharply in the near term. Chapter VII briefly reviews the existing empirical evidence on the interest rate impact of an increase in debt, while Chapter VIII looks at the case of Japan, where an increase in public debt was not accompanied by a rise in interest rates, and at the country-specific reasons that may have explained this favorable outcome.

I. Reporting the Fiscal Impact of Financial Sector Support[1]

1. **A thorough and transparent reporting of government interventions in the financial sector is a prerequisite for understanding the fiscal stance in crisis countries and prescribing appropriate fiscal policy**. This chapter discusses how to report the fiscal impact of various forms of government intervention.[2] Section A deals with the reporting of direct government interventions in bank restructuring operations. To do so, it presents a number of principles for reporting public intervention in resolving financial crises, drawing on accepted statistical methodologies such as the IMF Government Finance Statistics Manual (*GFSM) 1986* and *GFSM 2001*—the usual basis for Fund staff monitoring of the fiscal position.[3] Section B describes the reporting of indirect interventions, notably those giving rise to contingent liabilities.

A. Reporting the Cost of Direct Interventions

2. **When government intervenes in a financial institution, the key question for reporting purposes is whether the intervention creates an effective government claim on the institution**.[4] The nature (or quality) of the claim determines the statistical treatment.

- **If the government's intervention results in an increase in its claims on financial institutions commensurate to its intervention** and for which the government expects to get returns (equity purchases) or be repaid (loans to a solvent bank), the intervention would be recorded as a financing operation, since it does not change the government's net worth. It simply changes the composition of its assets and/or liabilities.

- **An unrequited intervention** should, however, be treated as an expense (capital or current transfer) as it results directly in a reduction in the government's net worth. An important example is the case of the recapitalization of a bank by government that does not create new claims for the government (meaning that the recapitalization is an unrequited transfer) or a positive expectation of recovering associated claims (e.g., when assets exist but are impaired).

3. **Under cash accounting (e.g., *GFSM 1986 or the cash statement in GFSM 2001*), the fiscal impact of some government non-cash interventions is not fully reflected in the**

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[1] Prepared by Manal Fouad and Edouard Martin in collaboration with the IMF Statistics Department.

[2] This chapter does not address issues related to accounting principles.

[3] Both government finance statistics manuals are available at http://www.imf.org/external/pubs/ft/gfs/manual/gfs.htm.

[4] This criterion was not developed at the time of GFSM 1986. All transactions in claims on others acquired for purposes of public policy would be captured by "lending minus repayments" above-the-line. If the government intervention does not result in an effective claim, it would be recorded as expenditure.

fiscal balance. Only the carrying cost of these interventions would be reported above the line (as interest payments) and increase the fiscal deficit. To remedy this shortcoming, Daniel et al. (1997) proposed an "augmented" fiscal balance as a means of capturing the full costs of recapitalization: as is the case with cash operations, non-cash bank assistance operations (e.g., recapitalization through transfer of public debt, and debt swap) would count toward the "augmented" deficit and add to government debt if implemented for purposes of public policy. Table 1 and Table 2 present the treatment of similar operations under *GFSM 1986* and *GFSM 2001*, respectively, using numerical examples.

4. **The *GFSM 2001* provides a more complete framework for reporting direct government restructuring operations, focusing on the government's net worth and integrating stocks and flows as well as cash transactions**.[5]

- **Flow operations** are reflected in fiscal indicators such as the operating balance, net lending/borrowing balance, and the cash surplus/deficit. In addition, *GFSM 2001* allows (¶ 4.45) a classification of financial assets according to whether they have been acquired/disposed of for public policy or liquidity management purposes, as transactions in policy-related assets often involve a subsidy component. While this classification is usually not included in the reported *GFSM 2001* data, policy-related changes in net assets can be treated as flows with characteristics similar to revenue and expense for analytical purposes. Such treatment is notably used in compiling the overall fiscal balance,[6] similar to the "augmented" fiscal balance proposed by Daniel et al. (1997) under *GFSM 1986*.

- **Stock information**, such as the government's balance sheet, permits a better understanding of changes in the government's net worth. The values of assets and liabilities at the beginning of the reporting period plus the transactions recorded in the standard government operations table ("statement of government operations") and the "statement of other economic flows" determine their values at the end of the period. "Other economic flows" comprise valuation changes and a variety of other economic events, such as debt write-offs, that affect the holdings of assets and liabilities (see below). Their proper reporting is essential for understanding the impact on government of changes in the value of assets and liabilities, and thereby of the government's net worth.

5. **The main types of direct intervention should be recorded on the basis of the following principles** (references to the columns below correspond to the proposed treatment of the discussed operation in Table 1 (*GFSM 1986*) or Table 2 (*GFSM 2001*)):

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[5] The treatment of direct interventions is essentially the same under the EU European System of Accounts 1995 (ESA-95).

[6] The overall fiscal balance is defined (*GFSM 2001*, Box 4.1) as "net lending/borrowing adjusted through the rearrangement of lending and repayment transactions in assets and liabilities that are deemed to be for public policy purposes."

- *Loans to financial institutions and investments in equity of financial institutions* (requited recapitalization) are recorded as the acquisition of a financial asset (columns i–ii): In the case of loans extended, subsequent interest/dividends and amortization repaid by the financial institution are recorded as government revenue and a reduction in financial assets, respectively. The transactions themselves (extension of a loan, investment in equity, etc.) are therefore not reflected in net lending/borrowing, as they do not affect the government's net worth as long as the value of the loan or investment remains unimpaired.[7] However, as the government's new asset was acquired for public policy purposes, it would be reflected in the overall fiscal balance. Conversely, if the loan or investment in equity does not raise an effective asset (i.e., the intervened institution is "worthless") then the treatment becomes similar to the "unrequited recapitalization" below (i.e., it reduces the government's net worth).

- *Unrequited recapitalization* (i.e., not involving an exchange of assets) through a capital injection (column iii) or the assumption of a failed bank's liabilities (columns iv–v) is recorded, along with the corresponding carrying costs, as an expense in the operating statement. The full costs of bank recapitalization are thus reflected in net lending/borrowing.

- *The purchase of troubled assets* will be recorded simply as the acquisition of a financial asset when it is settled at market/fair value (column vi). It will, therefore, impact the overall fiscal balance (as the purchase is made for public policy purposes), but not net lending/borrowing.[8] The purchase will, however, require the recording of an expense when it is settled above market/fair value (the expense will then amount to the premium paid by the government relative to market/fair value, column vii).

6. **A few further issues to keep in mind when recording government interventions**:

- **Critical to the proper reporting of a government intervention is its valuation**. In some operations, such as the purchase of troubled assets, the current market value of some of the assets may be difficult to determine. The valuation of these assets is, however, crucial in defining the exact nature of the government intervention, i.e., whether it involves a degree of active fiscal policy, or is solely for liquidity management purposes. For example, in the case of the purchase by a government of troubled assets from financial companies, the price that the government will pay will determine whether this operation is purely an asset swap, providing the financial institutions with more liquid assets (cash or government securities vs. troubled

[7] The net impact of this intervention would be interest receivable foregone because governments usually extend these loans at rates lower than market rates.

[8] In the case of revenue-generating assets (e.g., loans or mortgage-backed securities), the corresponding revenue will, however, be reported and affect net lending/borrowing.

assets), or whether it also aims at recapitalizing these institutions (by valuing these assets higher than their estimated market price/fair value). *GFSM 2001* stipulates that (¶9.12): "If the market value can be determined, then the transaction should be valued at that amount and a second transaction should be recorded as an expense to account for the transfer. Otherwise, the value of the transaction should be the amount of funds exchanged." However, when there is a strong presumption that the assets are severely impaired and bought at a significant premium, there may be a strong rationale for reporting the estimated implicit subsidy as an expense.

- In the absence of an **observable market price** for these assets/liabilities, other rules need to be set up, for example historic returns. An assessment of the fair value of the transaction could be made by using the discounted value of expected future flows, using the value of the counterpart of the transaction (such as the mortgaged property values), or using the price at which similar type of assets trade.

- **Other economic flows**. When assets have been purchased and liabilities incurred, changes in their value should be recorded as other economic flows. Realized or not, gains and losses resulting from changes in the prices of the government's assets and liabilities should be recorded as holding gains/losses. These holding gains and losses are not reported in the statement of government operations, and therefore do not impact the government's net lending/borrowing balance. They are reported in the statement of other economic flows and impact on the government's net financial worth (*GFSM 2001*, Figure 4.1). If a government purchases assets at market value (or fair value if there is no market for these assets at the time of the purchase) and the value of these assets subsequently fall, these losses will at no point impact the net lending/borrowing balance of the government, even once they are realized (i.e., the assets are sold and/or the liabilities are reimbursed). Conversely, if a government purchases assets at above market value/fair value, the premium paid by the government will be reported as an expense at the time of the purchase. This reinforces the point that the valuation of government interventions is crucial to their proper reporting. It also encourages reporting not to be limited to reporting economic flows but also aimed at integrating these flows with corresponding stocks to explain and disclose the government's net worth.

7. **In practice, governments have tried to design their support so it does not affect their deficits—that is, they have maintained claims on financial institutions in almost all cases**. Chapter II shows how these operations have been treated in a number of countries. Fund staff face unavoidable judgment calls in deciding whether the claims have the full value attributed to them by government.

B. Reporting the Cost of Indirect Interventions

8. **Indirect interventions can potentially have an important fiscal cost and therefore need to be fully reported and, when possible, quantified.** These interventions can take the form of operations undertaken by non-government entities, notably the central bank, or by the government but without immediate costs, such as blanket guarantees.

Quasi fiscal operations

9. **Some public interventions may be implemented by public entities that are not part of the central or general government**. The most common example is central bank-led restructuring operations. If the central bank does not expect to recover the full value of its support, the government indirectly bears the cost through lower profit transfers and possibly compensating the central bank for its losses. These quasi-fiscal operations would not be directly reflected on the government operations tables. The IMF *Manual on Fiscal Transparency* states that "it is important to identify, quantify (where possible), and report on quasi-fiscal activities," and recommends that a statement on quasi-fiscal activities be included in the budget documentation, together with policy purpose statements and information on the duration and intended beneficiaries of the activity. In countries where such operations have been important, the IMF has used a fiscal presentation which consolidates the government operations with central bank quasi-fiscal operations. When this is not practical, the central bank/public bank support to the financial sector should at least be shown separately in a memorandum item.

In practice, it will be important to:

- **Determine whether separate entities are involved in the restructuring**, and whether these entities are non-market producers and should be regarded part of government and be consolidated with the fiscal tables. Governments often create special restructuring agencies or accounts, and these should be included in the relevant sector (e.g., central government, general government).

- **Determine whether an operation implemented by a non-governmental organization is a quasi-fiscal activity**, which could, in principle, be duplicated by budgetary measures in the form of an explicit tax, subsidy, or direct expenditure (e.g., a central bank could lend to a bank at below-market conditions).

- **When practical, consolidate quasi-fiscal operations with the government's fiscal operations, especially when they have significant financial magnitude or create major distortions in fiscal analysis**. Considering that quasi-fiscal operations are in time likely to affect the government position (through lower revenue/dividends or recapitalization needs), there may be a rationale for reflecting the costs of these operations directly in the government's accounts.

- **When estimating the exact cost of quasi-fiscal activities proves impractical and contentious, a pragmatic approach is often devised**. For example, one could estimate the cost of any quasi-fiscal operation which has significant financial magnitude or is deemed to create a major distortion.

Contingent liabilities

10. **Guarantees by the government or the central bank represent a contingent liability and a potentially important fiscal cost**. Usually, the cost of guarantees is recorded ex post when government honors the guarantee that is called. However, given the fiscal risks, it is important to disclose the contingent liability and include it in debt sustainability scenarios. Where a government charges for the provision of a guarantee (as is required under EU state aid rules), the fee improves the government's operating balance.

- Under **statistical reporting standards** (*GFSM 2001* or the European Union's *European System of Accounts 1995 (ESA-95*)) contingent liabilities are not considered liabilities until the contingency materializes, and therefore they need not be recorded in financial statements as a liability/expense until then. Once the contingency has materialized and payments need to be made, the associated liabilities should be reported as in Tables 1 and 2 columns viii–x.[9] It should be noted that *GFSM 2001* asks for the disclosure of the value of contingencies in memorandum items. The IMF *Code of Good Practices on Fiscal Transparency* also calls for statements as part of the budget documentation that describe the nature and significance of all contingent liabilities.

- For **accounting purposes**, the *International Public Sector Accounting Standards* for accrual accounting require disclosure in notes to financial statements of contractual contingent liabilities when the possibility of payment is "not remote."

- **Good disclosure practice** is to publish detailed information on guarantees. This should cover the public policy purpose of each guarantee or guarantee program, the total amount of the guarantee classified by sectors and duration, the intended beneficiaries, and likelihood the guarantee will be called. Information should also be provided on past calls of guarantees. Best practice would be to compute the expected value of the increase in government liabilities due to called guarantees. Implicit liabilities should generally not be disclosed to prevent moral hazard (see Cebotari, 2008).

- **Debt sustainability analysis** should cover all of the debt created by the restructuring operations, including quasi fiscal interventions and various assumptions for contingent liabilities that may materialize. It should also present scenarios on recovery rates of debt repayments by recapitalized agencies, and resources generated from the sale of acquired assets and equity stakes.

[9] The 2008 SNA distinguishes between one-off guarantees and standardized guarantees. The former are recorded only when the guarantee is called, while for the latter the present value of expected calls (net of expected recoveries) is recorded.

Table 1. Statistical Treatment of Government Intervention (under GFSM 1986)

			Capital injection (100)					
			Creating an effective claim					
			Buy equity (i)		Extend a loan (ii)		No effective claim (iii)	
		Baseline: no Intervention	Payment in cash (ia)	Payment in Securities (ib)	Payment in cash (iia)	Payment in Securities (iib)	Payment in cash (iiia)	Payment in Securities (iiib)
				Augmented treatment		Augmented treatment		Augmented treatment
(1)	**Total revenue and grants**	**150**	**153**	**153**	**152**	**152**	**150**	**150**
	of which interest received	*0*	*0*	*0*	*2*	*2*	*0*	*0*
	of which dividends received	*0*	*3*	*3*	*0*	*0*	*0*	*0*
(2)=(3)+(4)	**Total expenditure and Lending minus repayments**	**150**	**250**	**155**	**250**	**155**	**250**	**155**
(3)	**Expenditure**	**150**	**150**	**155**	**150**	**155**	**250**	**155**
	of which interest	***0***	*0*	*5*	*0*	*5*	*0*	*5*
	of which capital transfers	***0***	*0*	*0*	*0*	*0*	*100*	*0*
(4)	**Lending minus repayments**	**0**	**100**	**0**	**100**	**0**	**0**	**0**
	Loans	0	0	0	100	0	0	0
	Shares and other equity	0	100	0	0	0	0	0
(5)=(1)-(2)	**Overall balance**	**0**	**-97**	**-2**	**-98**	**-3**	**-100**	**-5**
(6)	**Non-cash bank restructuring measures**	**0**	**0**	**100**	**0**	**100**	**0**	**100**
	Loans	0	0	0	0	100	0	0
	Shares and other equity	0	0	100	0	0	0	0
	Capital transfer	0	0	0	0	0	0	100
(7)=(5)-(6)	***Augmented balance***	***0***	***-97***	***-102***	***-98***	***-103***	***-100***	***-105***
-(7)	**Total financing**	**0**	**97**	**102**	**98**	**103**	**100**	**105**
	Domestic financing	**0**	**97**	**102**	**98**	**103**	**100**	**105**
	Net change in banking deposits (-increase)	0	97	2	98	3	100	5
	Issuance of T-bills	*0*	*0*	*100*	*0*	*100*	*0*	*100*

Assume: Interest on government securities issued: 5%; interest earned on assets acquired by government: 2%; interest on cash deposits of government 0 %; and dividends on shares and other equity: 3%.

	Government acquires an effective claim on recipient of financial assistance	
(i)a	Government injects capital in a financial institution by taking up equity to the value of 100, financed from existing cash resources.	This exchange of cash assets for an asset acquired for policy purposes directly reduces the overall balance. The secondary impact of acquiring the equity generate some dividend, thus increasing the overall balance to the extent that it is more than interest forgone on the cash deposits. Government's gross, as well as net, debt remains unchanged.
(i)b	Government injects capital in a financial institution by taking up equity to the value of 100, financed by the issuance of securities	In the standard GFSM 1986 the acquisition of a financial asset for policy purposes, funded by the incurrence of a liability has no influence on the overall balance in the absence of cash flows. The secondary impact of the actual interest payable on the securities reduces the overall balance, in so far as it does not match the receivable dividend income. Government's stock of gross debt increases with value of securities issued, but net debt remains unchanged.
(ii)a	Government injects capital in a financial institution by extending a loan to the bank, financed from existing cash resources.	This exchange of cash assets for a loan acquired for policy purposes directly reduces the overall balance. The secondary impact of the loan extended is interest receivable, thus increasing the overall balance of government to the extent that it is more than interest forgone on the cash deposit. Government's gross, as well as net, debt remains unchanged.
(ii)b	Government injects capital in a financial institution by extending a loan to the bank, financed by the issuance of securities	In the standard GFSM 1986 the acquisition of a financial asset for policy purposes, funded by the incurrence of a liability has no influence on the overall balance in the absence of cash flows. The secondary impact of the loan extended is interest receivable, thus increasing the overall balance of government to the extent that it is more than interest payable. Government's gross debt increases with value of securities issued, but net debt remains unchanged.
	Government does not acquire an effective claim on recipient of financial assistance	
(iii)a	Government injects capital in a financial institution but does not acquire an effective claim on the recipient. The injection is financed from existing cash resources	This capital injection directly reduces the overall balance of government due to the capital transfer. In addition, the overall balance could also decrease to the extent that revenue reduces due to interest foregone on the cash deposits. Government's gross debt remains unchanged, but net debt increases.
(iii)b	Government injects capital in a financial institution but does not acquire an effective claim on the recipient. The injection is financed by the issuance of securities	In the standard GFSM 1986 the capital injection has no influence on the overall balance in the absence of cash flows. The secondary impact of the interest cost payable on the securities reduces the overall balance. Government's gross, as well as net debt increases with the value of securities issued.

Table 1. Statistical Treatment of Government Intervention (under GFSM 1986) (continued)

			Reducing liabilities of financial institutions		Purchasing bad assets from financial institutions			
			Full assumption of debt (iv)	Assistance with debt reduction (v)	At market prices (vi)		At above market rates (vii)	
		Baseline: no Intervention			Payment in cash (vi)a	Payment in Securities (vi)b	Payment in cash (vii)a	Securities (vii)b
			Augmented treatment			Augmented treatment		Augmented treatment
(1)	**Total revenue and grants**	**150**	**150**	**150**	**152**	**152**	**152**	**152**
	of which interest received	*0*	*0*	*0*	*2*	*2*	*2*	*2*
(2)=(3)+(4)	**Total expenditure and Lending minus repayments**	**150**	**155**	**170**	**250**	**155**	**270**	**155**
(3)	**Expenditure**	**150**	**155**	**170**	**150**	**155**	**170**	**155**
	of which interest	*0*	*5*	*0*	*0*	*5*	*0*	*5*
	of which capital transfers	*0*	*0*	*20*	*0*	*0*	*20*	*0*
(4)	**Lending minus repayments**	**0**	**0**	**0**	**100**	**0**	**100**	**0**
	Loans	0	0	0	100	0	100	0
(5)=(1)-(2)	**Overall balance**	**0**	**-5**	**-20**	**-98**	**-3**	**-118**	**-3**
(6)	**Non-cash bank restructuring measures**	**0**	**100**	**0**	**0**	**100**	**0**	**120**
	Loans	0	0	0	0	100	0	100
	Capital transfer	0	100	0	0	0	0	20
(7)=(5)-(6)	***Augmented balance***	**0**	**-105**	**-20**	**-98**	**-103**	**-118**	**-123**
-(7)	**Total financing**	**0**	**105**	**20**	**98**	**3**	**118**	**123**
	Domestic financing	**0**	**105**	**20**	**98**	**3**	**118**	**123**
	Net change in banking deposits (-increase)	0	5	20	98	3	118	3
	Issuance of T-bills	0	0	0	0	0	0	120
	Increase in other domestic liabilities	0	100	0	0	0	0	0

Assume: Interest on government securities issued: 5%; interest earned on assets acquired by government: 2%; and interest on cash deposits of government 0 %.

	Government assists financial institutions in reducing their liabilities	
(iv)	Government assumes a bank's liabilities in respect of a loan outstanding, to the value of 100	In the standard GFSM 1986 the loan assumption has no influence on the overall balance in the absence of cash flows. The secondary impact is a reduction in the overall balance due to the interest payable on the assumed loan. Government's stock of gross, and net, debt increases with value of assumed loan.
(v)	Government provides assistance to banks in providing them with some cash to be used in reducing outstanding liabilities to the value of 20	This assistance directly reduces the overall balance of government due to the capital transfer. The secondary impact of this assistance is a reduction in the overall balance of government to the extent that revenue reduces due to interest foregone on the cash deposits. Government stock of gross debt remains unchanged, but net debt increases.
	Governments purchases bad assets from financial institutions	
(vi)a	Government purchases bad assets from a bank at market values of 100, financed from existing cash resources	This exchange of cash assets for an asset related to policy purposes directly reduces the overall balance of government. The secondary impact of interest receivable increase the overall balance of government to the extent that it is more than interest forgone on the cash deposit. Government's stock of gross, and net, debt remains unchanged.
(vi)b	Government purchases bad assets from a bank at market values of 100, financed by the issuance of securities	In the standard GFSM 1986 the acquisition of a financial asset in exchange of a liability has no influence on the overall balance in the absence of cash flows. The secondary impact of the actual interest cost reduces overall balance, in so far as it does not match the interest income. Government's stock of gross debt increase with value of securities issued, but net debt remains unchanged.
(vii)a	Government purchases bad assets from a bank at a price of 120 while market value of the asset is 100 - financed from existing cash resources	This exchange of cash assets for an asset related to policy purposes directly reduces the overall balance of government. The secondary impact of the asset acquired is interest receivable, thus increasing the overall balance of government to the extent that it is more than interest forgone on the cash deposit. Government's stock of gross debt remains unchanged but net debt increases with 20.
(vii)b	Government purchases bad assets from a bank at a price of 120 while market vale of the asset is 100 - financed by the issuance of securities	In the standard GFSM 1986 the acquisition of an asset related to policy purposes in exchange for a liability has no influence on the overall balance of government in the absence of cash flows. The secondary impact of the actual interest cost reducesthe overall balance, in so far as it does not match the interest income. Government's stock of gross debt increase with the value of securities issued (120), the net debt increases with 20.

Table 1. Statistical Treatment of Government Intervention (under GFSM 1986) (concluded)

		Baseline: no Intervention	**Issuing guarantees (viii)**	**Assuming one-off debt service of guaranteed debt (ix)**		**Repaying debt when guarantee is called (x)**	
				With creating an effective claim on defaulter (ix)a	Without creating an effective claim on defaulter (ix)b	With creating an effective claim on defaulter (x)a	Without creating an effective claim on defaulter (x)b
				Augmented treatment	Augmented treatment		
(1)	**Total revenue and grants**	**150**	**150**	**150**	**150**	**152**	**150**
	of which interest received	*0*	*0*	*0*	*0*	*2*	*0*
(2)=(3)+(4)	**Total expenditure and Lending minus repayments**	**150**	**150**	**150**	**150**	**250**	**255**
(3)	**Expenditure**	**150**	**150**	**150**	**150**	**150**	**255**
	of which interest	*0*	*0*	*0*	*0*	*0*	*5*
	of which capital transfers	*0*	*0*	*0*	*0*	*0*	*100*
(4)	**Lending minus repayments**	**0**	**0**	**0**	**0**	**100**	**0**
	Loans	0	0	0	0	100	0
(5)=(1)-(2)	**Overall balance**	**0**	**0**	**0**	**0**	**-98**	**-105**
(6)	**Non-cash bank restructuring measures**	**0**	**0**	**11**	**11**	**0**	**0**
	Loans			11	0	0	0
	Capital transfer			0	11	0	0
(7)=(5)-(6)	***Augmented balance***	**0**	**0**	**-11**	**-11**	**-98**	**-105**
-(7)	**Total financing**	**0**	**0**	**11**	**11**	**98**	**105**
	Domestic financing	**0**	**0**	**11**	**11**	**98**	**105**
	Net change in banking deposits (-increase)	0	0	0	0	98	105
	Increase in other domestic liabilities	0	0	11	11	0	0
	Memorandum item: Outstanding guarantees	**0**	**1000**	**990**	**990**	**900**	**900**

Assume: Interest on government securities issued: 5%; interest earned on assets acquired by government: 2%; and interest on cash deposits of government 0 %.

	Government assistance through guarantees	
(viii)	Government provides support to the industry by issuing guarantees to the total amount of 1000.	This issuance of guarantees does not impact on the overall balance of government because the transaction is not recorded in the operation of government. Government's stock of gross, and net, debt remains unchanged because such guarantees are not regarded as government liabilities until such time as these are called. However, for transpareny purposes, record the total outstanding amount of guarantees as a memorandum item on the government accounts.
(ix)a	Government assumes the obligation to service a once-off principal (10) and interest (1) payment that was guaranteed due to temporary liquidity contraint of a bank (with creating an effective claim on defaulter).	In the GFSM 1986 the assumption of debt service has no influence on the overall balance of government in the absence of cash flows. Since the bank remains a going concern, government acquires an effective claim on the bank. The secondary impact of interest receivable increase the overall balance of government to the extent that it is more than interest forgone on the cash deposit. Government's stock of gross debt increases and net debt remains unchanged.
(ix)b	Government is obliged to service a principal (10) and interest payment (1) that was guaranteed, but due to fundamental insolvency issues, government does not obtain an effective claim on the defaulter bank (without creating an effective claim on defaulter).	In the GFSM 1986 the assumption of the servicing of a guaranteed loan has no influence on the overall balance of government in the absence of cash flows. The overall balance could decrease to the extent that revenue reduces due to interest foregone on the cash deposits. Government's stock of gross debt and net debt increase (11).
(x)a	A guarantee to the value of 100 is called. The defaulting bank are being restructured and government obtain an effective claim on the bank.	This exchange of cash assets for an asset related to policy purposes directly reduces the overall balance of government. Since the bank remains a going concern, government acquires an effective claim on the bank. The secondary impact of interest receivable increase the overall balance to the extent that it is more than interest forgone on the cash deposit. Government's stock of gross, and net, debt remains unchanged, while the stock of outstanding guarantees reduces with the amount of the called guarantee.
(x)b	A guarantee to the value of 100 is called. The defaulting bank is insolvent and government does not obtain an effective claim on the bank.	A called guarantee has the same impact as loan assumption, assuming the loan directly reduces the overall balance of government due to the capital transfer. The secondary impact is a further reduction in the overall balance due to the interest payable on the assumed loan. Government's stock of gross, and net, debt increases with value of assumed loan, while outstanding guarantees reduces with the same amount.

Table 2. Statistical Treatment of Government Intervention (under GFSM 2001)

			Capital injection (100)					
			Creating an effective claim				No effective claim (iii)	
			Buy equity (i)		Extend a loan (ii)			
		Baseline: no Intervention	Payment in cash (ia)	Payment in Securities (ib)	Payment in cash (iia)	Payment in Securities (iib)	Payment in cash (iiia)	Payment in Securities (iiib)
(1)	**Revenue**	**150**	**153**	**153**	**152**	**152**	**150**	**150**
	of which interest received	*0*	*0*	*0*	*2*	*2*	*0*	*0*
	of which dividends received	*0*	*3*	*3*	*0*	*0*	*0*	*0*
(2)	**Expense**	**100**	**100**	**105**	**100**	**105**	**200**	**205**
	of which interest	*0*	0	5	0	5	0	5
	of which capital transfers	*0*	*0*	*0*	*0*	*0*	*100*	*100*
(3)=(1)-(2)	**Net/gross operating balance**	**50**	**53**	**48**	**52**	**47**	**-50**	**-55**
(4)	Net acquisition of nonfinancial assets	50	50	50	50	50	50	50
(5)=(3)-(4)	**Net lending/borrowing**	**0**	**3**	**-2**	**2**	**-3**	**-100**	**-105**
(6)=(7)-(8)	**Transactions in financial assets and liabilities (Financing)**	**0**	**3**	**-2**	**2**	**-3**	**-100**	**-105**
(7)	**Net acquisition of financial assets**	**0**	**3**	**98**	**2**	**97**	**-100**	**-5**
	of which							
	Currency and Deposits	*0*	*-97*	*-2*	*-98*	*-3*	*-100*	*-5*
(7.1)	*Loans for policy purposes*	*0*	*0*	*0*	*100*	*100*	*0*	*0*
(7.2)	*Shares and other equity for policy purposes*	*0*	*100*	*100*	*0*	*0*	*0*	*0*
(8)	**Net incurrence of liabilities**	**0**	**0**	**100**	**0**	**100**	**0**	**100**
	of which							
	Securities other than shares	*0*	*0*	*100*	*0*	*100*	*0*	*100*
	Loans	*0*	*0*	*0*	*0*	*0*	*0*	*0*
(9)=(5)-(7.1)-(7.2)	**Overall balance**	**0**	**-97**	**-102**	**-98**	**-103**	**-100**	**-105**

Assume: Interest on government securities issued: 5%; interest earned on assets acquired by government: 2%; interest on cash deposits of government: 0 %; and dividends on shares and other equity: 3%.

	Government acquires an effective claim on recipient of financial assistance	
(i)a	Government injects capital in a financial institution by taking up equity to the value of 100, financed from existing cash resources.	This exchange of one type of asset for another has no primary impact on net worth of government. The secondary impact of acquiring the equity generate some dividend, thus increasing net worth of government to the extent that it is more than interest forgone on the cash deposits. The implied "cost" of the rescue operation is potential losses in the value of the equity investment. Government's gross, as well as net, debt remains unchanged.
(i)b	Government injects capital in a financial institution by taking up equity to the value of 100, financed by the issuance of securities	This acquisition of a financial asset funded by the incurence of a liability has no primary impact on the net worth of government. The secondary impact of the actual interest payable on the securities reduces net worth, in so far as it does not match the receivable dividend income. The implied "cost" of the rescue operation is potential losses in the value of the equity investment. Government's stock of gross debt increases with value of securities issued, but net debt remains unchanged.
(ii)a	Government injects capital in a financial institution by extending a loan to the bank, financed from existing cash resources.	This exchange of one type of asset for another has no primary impact on net worth of government. The secondary impact of the loan extended is interest receivable, thus increasing net worth of government to the extent that it is more than interest forgone on the cash deposit. The implied "cost" of the rescue operation is potential losses on the loans extended. Government's gross, as well as net, debt remains unchanged.
(ii)b	Government injects capital in a financial institution by extending a loan to the bank, financed by the issuance of securities	This acquisition of a financial asset in exchange for a liability has no primary impact on the net worth of government. The secondary impact of the loan extended is interest receivable, thus increasing net worth of government to the extent that it is more than interest payable. The implied "cost" of the rescue operation is potential losses on the loans extended. Government's gross debt increases with value of securities issued, but net debt remains unchanged.
	Government does not acquire an effective claim on recipient of financial assistance	
(iii)a	Government injects capital in a financial institution but does not acquire an effective claim on the recipient. The injection is financed from existing cash resources	This capital injection directly reduces net worth of government due to the capital transfer. In addition, net worth could also decrease to the extend that revenue reduces due to interest foregone on the cash deposits. The implied "cost" of the rescue operation is the amount provided. Government's gross debt remains unchanged, but net debt increases.
(iii)b	Government injects capital in a financial institution but does not acquire an effective claim on the recipient. The injection is financed by the issuance of securities	This capital injection directly reduces net worth of government due to the capital transfer. In addition, net worth is further reduced by the interest cost payable on the securities. The implied "cost" of the rescue operation is the value of the securities provided. Government's gross, and net, debt increases with the value of securities issued.

Table 2. Statistical Treatment of Government Intervention (under GFSM 2001) (continued)

			Reducing liabilities of financial institutions		Purchasing bad assets of financial institutions			
					At market prices (vi)		At above market rates (vii)	
		Baseline: no Intervention	Full assumption of debt (iv)	Partial assistance with reduction (v)	Payment in cash (vi)a	Payment in Securities (vi)b	Payment in cash (vii)a	Payment in Securities (vii)b
(1)	**Revenue**	**150**	**150**	**150**	**152**	**152**	**152**	**152**
	of which interest received	*0*	*0*	*0*	*2*	*2*	*2*	*2*
(2)	**Expense**	**100**	**205**	**120**	**100**	**105**	**120**	**125**
	of which interest	*0*	*5*	*0*	*0*	*5*	*0*	*5*
	of which capital transfers	*0*	*100*	*20*	*0*	*0*	*20*	*20*
(3)=(1)-(2)	**Net/gross operating balance**	**50**	**-55**	**30**	**52**	**47**	**32**	**27**
(4)	Net acquisition of nonfinancial assets	50	50	50	50	50	50	50
(5)=(3)-(4) also = (6)	**Net lending/borrowing**	**0**	**-105**	**-20**	**2**	**-3**	**-18**	**-23**
(6)=(7)-(8)	**Transactions in financial assets and liabilities (Financing)**	**0**	**-105**	**-20**	**2**	**-3**	**-18**	**-23**
(7)	**Net acquisition of financial assets**	**0**	**-5**	**-20**	**2**	**97**	**-18**	**97**
	of which							
	Currency and Deposits	*0*	*-5*	*-20*	*-98*	*-3*	*-118*	*-3*
(7.1)	*Loans for policy purposes*	*0*	*0*	*0*	*100*	*100*	*100*	*100*
(8)	**Net incurrence of liabilities**	**0**	**100**	**0**	**0**	**100**	**0**	**120**
	of which							
	Securities other than shares	*0*	*0*	*0*	*0*	*100*	*0*	*120*
	Loans	*0*	*100*	*0*	*0*	*0*	*0*	*0*
(9)=(5)-(7.1)	**Overall balance**	**0**	**-105**	**-20**	**-98**	**-103**	**-118**	**-123**

Assume: Interest on government securities issued: 5%; interest earned on assets acquired by government: 2%; and interest on cash deposits of government: 0 %.

	Government assists financial institutions in reducing their liabilities	
(iv)	Government assumes a bank's liabilities in respect of a loan outstanding, to the value of 100	This loan assumption directly reduces net worth of government due to the capital transfer. The secondary impact is a further reduction in net worth due to the interest payable on the assumed loan. Government's stock of gross, and net, debt increase with value of assumed loan.
(v)	Government provides assistance to the bank in providing them with some cash to be used in reducing outstanding liabilities to the value of 20	This assistance directly reduces net worth of government due to the capital transfer. The secondary impact of this assistance is a reduction in net worth of government to the extent that revenue reduces due to interest foregone on the cash deposits. Government stock of gross debt remains unchanged, but net debt increases.
	Governments purchases bad assets from financial institutions	
(vi)a	Government purchases bad assets from a bank at market values of 100, financed from existing cash resources	This exchange of one type of asset for another has no primary impact on net worth of government. The secondary impact of interest receivable increase net worth of government to the extent that it is more than interest forgone on the cash deposit. The implied "cost" of the rescue operation is potential losses on the assets acquired. Government's stock of gross, and net, debt remains unchanged.
(vi)b	Government purchases bad assets from a bank at market values of 100, financed by the issuance of securities	This acquisition of a financial asset in exchange for a liability has no primary impact on the net worth of government. The secondary impact of the actual interest cost reduces net worth, in so far as it does not match the interest income. The implied "cost" of the rescue operation is potential losses on the assets acquired. Government's stock of gross debt increase with value of securities issued, but net debt remains unchanged.
(vii)a	Government purchases bad assets from a bank at a price of 120 while market value of the asset is 100 - financed from existing cash resources	This exchange of one type of asset for another (acquired at a cost higher than market value) directly reduces net worth of government by the amount of the difference between the market value and purchasing price. The secondary impact of the asset acquired is interest receivable, thus increasing net worth of government to the extent that it is more than interest forgone on the cash deposit. The implied "cost" of the rescue operation is potential losses on the assets acquired. Government's stock of gross debt remains unchanged but net debt increases by 20.
(vii)b	Government purchases bad assets from a bank at a price of 120 while market vale of the asset is 100 - financed by the issuance of securities	This acquisition of an asset (at a cost higher than market value) in exchange for a liability directly reduces net worth of government by the amount of the difference between the market value of the asset acquired and the value of the liability issued. The secondary impact of the actual interest cost reduces net worth, in so far as it does not match the interest income. The implied "cost" of the rescue operation is potential losses on the assets acquired. Government's stock of gross debt increase with the value of securities issued (120), the net debt increases by 20.

Table 2. Statistical Treatment of Government Intervention (under GFSM 2001) (concluded)

				Assuming once off debt service of guaranteed debt (ix)		Repay debt when guarantee is called (x)	
		Baseline: no Intervention	**Issuing guarantees (viii)**	With creating an effective claim on defaulter (ix)a	Without creating an effective claim on defaulter (ix)b	With creating an effective claim on defaulter (x)a	Without creating an effective claim on defaulter (x)b
(1)	**Revenue**	**150**	**150**	**150**	**150**	**152**	**150**
	of which interest received	*0*	*0*	*0*	*0*	*2*	*0*
(2)	**Expense**	**100**	**100**	**100**	**111**	**100**	**205**
	of which interest	*0*	*0*	*0*	*0*	*0*	*5*
	of which capital transfers	*0*	*0*	*0*	*11*	*0*	*100*
(3)=(1)-(2)	**Net/gross operating balance**	**50**	**50**	**50**	**39**	**52**	**-55**
(4)	Net acquisition of nonfinancial assets	50	50	50	50	50	50
(5=(3)-(4) also = (6)	**Net lending/borrowing**	**0**	**0**	**0**	**-11**	**2**	**-105**
(6)=(7)-(8)	**Transactions in financial assets and liabilities (Financing)**	**0**	**0**	**0**	**-11**	**2**	**-105**
(7)	**Net acquisition of financial assets**	**0**	**0**	**0**	**-11**	**2**	**-5**
	of which						
	Currency and Deposits	*0*	*0*	*-11*	*-11*	*-98*	*-5*
(7.1)	*Loans for policy purposes*	*0*	*0*	*11*	*0*	*100*	*0*
(8)	**Net incurrence of liabilities**	**0**	**0**	**0**	**0**	**0**	**100**
	of which						
	Securities other than shares	*0*	*0*	*0*	*0*	*0*	*0*
	Loans	*0*	*0*	*0*	*0*	*0*	*100*
(9)=(5)-(7.1)	**Overall balance**	**0**	**0**	**-11**	**-11**	**-98**	**-105**
	Memorandum item: Outstanding guarantees	**0**	**1000**	**990**	**990**	**900**	**900**

Assume: Interest on government securities issued: 5 percent; interest earned on assets acquired by government: 2 percent; and interest on cash deposits of. government: 0 percent

	Government assistance through guarantees	
(viii)	Government provides support to the industry by issuing guarantees to the total amount of 1000.	This issuance of guarantees does not impact on the net worth of government because the transaction is not recorded in the operation of government. Government's stock of gross , and net, debt remains unchanged because such guarantees are not regarded as government liabilities until such time as these are called. However, for transparency purposes, record the total outstanding amount of guarantees as a memorandum item on the government accounts.
(ix)a	Government is obliged to service a once-off principal (10) and interest (1) payment that was guaranteed due to temporary liquidity constraint of a bank.	This exchange of one type of asset for another has no primary impact on net worth of government. Since the bank remains a going concern, government acquires an effective claim on the bank. The secondary impact of interest receivable increase net worth of government to the extent that it is more than interest forgone on the cash deposit. The implied "cost" of the assistance is potential losses on the assets acquired. Government's stock of gross debt increases and net debt remains unchanged.
(ix)b	Government is obliged to service a principal (10) and interest payment (1) that was guaranteed, but due to fundamental insolvency issues, government does not obtain an effective claim on the defaulter bank.	This servicing of a guaranteed loan directly reduces net worth of government due to the capital transfer. In addition, net worth could also decrease to the extend that revenue reduces due to interest foregone on the cash deposits. Government's stocks of gross debt and net debt increase (11).
(x)a	A guarantee to the value of 100 is called. The defaulting bank are being restructured and government obtain an effective claim on the bank.	This exchange of one type of asset for another has no primary impact on net worth of government. Since the bank remains a going concern, government acquires an effective claim on the bank. The secondary impact of interest receivable increase net worth of government to the extent that it is more than interest forgone on the cash deposit. The implied "cost" of the assistance is potential losses on the assets acquired. Government's stock of gross, and net, debt remains unchanged, while the stock of outstanding guarantees reduces with the amount of the called guarantee.
(x)b	A guarantee to the value of 100 is called. The defaulting bank is insolvent and government does not obtain an effective claim on the bank.	A called guarantee has the same impact as loan assumption, assuming the loan directly reduces net worth of government due to the capital transfer. The secondary impact is a further reduction in net worth due to the interest payable on the assumed loan. Government's stock of gross, and net, debt increases with value of assumed loan, while outstanding guarantees reduces with the same amount.

II. Financial Sector Support Measures[10]

11. **This chapter provides a detailed summary of the financial sector support measures and their net costs in advanced and emerging market countries**. In addition to the specific measures announced or implemented in each country, it provides information on the magnitude of support, estimates of the upfront fiscal cost, and information on how countries currently propose to treat the different measures in their fiscal accounts (which is not in all cases consistent with the recommended treatment in Chapter I). Based on the analysis in Chapters III and VI, the expected net costs of financial support operations (including recapitalization, purchase of assets, liquidity provision and guarantees) are calculated in Tables 3 and 4.

12. **The data have been compiled jointly with the IMF Monetary and Capital Markets Department, relying primarily on information from official government sources, such as treasuries and central banks**. These have been supplemented by information from financial market sources, including investment and commercial banks, ratings agencies, and private consultancy companies. Information by country is presented in Table 5. The figures reported reflect official announcements of amounts allocated for financial sector support, not necessarily actual disbursements.[11]

[10] Prepared by Daehaeng Kim with contributions by Edouard Martin.

[11] In some instances, the amounts announced have not yet been formally committed through legislation or regulation.

Table 3. Upfront Gross Fiscal Cost and Recovery Rate

(In percent of GDP, unless otherwise indicated)

	Upfront Government Financing	Recovery Rate 1/		Medium-term Net Cost of Direct Support	
		Point Estimate 2/	95% Interval	Point Estimate	95% Interval
Advanced North America					
Canada	**8.8**	59.7	[37.9, 81.5]	**3.5**	[1.6, 5.4]
United States	**6.3**	49.1	[26.8, 71.4]	**3.2**	[1.8, 4.6]
Advanced Europe					
Austria	**5.3**	54.2	[34.3, 74]	**2.4**	[1.3, 3.4]
Belgium	**4.7**	55.5	[34.7, 76.2]	**2.1**	[1.1, 3.0]
France	**1.5**	48.5	[29.1, 67.9]	**0.8**	[0.4, 1.0]
Germany	**3.7**	54.7	[34.8, 74.4]	**1.7**	[0.9, 2.3]
Greece	**5.4**	47.5	[30.4, 64.5]	**2.8**	[1.9, 3.7]
Ireland	**5.3**	51.9	[28.6, 75.1]	**2.6**	[1.3, 3.7]
Italy	**1.3**	50.4	[31, 69.7]	**0.6**	[0.3, 0.8]
Netherlands	**6.2**	57.7	[37.8, 77.4]	**2.6**	[1.3, 3.8]
Norway	**13.8**	97.7	[53.6, 100]	**0.3**	[0, 6.4]
Portugal	**2.4**	46.6	[30.1, 62.9]	**1.3**	[0.8, 1.6]
Spain	**4.6**	49.9	[31.5, 68.2]	**2.3**	[1.4, 3.1]
Sweden	**5.8**	62.4	[39.1, 85.6]	**2.2**	[0.8, 3.5]
Switzerland	**1.1**	61.4	[39.1, 83.5]	**0.4**	[0.1, 0.6]
United Kingdom 3/	**19.8**	42.9	[25.3, 60.3]	**5.2**	[4.0, 6.4]
Advanced Asia and Pacific					
Australia	**0.7**	62.5	[39.8, 85.1]	**0.3**	[0.1, 0.4]
Japan	**0.2**	50.5	[29.6, 71.2]	**0.1**	[0.0, 0.1]
Korea	**0.2**	58.4	[37.8, 79]	**0.1**	[0.0, 0.1]
Emerging Economies					
Argentina	**0.0**	N/A	N/A	**0.0**	N/A
Brazil	**0.0**	N/A	N/A	**0.0**	N/A
China	**0.0**	30.0	N/A	**0.0**	N/A
India	**0.0**	N/A	N/A	**0.0**	N/A
Indonesia	**0.1**	30.0	N/A	**0.1**	N/A
Hungary	**1.1**	19.4	[7.97, 30.7]	**0.9**	[0.7, 1.0]
Poland	**0.4**	30.0	N/A	**0.3**	N/A
Russia	**0.6**	40.8	[22.9, 58.8]	**0.4**	[0.2, 0.4]
Saudi Arabia	**1.2**	100.0	[51.6, 100]	**0.0**	[0, 0.5]
Turkey	**0.0**	30.0	N/A	**0.0**	N/A
Average for: 4/					
G-20	**3.3**	50.7	[29.5, 71.1]	**1.4**	[0.8, 2.0]
Advanced Economies	**5.2**	50.5	[29.5, 71.4]	**2.3**	[1.3, 3.1]
Emerging Economies	**0.1**	53.2	[28.9, 67.4]	**0.0**	[0.0, 0.1]

Source: IMF staff estimates. See Chapter III for details.
1/ In percent of upfront outlays.
2/ In the absence of estimated recovery rates for China, Indonesia, Poland and Turkey, the recovery rate for these countries is assumed to be 30 percent, the average for Hungary and Russia.
3/ The recovery rate for the Special Liquidity Scheme is assumed to be 90 percent.
4/ Weighted by PPP GDP of 2007.

Table 4. Net Expected Cost from Financial Sector Support Measures

(In percent of GDP, unless otherwise indicated)

	Net Cost of Direct Support	Guarantees					Liquidity Provision by Central Bank and others		Total Net Cost
		Gross	Spreads 1/		Expected Cost 3/		Gross	Net 4/	
			MKMV LGD 2/	Optimistic/ Conservative LGD 2/	Point Estimate	Range			
	(i)				(ii)			(iii)	(i)+(ii)+(iii)
Advanced North America									
Canada	**3.5**	11.7	125	[71.5, 222]	0.7	[0.4, 1.2]	1.6	0.2	**4.4**
United States 5/	**3.2**	31.3	405	[220, 750]	5.8	[3.2, 10.0]	36.1	3.6	**12.7**
Advanced Europe									
Austria	**2.4**	30.0	356	[100, 316]	5.0	[1.4, 4.4]	0.0	0.0	**7.4**
Belgium	**2.1**	26.2	N/A	N/A	N/A	N/A	0.0	0.0	**2.1**
France	**0.8**	16.4	114	[127, 410]	0.9	[1.0, 3.1]	1.0	0.1	**1.8**
Germany	**1.7**	17.6	168	[179, 595]	1.4	[1.5, 4.6]	0.0	0.0	**3.1**
Greece	**2.8**	6.2	451	[159, 521]	1.3	[0.4, 1.4]	0.0	0.0	**4.1**
Ireland	**2.6**	257	90	[37.5, 114]	11.4	[4.7, 14.4]	0.0	0.0	**13.9**
Italy	**0.6**	0.0	142	[87.5, 274]	0.0	N/A	2.5	0.3	**0.9**
Netherlands	**2.6**	33.7	345	[123, 397]	5.4	[2.0, 6.1]	0.0	0.0	**8.0**
Norway	**0.3**	0.0	316	[205, 692]	0.0	N/A	0.0	0.0	**0.3**
Portugal	**1.3**	12.0	169	[167, 552]	1.0	[0.9, 2.9]	0.0	0.0	**2.3**
Spain	**2.3**	18.3	156	[88.7, 279]	1.4	[0.7, 2.4]	0.0	0.0	**3.7**
Sweden	**2.2**	47.3	173	[138, 449]	4.0	[3.1, 9.7]	15.3	1.5	**7.7**
Switzerland	**0.4**	0.0	182	[173, 573]	0.0	N/A	10.9	1.1	**1.5**
United Kingdom 6/	**5.2**	17.4	304	[181, 601]	2.5	[1.5, 4.6]	13.8	1.4	**9.1**
Advanced Asia and Pacific									
Australia	**0.3**	N/A	232	[102, 326]	N/A	N/A	0.0	0.0	**0.3**
Japan	**0.1**	3.9	403	[277, 982]	0.7	[0.5, 1.5]	8.8	0.9	**1.7**
Korea	**0.1**	10.6	470	[164, 540]	2.3	[0.8, 2.5]	0.0	0.0	**2.4**
Emerging Economies									
Argentina	**0.0**	0.0	N/A	N/A	0.0	N/A	0.9	0.1	**0.1**
Brazil	**0.0**	0.0	N/A	N/A	0.0	N/A	1.5	0.1	**0.1**
China	**0.0**	0.0	N/A	N/A	0.0	N/A	0.5	0.0	**0.1**
India	**0.0**	0.0	N/A	N/A	0.0	N/A	5.6	0.6	**0.6**
Indonesia	**0.1**	0.1	500	N/A	0.0	N/A	0.0	0.0	**0.1**
Hungary	**0.9**	1.1	500	N/A	0.0	N/A	4.0	0.4	**1.3**
Poland	**0.3**	3.2	500	N/A	0.7	N/A	0.0	0.0	**1.0**
Russia	**0.4**	0.5	644	[216, 734]	0.1	[0.0, 0.1]	6.0	0.6	**1.1**
Saudi Arabia	**0.0**	N/A	559	[191, 641]	N/A	N/A	8.2	0.8	**0.8**
Turkey	**0.0**	0.0	500	N/A	0.0	N/A	0.2	0.0	**0.0**
Average for: 7/									
G-20	**1.4**	12.4			2.0	[1.1, 3.6]	12.2	1.2	**4.7**
Advanced Economies	**2.3**	19.7			3.2	[1.9, 5.8]	18.2	1.8	**7.3**
Emerging Economies	**0.0**	0.1			0.0	[0.0, 0.0]	2.2	0.2	**0.3**

Source: IMF staff estimates. See Chapter VI for details.

1/ Spreads in basis points are calculated based on estimates of implicit put option values for individual banks and using Moody's KMV Credit Edge database as of November 14, 2008. They are based on a five-year average duration. Spreads are assumed to be 500 basis points when market rates are unavailable.

2/ MKMV, Conservative and Optimistic LGD refer respectively to (i) Moody's estimated recovery rates (equivalently 1 - Loss Given Default (LGD)), (ii) a conservative recovery rate of 40 percent, and (iii) an optimistic recovery rate of 80 percent.

3/ Cumulative cost over five years.

4/ The recovery rate for outlays by central banks is assumed to be 90 percent.

5/ For the U.S., security dealers and brokers are added to the traditional banks.

6/ We abstract from netting the guarantee fees from the gross cost of guarantees given the differences in fees applied across countries and to different maturity classes of debt and given the legislative differences involved in applying those fees.

7/ Weighted by PPP GDP of 2007.

Table 5. Financial Sector Support Operations in Selected Countries

(In local currencies)

Argentina

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Loans	9	Loans of AR$ 1.7 billion to the agricultural sector; AR$ 1.3 billion to the manufacturing sector; AR$ 3.1 billion to those buying their first car; AR$ 3.5 million to those buying home appliances; AR$ 3 billion to SMEs. All of these measures are likely to be financed by Anses (Administración Nacional de la Seguridad Social).	0	This operation will likely involve the transfer of Anses' deposits to a number of commercial banks. As Anses is not part of the central government, it will not be reflected in the central government accounts.
Total	9		0	

Australia

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	N/A	Government will guarantee all deposits (no explicit DI before).	0	The deposit guarantee was reported as a contingent liability in the Statement of Risks in the Mid-Year Economic and Fiscal Outlook (MYEFO). If the guarantee is called upon it will be paid by the government and reported as an expenditure (likely as a capital transfer).
Guarantee	N/A	Government will guarantee, for a fee, eligible wholesale borrowing (new and existing term issuance up to 5 years) of Australian-owned banks, Australian subsidiaries of foreign banks, and credit unions.	0	The wholesale funding guarantee was reported as a contingent liability in the Statement of Risks in MYEFO. To the extent that the guarantee is quantifiable in future, those values will be detailed as a 'quantifiable contingent liability'. If the guarantee is called upon it will be paid by the Treasury portfolio and will be reported as an expenditure.
Purchase of Assets	8	Purchase of up to AUD4 billion of RMBS from institutions who are not eligible for guarantee. The Australian Office of Financial Management (AOFM) has been directed to purchase another AUD 4 billion of RMBS from non-ADI lenders, in addition to the AUD4.0bn already announced.	8	These purchases of AAA-rated RMBS will be reported as financing (purchases of financial assets).
Total	8		8	

Austria

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	N/A	Unlimited deposit insurance	0	Government guarantee. Not expected to be reported.
Guarantee	85	E85 billion is pledged to guarantee the interbank market (E10 billion for a medium-term interbank clearing facility and E75 to guarantee bank financing).	0	Government guarantee. Not expected to be reported.
Capital Injection	15	E15 billion is pledged for bank recapitalization.	15	Will be reported in the government accounts as financing (purchase of financial assets).
Total	100		15	

Belgium

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Guarantee	91	Two types of guarantees: (1) a guarantee by the government to the NBB extending collateralized loans to banks; and (2) new interbank and institutional deposits and financing as well as new bond issuance intended for institutional invests by a number of Dexia entities. E90 billion for Dexia, the rest is unallocated.	0	Government guarantees. Not expected to be reported.
Liquidity Support from Central Bank	0	The liquidity support available to Fortis amounted to E65.4 billion from the Belgium National Bank and E47 billion from the ECB. This must have been stopped when BNP Paribas stepped in following the sale of a majority equity position in Fortis Bank Belgium to BNP Paribas in October 2008. Liquidity support from ECB and national central bank could be resumed if BNP Paribas stop providing liquidity as of March 1st.	0	Central bank operations, not reported in the government accounts.
Capital Injection	16	Dexia (E2 billion), Fortis (E9.4 billion), KBC Group (E3.5 billion) and Ethias (E1.5 billion).	16	Will be reported in the government accounts as financing (purchase of financial assets).
Total	107		16	

Brazil

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Crisis Liquidity Facilities	44	Central bank (BCB) initiated repo operations in dollars. Loans outstanding as of Dec 23, 2008 were US$13.9 bn (0.9% of GDP) having peaked at US$14.9 bn. Most expiring contracts are being rolled over. BCB announced dollar lending program for up to US$ 10 bn (0.6% of GDP)--amounts will be lent to banks with commitment to on-lend to firms amortizing foreign debts. Deposit insurance fund puchases CDs and some other obligations issued by smaller banks for R$15 bn. Of this, R$2.5 bn (US$1.1 bn, 0.1% of GDP) had been used as of December 17, 2008. Public banks (Banco do Brasil and Nossa Caixa) announced credit lines totalling up to RS$8 bn (US$3.5, 0.3% of GDP) apiece to purchase loan portfolio from small banks. Total USD 25 billion (13.9+10+1.1)	0	Primarily implemented by the central bank, these measures will not be reported in the government accounts.
Total	44		0	

Canada

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Purchase of assets	125	Canada Mortgage and Housing Corporation will purchase up to CAD75 billion of insured mortgage. Purchase of CAD12 billion by end-Oct. The federal government agreed to increase its mortgage purchases by CAD50 billion (Jan 28, 2009).	125	The corporation is owned by, but not part of, the government. These purchases will therefore not be directly reported in the government accounts.
Liquidity	25	Crisis Liquidity Facilities. Increased the size of term PRAs to over US$24.5 billion (1.9 percent of GDP). Purchase and Resale agreement (PRA) is an arrangement between the Bank of Canada (BoC) and dealers whereby the BoC buys treasuries from a dealer, and the dealer agrees to repurchase the treasuries the next day.	0	Central bank operation, not reported in the government accounts.
Loan by Treasury to auto makers	4	A loan of US$3.3 billion (0.2 percent of GDP) to be granted (from the federal government and the Government of Ontario) to GM and Chrysler.	4	Reported as financing.
Credit Facility	12	Canadian Secured Credit Facility has been newly established. The budget sets aside CAD12 billion to purchase securities backed by loans and leases on vehicles and equipment.	12	N/A
Guarantee	188	Minister announced the creation of the Canadian Lenders Assurance Facility, which will provide insurance on the wholesale term borrowing of federally regulated deposit-taking institutions. A new Canadian Life Insurers Assurance Facility has been introduced, which will guarantee insurers' wholesale term borrowing. No specific amount was set for the program.	0	N/A
Total	354		141	

China

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Capital injection	3	Capital injection to Chinese airline companies.	3	This operation will involve the sale of newly issued stocks to the airlines' state-owned parent companies. They will therefore not be reported in the government accounts.
Bank recapitalization	141	Capital injection in Agricultural Bank (130 bln yuan) and others.	0	This operation will be conducted by Central Hujin and therefore not reported in the government accounts.
Total	144		3	

France

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Capital Injection	24	E3 billion for Dexia and E21 billion for others.	24	Will be reported in the government accounts below the line as financing (purchase of financial assets).
Bank Lending Guarantee	320	Up to E320 billion will be made available to guarantee bank lending.	0	Government guarantee. Not expected to be reported.
Corporate Loan	26	Government has announced a 20 billion euro fund to support the country's strategic companies. The government will raise E6 billion, with the rest coming from a state-owned bank, Caisse des Depots & Consignations (CDC). Government has extended more credit to PSA Peugeot Citroen and Renault SA and said aid to the carmakers may reach E6 billion in return for their pledges to keep domestic plants open.	6	The authorities have reported E3billion in the budget as expenditure and it is unclear how the remainder of the fund contribution will be accounted for. The modalities of the 6billion credit having yet to be specified, the way this credit will be reported in the government's account remains also unclear.
Total	370		30	

Germany

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	1,000	Public commitment by government to fully cover household deposits.	0	Is not expected to be reported in the government accounts.
Capital Injection	91	E10 billion for Bayern LB, E1.358 billion for IKB and E80 billion for other bank recapitalization.	91	Will be reported in the government accounts as financing (purchase of financial assets).
Asset purchase	10	Stabilization fund to provide EUR 10 bn for purchase of troubled assets	0	The stabilization fund is not part of the government.
Debt Guarantee	438	Stabilization fund provides interbank loan guarantees (E400 billion). Expected that 5% of guaranteed amount may be called upon. E23 billion for West LB and E15 billion for Hypo real estate.	0	The stabilization fund is not part of the government.
Total	539		91	

Greece

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	N/A	Deposit insurance up to E100,000 for all deposits.	0	The Fund guaranteeing the deposits is not part of the government. These guarantees are not expected to be reported as a contingent liability.
Capital Injection	5	Government announced E28 billion rescue plan. The plan permits the injection of up to E5 billion for bank capital in the form of preferred shares. The shareholders of Alpha Bank approved the government's capital injection of E940 mn in preference shares. The shareholders of Eurobank approved the government's capital injection of E345.5 mn in preference shares. (These are under E5 billion package.)	5	Will be reported in the government accounts as financing (purchase of financial assets). Preferred shares will pay a fixed annual return of 20 percent, which will be reported as revenue.
Loan Guarantee	15	Government backs new loans up to E15 billion.	0	Expected to be reflected as a contingent liability. Related fees will be reported as a revenue.
Lending	8	Issuance of up to E8 billion in special bonds to boost bank liquidity. The bonds will be lent directly to the banks at their nominal value against payment of a fee plus collateral.	8	Could be reported under the line as collateralized loan. Related fees will be reported as a revenue.
Total	28		13	

Hungary

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	N/A	Increase in DI to HUF13 million.		Expected to be reported as a contingent liability.
Liquidity provision	1,075	ECB repo facility	0	Central bank operation, not reported in the government accounts.
Capital Injection	300	Hungary is trying to set aside HUF600 billion for banking sector - half to enhance banks' capital ratios and half to guarantee interbank lending.	300	A fund will be created for that purpose. The fund will be capitalized though a government transfer, which is expected to be reported in the government accounts as financing. Any capital injection is expected to be reported in the fund accounts as financing (purchase of financial assets).
Guarantee	300	Interbank lending.	0	Another fund will be created for that purpose. The fund will be capitalized though a government transfer, which is expected to be reported as financing. The cost of called guarantees will be reported as transfers in the fund accounts. These funds are not expected to be consolidated in the general government accounts.
Total	1,675		300	

India

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Liquidity provision	2,932	Crisis liquidity facility including measures taken in January 2009.	0	Central bank operation, not reported in the government accounts.
Total	2,932		0	

Indonesia

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Guarantee	4,000	Export financing agency will be running within 9 months and will provide guarantees, insurance, or lending. The agency will be housed under the ministry of finance and will have initial capital of 4 trillion rupiah.	4,000	N/A
Total	4,000		4,000	

Ireland

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	485	Deposit insurance increased to unlimited for all deposits (retail, commercial, institutional, and interbank), covered bonds, senior debt and dated subordinated debt of Irish banks and deposit institutions. Estimated coverage is 485 billion.	0	The insurance is provided by the government. The corresponding contingent liability is not expected to be reported.
Capital injection	10	Recapitalisation program for credit institutions. Part of the funds will come from the National Pensions Reserve Fund. The State's investment will take the form of preference shares and/or ordinary shares and the State may where appropriate participate on an underwriting basis. A E7 billion recapitalization plan was announced in for the Allied Irish Bank and Bank of Ireland, funded by the existing allocation for recapitalization.	10	The government's investment will be reported in the government accounts as financing (purchase of financial assets).
Total	495		10	

Italy

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Guarantee	N/A	Ministry of Finance authorized to guarantee loans granted by the Bank of Italy to banks; issue a state guarantee to back up the Italian interbank deposit insurance, up to E103,191.38; and issue a state guarantee for new Italian bank liabilities with maturity of less than 5 years.	0	These guarantees are expected to be reported, as other contingent liabilities, in an annex to the budget law.
Recapitalization	20	The recapitalization measures was provided to subscribe subordinated debt instruments (to be counted as bank core tier 1 capital). The budget for these measures will be around E15 - 20 billion.	20	Will be reported in the government accounts as financing (purchase of financial assets).
Liquidity Swap	40	Provide for temporary exchanges of government securities held by the Central Bank with assets held by Italian banks.	0	Central bank operation, not reported in the government accounts.
Total	60		20	

Japan

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Guarantee	20,000	MOF provides a JPY33 trillion package through the policy-based financing institutions to the SMEs, including a government guarantee of JPY20 trillion.	900	Credit guarantees are not expected to be reported in the budget.
Lending and Purchase of commercial papers	13,000	MOF provides a JPY33 trillion package through the policy-based financing institutions to the SMEs, including loans of JPY11 trillion and purchase of CPs of JPY 2 trillion.		The JPY0.9 trillion that the government will inject into Japan Public Corporation for it to finance this lending will be reported in the government accounts as spending.
Capital injection	12,000	A special corporation will take participation in commercial banks for up to JPY12 trillion.		The corporation will finance its purchases by borrowing, with a government guarantee.
Purchase of Assets	1,000	The BOJ announced (Feb 3, 2009) that it will resume a programme of stock purchases. The BOJ will purchase JPY 1 trillion worth of stocks held by financial institutions. Financed by the BOJ.	0	Central bank operation, not reported in the government accounts.
Purchase of commercial bank's stock holdings	20,000	A special corporation could buy up to JPY20 trillion in stocks from the commercial banks.	0	The corporation will finance its purchases by borrowing, with a government guarantee.
Total	66,000		900	

Korea

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Guarantee	100,000	Guarantee to Korean banks' external debt issued until June 30, 2009 for 3 years (capped at US$100 billion).	0	These guarantees will be provided by the Ministry of Strategy and Finance and reported as government's contingent liabilities.
Purchase of Assets	11,300	Creation of a KRW10 trillion fund to purchase bonds and commercial papers issued by SMEs and corporations. State run Korea Asset Management to purchase up to USD900mn of construction loans from savings banks (KRW 1.3 trillion). No direct government funding is expected.	0	This fund will be funded by the central bank, the Korea development bank and institutional banks. The purchases will therefore not be reported directly in the government accounts.
Bank recapitalization	20,000	Creation of a KRW20 trillion fund to purchase commercial banks' preferred stocks, hybrid bonds, and subordinated debt to augment the banks' capital.	0	This fund will be funded by the central bank, the Korea development bank and institutional banks. The purchases will therefore not be reported directly in the government accounts.
Capital Injection	3,950	In-kind investment in public financial institutions (KRW 1.65 trillion) in 2008. Cash injection into 5 state-run financial institutions to support lending to small- and medium- sized enterprises and exporting firms (KRW 1.5 trillion) in the 2009 budget.	2,300	The injection of equity will be provided by the government. Expected to be reported as spending (transfers).
Total	135,250		2,300	

Netherlands

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	N/A	Up to E100,000 for one year for all deposits.	0	The insurance is covered by the banks and the central bank. And is therefore not recorded in the government accounts.
Loan Guarantee	200	Conditional guarantees for loan between banks and institutional investors. E200 billion is allocated for this facility, but the amount actually used by end-2008 is very limited.	0	These government guarantees will be mentioned in the budget documents but no quantitative estimates are expected to be provided.
Purchase of Assets	17	The government purchased E16.8 billion equity from the Fortis Holding in Belgium to nationalize Fortis Netherlands.	17	Will be reported in the government accounts as financing (purchase of assets).
Capital Injection	20	ING (E10 billion) and E10 billion is available for other banks.	20	Will be reported in the government accounts as financing (purchase of financial assets).
Total	237		37	

Norway

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Capital Injection/Liquidity Swap	350	The Storting (Norwegian parliament) has authorized the Ministry of Finance to exchange with banks government securities against collateral in or in return for Norwegian covered bonds in amounts up to a total of NOK 350 billion. It is a swap arrangement with conservative haircuts.	350	Will be reported in the government accounts as financing.
Total	350		350	

Poland

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Guarantees	40	The government will provide guarantees for interbank lending up to 40 billion zloty, if needed.	0	This guarantee is provided directly by the government and will be reported in its accounts as a contingent liability.
Capital injection	5	The government increased the capital of state-owned BGK bank by 5.3 billion zloty, to expand its lending to domestic firms.	5	Will be reported in the government accounts as financing (purchase of financial assets).
Total	45		5	

Portugal

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	N/A	Formal deposit insurance increased to E100,000.	0	Government guarantee. Not expected to be reported.
Guarantee	20	A special scheme provides guarantees to credit institutions, available for the renewal of financing operations.	0	Government guarantee. Not expected to be reported.
Capital Injection	4	Government will make E4 billion available to banks seeking to strengthen their capital.	4	Will be reported in the government accounts as financing (purchase of financial assets).
Total	24		4	

Russia

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	200	Government will widen remit of deposit insurance agency by injecting 200 billion rubles from the budget.	200	The recapitalization of the agency by the government is reported above the line as a transfer. The insurance is not reported as a contingent liability.
Purchase of assets	175	Financed from the National Welfare Fund	0	This operation will not be reported in the government accounts.
Capital Injection	60	Government capital injection in the State Mortgage Agency to finance the purchase of mortgage-backed securities.	60	The capital injection was reported above the line, as a transfer, in the 2008 supplementary budget. The purchases of securities will not appear in the government accounts as the Agency is not part of the government.
Uncollateralized lending	388	CBR's new uncollateralized lending facility (388 billion rubles for one month) on top of 220 billion rubles rolled over via daily repos has eased local liquidity.	0	Central bank operation, not reported in the government accounts.
Bank Loan/Recapitalization	950	Subordinated loans to VTB, Sberbank, Rosselkhozbank, and others through VEB. Collateralized lending of US$6.5 to Alfa group and RusAI (financed from foreign reserves).	0	Central bank operation (in coordination with VEB), not reported in the government accounts.
Liquidity support	1,213	Government deposit to commercial banks with the rate of USD LIBOR + 1%.	0	Central bank operation, not reported in the government accounts.
Total	2,986		260	

Saudi Arabia

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Capital Injection	11	Government has injected up to US$3 billion to local banks to meet a shortfall of dollar funding in the domestic banking sector.	11	This injection will be reported as financing (purchase of financial assets).
Loan	10	"No-fee" loan from the government to Saudi citizens through the Saudi Credit Bank (US$2.7 billion).	10	The government contribution will be reported as spending (transfer).
Guarantee	N/A	The supreme economic council has offered guarantees for all bank deposits.	0	The corresponding contingent liability is not expected to be reported.
Liquidity Facility	150	US$40 billion liquidity facility has been announced.	0	Central bank operation, not reported in the government accounts.
Total	171		21	

Spain

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	N/A	Deposit insurance increased to E100,000.	0	Government guarantee. Not expected to be reported.
Guarantee	200	Cabinet approved plans to guarantee up to E100 billion of bank debt for 2009. Another E100 billion of guarantees can be extended, if needed.	0	Government guarantee. Not expected to be reported.
Purchase of assets	50	Government announced plans to set up a fund up to E50 billion to buy non-toxic assets from banks and other financial institutions. Initial endowment E30 billion could be expanded to E50 billion.	50	The Fund will be part of the government. The purchases will be reported in the government accounts as financing (purchases of financial assets).
Total	250		50	

Sweden

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Guarantee	18	Bank deposit guarantee for all types of accounts of private and legal person up to SEK500,000. Deposit insurance fund has 18 billion SEK.	18	While the government is the ultimate guarantor of the Deposit Guarantee Scheme, which had 17 billion SEK of reserves in early October 2008, the corresponding contingent liabilities are not expected to be reported.
Guarantee	1,500	The State will initially guarantee up to SEK1,500 billion of debt instruments, including bonds, certificates of deposits and other non-subordinated debt. However, this scheme has not yet found acceptance within the banking sector and is likely to be revised in order to make it acceptable.	0	This scheme aims at ensuring the roll-over of banks' existing debt instruments of more than 90 days maturity: in exchange for a market-based fee charged by the government to an applicant bank, the former agrees to guarantee the latter's refinanced debt obligations. The fees will be reported above the line as revenue. It is unclear whether the corresponding contingent liabilities will be reported .
Liquidity support from SNDO	150	Starting mid-September, the SNDO issued SEK 150 billion worth of short-term treasury bills to use the proceeds to inject funds into the mortgage securities market via reverse repos.	150	Reported in government accounts as financing operation.
Liquidity support from Riksbank	487	Riksbank programs: up to SEK 180 billion lent through 3 month and 6 month SEK lending program; up to USD 35 billion to ease USD shortage in the 30-90 day spectrum; SEK 75 billion through the Riksbank Certificated program; SEK 8 billion through the CP program. Special liquidity assistance to Kaupthing's Swedish sub of SEK 5 billion on Oct. 8.	0	Central bank operation, not reported in the government accounts.
Capital Injection	65	A stabilization fund will be set up to manage potential solvency problems, where the government will contribute SEK15 billion. Sweden announced (Feb 4, 2009) plans to inject up to SEK50bn into its financial sector. This new program will be financed from the stability fund presented in October 2008. The Swedish government stated that it may buy as much as 70% of new shares and hybrid capital from banks. Banks receiving a capital injection will be required to freeze bonus payments and wage increases for executives for two years.	15	The modalities of the fund having yet to be specified, the way the government's contribution will be reported on the government's account remains unclear.
Total	2,220		183	

Switzerland

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Purchase of illiquid assets	58	Swiss National Bank will provide CHF58 billion and UBS will contribute 7.2 bln to create a Special Purpose Vehicle to acquire illiquid assets from the bank.	0	Central bank operation, not reported in the government accounts.
Deposit Insurance	N/A	Plan to raise deposit insurance for private customers from CHF30,000 (amount not decided yet).	0	Expected to be privately run. Not reported in the government accounts.
Capital Injection	6	Purchase of convertible notes, to be redeemed or converted within 30 months.	6	Expected to be reported as spending (capital expenditure).
Total	64		6	

Turkey

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Liquidity provision	2	Union of Chambers and Commodity Exchanges of Turky (TOBB) and state-owned Halkbank provide 1.5 billion YTL loan to SMEs.	0	Will not be reported in the government accounts.
Total	2		0	

United Kingdom

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Deposit Insurance	N/A	100 percent Up to £50,000	0	Could be reported as contingent liability.
Debt Guarantee	250	The government guarantees short to medium-term debt issuance to meet maturing funding needs (estimated at 250 billion)	0	Could be reported as contingent liability.
Capital Injection	50	Recapitalization assistance for banks (8 so far) that have committed to raise Tier I capital.	50	Will be done through the purchase of preferred shares and common stock and reported as financing (purchase of financial assets).
Special Liquidity Scheme	185	Bank of England swaps banks' risky mortgage assets for T-bills. The window was closed down at end-January. The amount drawn down is £185 billion. The outstanding amount is expected to be close to the total amount drawn down, given the 3-year swap maturity.	185	Central bank operation, not reported in government accounts. The T-bills issued for this swap are not expected to be included in government debt statistics.
Asset Purchase Facility	50	The Bank of England will set up and operate the UK Asset Purchase Facility to buy up to £50 billion of "high quality private sector assets". The BOE will focus initially on purchases of corporate bonds, commercial papers, and paper issued under the CGS. The facility will be financed by the issue of Treasury bills and the Debt Management Office's cash management operations. It appears that initially all £50 billion of T-bills would need to be issued and handed over to the BOE for their purchases.	50	Central bank operation, not reported in government accounts.
Bank Loan	149	£99 billion (Northern Rock) and £50 billion (Bradford & Bingley).	0	The government will assume some of these institutions' liabilities. While it should increase the government debt, the authorities indicated that these liabilities should not be taken into account when assessing whether the 40 percent rule is met.
Total	684		285	

United States

Program	Amount (billion)	Operations	Gross Treasury Financing Need	Reporting
Term Securities Lending Facility	200	The Federal Reserve will lend Treasury securities to primary dealers secured for a term of 28 days (rather than overnight, as in the existing program) by a pledge of other securities, including federal agency debt, federal agency residential-mortgage-backed securities (MBS), and non-agency AAA/Aaa-rated private-label residential MBS.	0	Fed operation, not reported in the government accounts.
Term Auction Facility	600	The Federal Reserve will auction term funds to depository institutions. All depository institutions that are eligible to borrow under the primary credit program will be eligible to participate in TAF auctions. All advances must be fully collateralized.	0	Fed operation, not reported in the government accounts.
AIG Loan	113	The Federal Reserve, with full support of the Treasury Department, authorizes the NY Fed to lend to AIG. Total is 152.5, and 40 is from TARP. 53 for purchase, 60 for crisis liquidity facility, and 40 is recapitalization.	0	Fed operation, not reported in the government accounts.
Bear Stearns Loan	29	The Federal Reserve, with full support of the Treasury Department, authorizes the NY Fed to lend to Bear Stearns.	0	Fed operation, not reported in the government accounts.
TARP	700	US$125 billion to 9 of top banks (half of US$250 billion for capital injection); US$450 billion will be used to shore up the market for credit-card receivables, auto loans and student loans.	700	The capital injections are reported by the Treasury as spending (as TARP operations). The CBO has recommended that only the subsidy component of the injection (i.e. the difference between the equity purchase price and fair value) be reported as spending, the rest being reported as financing (purchase of financial assets). The subsidy component has been projected by the CBO at $180 billion in 2009.
Capital Assistance Program	0	Similar to the existing $250 billion Capital Purchase Program under TARP, Treasury will continue to help banks shore up capital after undergoing a stress test. Treasury will take an equity position in the form of preferred shares in banks receiving CAP investment. Announced as part of the Financial Stability Plan in Feb 10, 2009. Headline support and financing need unknown. The CAP is a more targeted continuation of the CPP under TARP, and we assume $47.2 billion out of $277.2 billion of unallocated TARP funds will be used for the CAP.	0	The CAP is expected to be reported as spending (TARP operation) by the Treasury, while the CBO would recommend that only the subsidy component of the capital injection be reported as spending, the rest being reported as financing (purchase of financial assets).

Fannie Mae/Freddie Mac Support	200	US$200 billion for equity acquisition; and unlimited credit line.	200	The equity acquisition is expected to be reported as financing (purchase of financial assets). Freddie and Fanny are not part of the general government and their debt, which do not benefit from an explicit guarantee from the government, is not included in government debt.
Commercial Paper Fund Facility	1,750	The Federal Reserve provides a liquidity backstop to U.S. issuers of commercial paper. The maximum exposure shall be US$1.8 trillion. The Treasury has deposited US$50 billion from TARP into an account at the NY Fed to support this facility.	0	The $50 billion are reported, as part of the TARP, as a deposit with the Fed. Any losses resulting from calls on these guarantees will be reported by the government as spending (transfers).
Swap Lines	N/A	Currency swap facility with other central banks. Unlimited.	0	Fed operation, not reported in the government accounts.
Money Market Investor Funding Facility	540	The Federal Reserve provides liquidity to U.S. money market investors. The MMIFF will be a credit facility by Fed to a series of special purpose vehicles established by the private sector.	0	Fed operation, not reported in the government accounts.
Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility	24	The Federal Reserve's lending facility that provides funding to U.S. depository institutions and banking holding companies to finance their purchases of high-quality asset-backed commercial paper. USD 24 billion as of end-Dec 2008.	0	Fed operation, not reported in the government accounts.
Primary Dealer Credit Facility	37	(March 16) The Fed announces a new lending program to provide credit to brokers the PDCF (Primary Dealers Credit Facility). Extended to January 2009. Expands the PDCF: (Sept 14) The collateral eligible to be pledged at the Primary Dealer Credit Facility (PDCF) has been broadened to closely match the types of collateral that can be pledged in the tri-party repo systems of the two major clearing banks. Previously, PDCF collateral had been limited to investment-grade debt securities. USD 37 billion as of end-Dec 2008.	0	Fed operation, not reported in the government accounts.
Hope for Homeowners Program:	1	FHA authorized to insure up to $300 bn refinanced housing loans under this program.	0	The FHA is part of the government agency. The corresponding contingent liabilities are expected to be reported by the GAO.
Citi Group and Bank of America Support	331	The Treasury and FDIC will guarantee losses on troubled assets (over 300 billion). Total is 244+25. 25 is from TARP (20 for recap and 5 for guarantee), 10 is for guarantee by FDIC. The remaining amount is from Fed as a lending. $87 billion support for Bank of America is provided by Fed.	0	These guarantees are not usually reported by the Treasury, but are expected to be reported by the GAO.

Deposit Insurance	N/A	Up to 250,000 for all deposits; the Treasury can lend an unlimited amount to the bank insurance agency to ensure depositors in failed banks are repaid.	0	The amount of the related contingent liabilities are usually reported by the FDIC. The FDIC is part of the government and exercised guarantees will therefore be reported as government spending.
Debt Guarantee	N/A	Full guarantees for all eligible, publicly traded money market mutual funds. Guarantee fee paid by funds; losses up to US$50 billion guaranteed by assets of Exchange Stabilization Fund.	0	The ESF is part of the government and exercised guarantees will therefore be reported as government spending.
Public-Private Investment Program	0	Treasury announced in Feb 10, '09 that PPIP will coordinate a public and private effort to buy up hard-to-sell assets from banks. The public funds will be combined with private capital with financing supported by the Fed and the FDIC. Private sector buyers will set the price for the troubled assets. The initial scale of the fund amounts up to $500 billion (with the potential to expand up to $1 trillion). Assumed $100 billion will be raised from $277.2 billion of unallocated TARP funds and $400 billion from the private sector. FDIC, for its part, may provide guarantees that the value of the assets will not drop below a certain level (assumed not to until it becomes official).	0	The Treasury participation to the PIPP is expected to be reported as spending (TARP operation) by the Treasury, while the CBO would recommend that only the subsidy component of the capital injection be reported as spending, the rest being reported as financing (purchase of financial assets).
Purchase of GSE debt	100	Purchases of up to $100 billion in GSE debt will be conducted through auctions with primary dealers. Announced by the Federal Reserve in Nov 24th.	0	Fed operation, not reported in the government accounts.
Purchase of MBS	500	Purchases of up to $500 billion in mortgage backed securities will be conducted by selected managers. Announced by the Federal Reserve in Nov 24th.	0	Fed operation, not reported in the government accounts.
Housing Support and Foreclosure Prevention	0	$50 billion for new foreclosure prevention effort, announced as part of the FSP in Feb 10, '09. Assumed this will be financed through $277.2 billion of unallocated TARP funds.	0	This effort will be reported as spending.
TALF	180	The Fed announced the creation of the Term Asset-Backed Securities Loan Facility (TALF), which will purchase up to $200 billion in AAA-rated ABS backed by "newly and recently originated" student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Administration. The Treasury will finance the first $20 billion from TARP funds with the Fed providing the remainder of the financing.	0	The $20 billion will be reported as a government deposit with the Fed. Any losses will be incurred by the government and reported above the line (transfers).

Consumer and Business Lending Initiatives	720	Expanding TALF to $1 trillion (FSP announced in Feb 10, '09). This new initiative (additional $800 billion) will include other assets that were not included in TALF. The Treasury is likely to finance 10 percent of total support through unallocated TARP funds ($80 billion) with the Fed providing the remainder of the financing.	0	The government contribution to the lending initiatives will be reported as a government deposit with the Fed. Any losses will be incurred by the government and reported above the line (transfers).
Temporary Guarantee Program for Money Market Funds	3,000	The Treasury will guarantee investors' shares as of September 19, 2008. The guarantee is in effect through April 30, 2009, but can be extended through September 18, 2009. Participating funds pay a fee of 1.5 or 2.2 basis points times the number of shares outstanding. (A basis point is one-hundredth of a percentage point.)	0	The fees will be reported as revenue in the government accounts. Costs resulting from calls on this guarantee will be reported as spending.
TLGP	1,450	FDIC guarantees of new debts issued by commercial banks. Barclays estimates that 450 bn will be issued by June. The estimated (by FDIC) size of eligible debt is 1.4 trillion, but there is no specified program limit.	0	Expected to be reported by FDIC as contingent liabilities.
Credit Union Homeowners Affordability Relief Program and Credit Union System Investment Program	41	These two loan programs are operated through the National Credit Union Administration's Central Liquidity Facility and are financed by borrowing from the Federal Financing Bank (under Treasury). The Credit Union Homeowners Affordability Relief Program (CU HARP) will provide subsidized funding intended to help credit unions modify mortgages. The Credit Union System Investment Program (CU SIP) seeks to facilitate lending by shoring up corporate credit unions (which primarily provide financial resources and services to other credit unions).	0	N/A
Total	10,516		900	

Note: Capital Assistance Program, Public-Private Investment Program, Consumer and Business Lending Initiatives, and Housing Support and Foreclosure Prevention are currently assumed to be implemented with the unallocated funds in TARP (as announced by the authorities), but additional public resources might be needed to carry out these operations.

Capital injection includes: Up to $250 billion allocated under the Capital Purchase Program (TARP); $40 for AIG; $20 for Citigroup; $20 for Bank of America; $5 for GMAC bailouts; $40.2 for Capital Assistance Program; and up to $200 for conservatorship of Fannie Mae and Freddie Mac.

Purchase of assets and lending includes: $600 billion for GSE MBS and debt purchases; $52.5 for AIG assets; $29 for Bear Stearns; $19.8 for GM and Chrysler allocated under TARP; $50 for Housing Support and Foreclosure Prevention; and $100 for Public-Private Investment Program.

Central bank support provided Treasury backing includes: $50 billion for CPFF; $20 for TALF; and $80 for Consumer and Business Lending Initiatives.

Liquidity provision and other support by central bank includes: up to $200 billion for TSLF; $37 (as of Dec 31, 2008) for PDCF; $24 (as of Dec 31, 2008) for AMLF; up to $600 for TAF; $180 for TALF; $1,750 for CPFF; up to $540 for MMIFF; $60 for AIG; $234 for Citigroup a; $41 for the National Credit Union Administration; and $720 for Consumer and Business Lending Initiatives.

Guarantees include: $15 billion for Cititgroup (5 under TARP and 10 from FDIC); up to $1 under the Hope for Homeowners Program by FHA; up to $3,000 under the Temporary Guarantee Program by Money Market Funds; and up to $1,450 under FDIC's guarantee program for new bank debt and certain checking and other noninterest-bearing accounts.

Upfront financing need amounts to $900 billion for TARP and the conservatorship of Fannie Mae and Freddie Mac.

III. Outlook for Recovery Rates[12]

13. **This section provides estimates of recovery rates for banking crises, and investigates their determinants to assess the outlook for recovery following the current crisis**. The recovery rate is here defined as the proceeds recovered from the sale of assets in percent of the gross fiscal cost.

Magnitude of recovery rates

14. **The key source of the recovery rate data is the Laeven and Valencia (2008) database**. The recovery rate in this database is defined as the amount recovered during years *t* to *t*+5, where *t* denotes the start of the crisis, in percent of the gross budgetary outlays associated with the banking crisis. The following adjustments are made to the Laeven and Valencia (2008) database: (i) the gross fiscal cost of the Japan 1997 crisis is lowered from 14 percent of GDP to 9.1 percent of GDP (see Box 1); (ii) the recovery amount associated with the Japan 1997 crisis is raised to 4.8 percent of GDP from less than 0.1 percent of GDP (Box 1); and (iii) the recovery amount associated with the U.S. crisis of 1988 (not included in the Laeven and Valencia database) is recorded as 1.6 percent of GDP based on Hoelscher and Quintyn (2003).

15. **The recovery rate data have a wide range**. For the 39 crises during 1980–2003 for which data are available, the recovery rates have a mean of 20 percent, a median of 8 percent, a maximum of 94 percent (Sweden, 1991), and minimum of zero (Figure 1). The net fiscal cost of budgetary outlays associated with the banking crises (gross cost minus recovery amounts) averaged 13 percent of GDP, with a median of 10 percent and a maximum of 55 percent of GDP (Argentina, 1980) (Figure 2).

What determines the recovery rate?

16. **We investigate the association between the recovery rate and the following variables**: (i) the level of economic development (captured by per capita real PPP GDP); (ii) a transition-country dummy;[13] (iii) the occurrence of an exchange rate (ER) crisis (an ER crisis dummy that equals 1 when the nominal depreciation is in the top quintile of the full sample); (iv) the gross fiscal cost of the crisis; and (v) "fiscal space" at the start of the banking crisis (measured by the fiscal balance/GDP ratio).

17. **The regression results indicate a number of significant correlates of the recovery rate**. The positive and significant correlation with per capita income suggests that advanced

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[12] Prepared by Daniel Leigh with inputs from Makoto Nakagawa and Keiko Takahashi.

[13] Transition countries are as defined in IMF (2000).

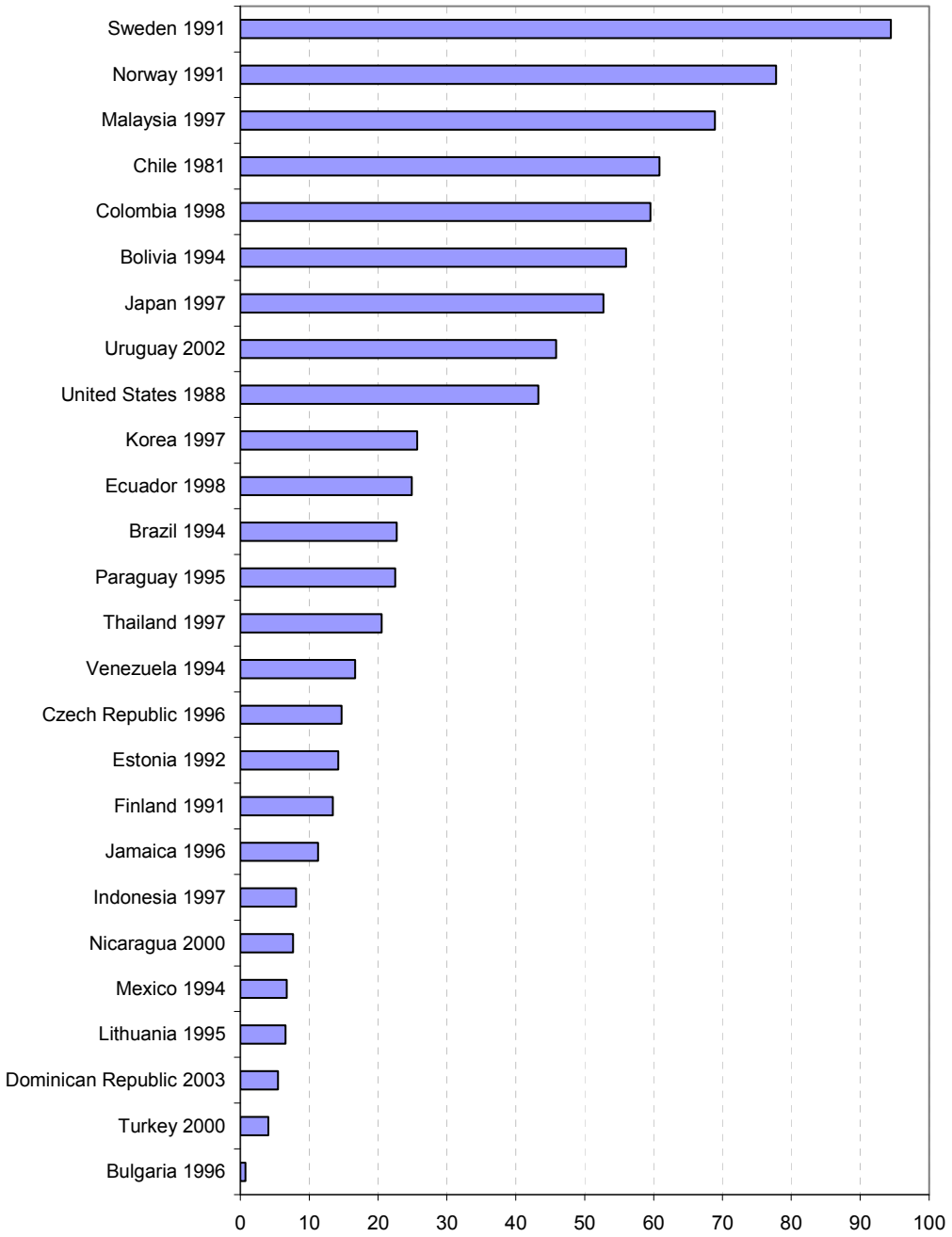
countries have higher recovery rates. Similarly, a transition-country dummy has a significant and negative sign, suggesting that the nature of the losses arising in financial crises in transition countries implied lower recovery rates. Exchange rate crises are associated with lower recovery rates. This could be because in exchange rate crises, the initial outlays arise from the acquisition of liabilities that are inflated by sizable and permanent depreciations, as well as high interest rates, while the decline in the value of assets plays a less significant role. Recovery rates are higher, the larger the fiscal balance at the start of the crisis: countries entering a banking crisis with a larger "buffer stock" experienced less severe losses. This finding is consistent with the notion that a stronger fiscal position is associated with high-quality public financial management that improves the prospect for a recovery.[14] Recovery rates are also lower, the higher the gross fiscal cost of the crisis, although the relationship is not statistically significant. Table 6 reports the estimation results.

18. **The estimated equation can also be used to project recovery rates**. For the purposes of projecting recovery rates, the equation containing the full set of controls considered is used (column 7 in Table 6). The in-sample fit of this equation can be assessed based on the adjusted R^2 of 39 percent, and a mean absolute residual of 15 percentage points (Table 7). Out-of-sample predictions based on this estimated equation imply recovery rates for the current financial crisis averaging 50.7 percent, with an average 95-percent confidence interval of 30 to 71 percent. Based on these recovery rates, and current estimates of the gross fiscal cost of the crisis, that average 3.3 percent of GDP, the expected average net fiscal cost is 1.4 percent of GDP, with a 95-percent confidence interval of 0.8 to 2.0 percent of GDP.

19. **However there are several caveats in using the historical estimated coefficients to project recovery rates**: (i) this is the first crisis since the Great Depression where both the output decline and financial sector turmoil are global; (ii) with many countries attempting the liquidation of assets over the coming years, recovery ratio could be lower; (iii) the sample size is small (37 countries); and (iv) there are only five advanced economies.

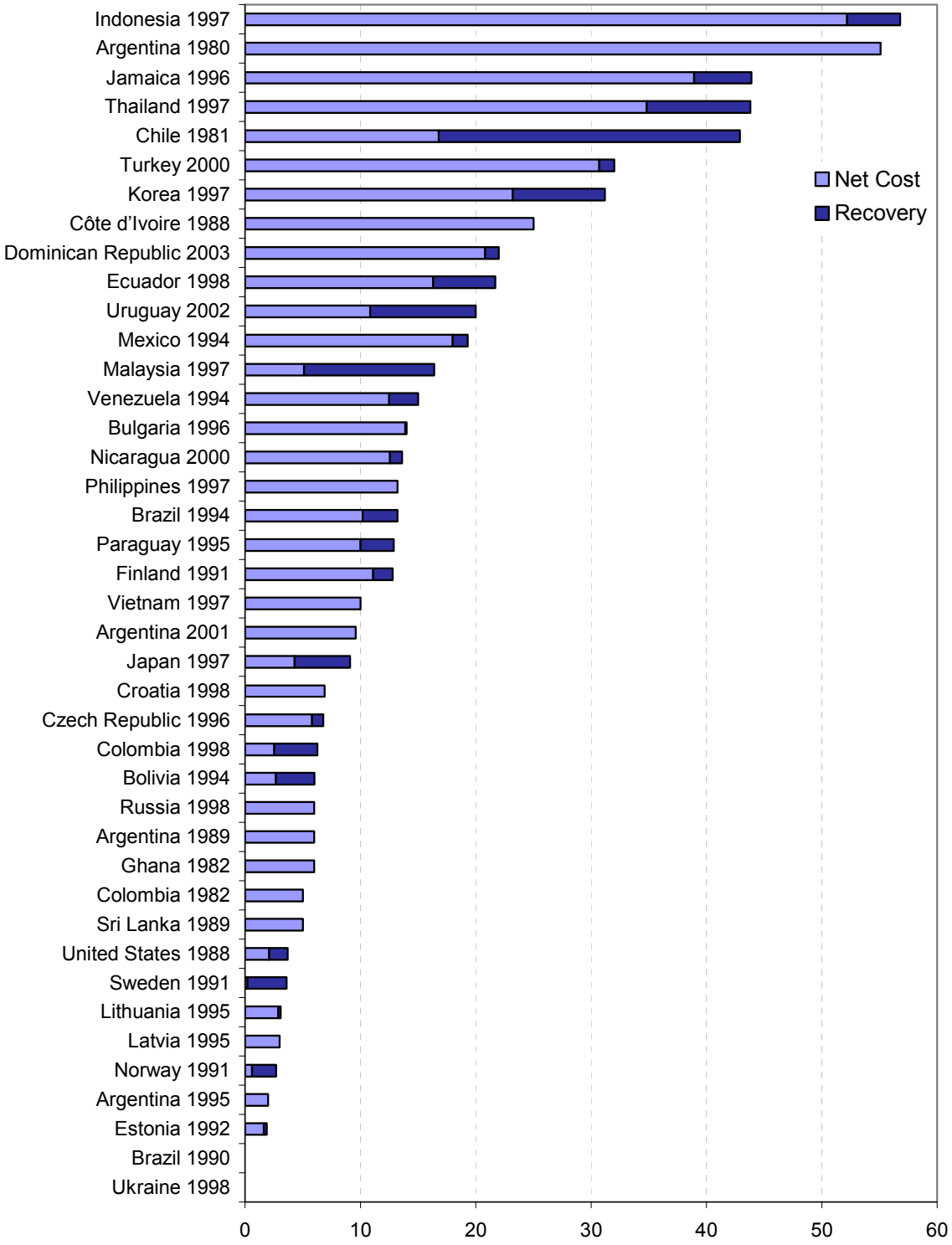
[14] Countries with stronger public financial management systems could be countries that adopted better processes for managing and selling the assets acquired through financial support operations. Further work would be needed to measure, and use as regressor, a variable capturing directly differences in those processes across countries.

Figure 1. Recovery Rates: Selected Banking Crises [1/]
(in Percent)



1/ The figure reports episodes with non-zero recovery rates. The episodes with zero recovery rates are Argentina (1980, 1989, 1995, 2001); Brazil (1990); Colombia (1982); Guinea (1985); Croatia (1998); Hungary (1991); Jordan (1989); Sri Lanka (1989); Latvia (1995); Philippines (1983, 1997); Poland (1992); Romania (1990); Senegal (1988); Slovenia (1992); Thailand (1983, 1997); Tunisia (1991); Ukraine (1998); and Zambia (1995).
Source: Laeven and Valencia (2008), Japan Deposit Insurance Corporation, Hoelscher and Quintyn (2003), and staff calculations.

Figure 2. Gross and Net Fiscal Cost of Banking Crises
(in Percent of GDP)



Source: Laeven and Valencia (2008), Japan Deposit Insurance Corporation, Hoelscher and Quintyn (2003), and IMF staff estimates.

Table 6. Estimation Results [1/]

(Dependent variable: recovery rate)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log(PPP real GDP per capita)	15.18**			14.54**	13.91**	12.96**	11.27*
	[2.576]			[2.505]	[2.626]	[2.115]	[1.936]
Transition Country Dummy		-18.99***		-18.25***	-21.95***	-17.29***	-21.75***
		[-3.152]		[-2.976]	[-2.826]	[-2.770]	[-2.774]
ER Crisis Dummy			-25.20***	-19.80**	-20.11***	-14.65*	-13.19*
			[-5.245]	[-2.677]	[-3.041]	[-1.971]	[-1.815]
Gross Fiscal Cost/GDP					-30.2		-34.18
					[-1.233]		[-1.667]
Fiscal Balance/GDP						195.2**	215.4**
						[2.519]	[2.554]
Observations	38	38	38	38	38	37	37
Adjusted R-squared	0.15	0.06	0.12	0.31	0.32	0.37	0.39

Source: IMF staff estimates.

1/ The table reports t-statistics adjusted for clustering in parentheses. ***, **, * denote statistical significance at 1, 5, 10 percent level, respectively.

Table 7. In-Sample Recovery Rate Predictions [1/]

(in Percent)

Country	Year	Prediction	Actual	Residual
Argentina	1980	6.9	0.0	-6.9
Argentina	1989	1.3	0.0	-1.3
Argentina	1995	40.2	0.0	-40.2
Argentina	2001	16.4	0.0	-16.4
Bolivia	1994	21.7	56.0	34.3
Brazil	1990	30.1	0.0	-30.1
Brazil	1994	29.8	22.7	-7.1
Chile	1981	30.6	60.8	30.3
Colombia	1982	11.1	0.0	-11.1
Colombia	1998	29.1	59.6	30.4
Czech Republic	1996	22.9	14.7	-8.2
Dominican Republic	2003	16.2	5.5	-10.7
Ecuador	1998	16.4	24.9	8.5
Estonia	1992	18.4	14.2	-4.2
Finland	1991	47.5	13.4	-34.1
Guinea	1985	21.3	0.0	-21.3
Croatia	1998	11.7	0.0	-11.7
Hungary	1991	10.2	0.0	-10.2
Indonesia	1997	13.3	8.1	-5.2
Jamaica	1996	10.5	11.3	0.8
Jordan	1989	14.5	0.0	-14.5
Japan	1997	43.8	52.7	9.0
Korea	1997	36.2	25.6	-10.6
Sri Lanka	1989	9.9	0.0	-9.9
Lithuania	1995	8.3	6.5	-1.8
Latvia	1995	9.8	0.0	-9.8
Mexico	1994	28.2	6.7	-21.5
Malaysia	1997	47.8	68.9	21.1
Nicaragua	2000	16.8	7.6	-9.2
Norway	1991	53.2	77.8	24.6
Philippines	1983	27.6	0.0	-27.6
Philippines	1997	26.1	0.0	-26.1
Poland	1992	2.9	0.0	-2.9
Paraguay	1995	35.7	22.5	-13.3
Romania	1990	4.3	0.0	-4.3
Senegal	1988	15.4	0.0	-15.4
Slovenia	1992	24.5	0.0	-24.5
Sweden	1991	52.1	94.4	42.4
Thailand	1983	21.6	0.0	-21.6
Thailand	1997	22.4	20.5	-1.9
Tunisia	1991	23.9	0.0	-23.9
Turkey	2000	12.8	4.1	-8.8
Ukraine	1998	8.6	0.0	-8.6
Uruguay	2002	25.2	45.8	20.7
United States	1988	47.2	43.2	-3.9
Venezuela	1994	12.5	16.7	4.2
Zambia	1995	8.6	0.0	-8.6
Memorandum				
Mean absolute residual				15.2

Source: IMF staff estimates.

1/ The table reports out-of sample prediction based on Equation 7 (full set of controls), and predictions for gross fiscal cost.

Box 1. Japan's 1997 Banking Crisis: Fiscal Cost and Recovery Rates

Data from the Japan Deposit Insurance Corporation (JDIC) suggest that the fiscal cost of Japan's banking crisis was smaller, and the recovery rate higher than reported in existing studies. In particular, the data provide the following insights:

Total authorized amount. The amount of budget authorizations for measures related to the banking crisis totaled 70 trillion yen during 1997–2001, i.e., 13.6 percent of GDP. Of the total amount, the bulk (57 trillion yen) corresponds to government guarantees to the JDIC, and the remainder (13 trillion yen) to government bond issuance to provide resources for grants to the financial institutions.

Gross fiscal cost. The JDIC data indicate that only 9.1 percent of GDP of the authorized amount was actually spent. This number is substantially lower than the fiscal cost reported in Laeven and Valencia (2008) (14 percent of GDP), and in *The Economist* (2008) (24 percent of GDP).

Recovery rate and net fiscal cost. The cumulative amount of recoveries during 1997–2008 reached 4.8 percent of GDP, i.e., 53 percent of the gross fiscal cost. If grants—that are unrecoverable by definition—are excluded from the gross cost, the recovery rate rises to 88 percent. These recovery rates are substantially larger than the rate recorded in the Laeven and Valencia (2008) database (less than one percent), which was based on recoveries collected during the first five years following the start of the crisis (1997–2002). This result suggests that it may take more than five years for substantial recovery amounts to accrue. In addition, some assets purchased from failed financial institutions—such as securities and real estate property—were eventually sold by the authorities at a gain, resulting in recovery rates in excess of 100 percent.

IV. MEASURING GOVERNMENT CONTINGENT LIABILITIES TO THE BANKING SECTOR [15]

20. **This chapter provides illustrative estimates of the fiscal cost of government contingent liabilities related to banking sector implicit and explicit guarantees**. The eventual cost of these guarantees is subject to significant uncertainty and will depend on the evolution of the financial sector and of the economy. Thus, we provide here a range of estimates broadly based on the Contingent Claims Approach (CCA), derived from modern finance theory.[16]

21. **The main idea behind this approach is to combine balance sheet information of financial institutions with measures of risk that institutions may face**. Intuitively, the potential cost for the government arising from guarantees depends on the probability that the value of banks' assets falls below the value of the banks' liabilities (including deposits, interbank loans etc.), and by the extent of the imbalance. In turn, these depend on the structure of bank assets and liabilities, on the market value of the latter, and on the volatility in these values. For example, an increase volatility will raise the probability that, as a result of market movements, a bank's net worth becomes negative.

22. **To implement CCA, standard option-pricing theory is utilized**. The option pricing formulas applied in CCA to estimate the banks' credit risk and their expected losses rely on a few selected variables including the asset value, volatility of the asset return, risk free value of debt, the time horizon until the expiration date of the guarantee, and the risk free interest rate (Black-Scholes (1973) and Merton (1973)). The guarantee can be modeled as a *put option*[17] on the asset with an exercise price equal to the face value of debt—an option sold by the guarantor (the government). In effect, the guarantee gives the bank the right to "sell" the assets to the guarantor in exchange for a payment equal to face value of the debt. As with any put option, the bank would exercise the option only if the value of the assets falls below the face value of the debt—that is, in case of default. The CCA computes the value of these put options assuming that all debt and deposits are guaranteed—through explicit or implicit guarantees.

23. **Operationally, we utilize a methodology developed by Moody's in conjunction with others** (hereafter MKMV). Specifically, the potential expected loss to governments is the implicit put option values as obtained from MKMV's credit risk spread measure (known as the Expected Default Frequency Implied Credit Default Swap, or EICDS). EICDS

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[15] Prepared by Dale Gray, Philippe Karam, and Papa N'Diaye.

[16] See Gray, Merton and Bodie (2007, 2008) and Gray and Malone (2008) for further details about the CCA methodology.

[17] A put option is the right to sell the underlying asset at a specified exercise price by a certain expiration date.

combines a probability of default by a bank on its debt obligations (called the "Expected Default Frequency," or EDF) with the likely recovery on assets acquired by the government: the latter is measured by the so-called "loss given default "(or LGD). The LGD is calibrated in such a way that the EICDS measure matches closely the observed market CDSs.

24. **The expected losses for governments from guarantees on banks are estimated for three groups of countries**: (i) G-7 (ii) advanced non-G-7 (Australia, Austria, Denmark, Ireland, Italy, Netherlands, Norway, Portugal, South Korea, Spain, Sweden, Switzerland), and (iii) emerging markets (Greece, Hungary, Russia and Saudi Arabia).[18]

25. **The present discounted value of expected losses associated with guarantees over a 5-year horizon and under three recovery scenarios were computed**. The losses were calculated using the MKMV contingent claims model.[19] Given the sensitivity of the results to the assumed recovery rates on assets, three scenarios were considered: (i) the base case (using MKMV estimated recovery rates); (ii) a conservative recovery rate (of 40 percent for all banks—frequently assumed in many CDS models); and (iii) an optimistic scenario (80 percent recovery rate).

26. **The results suggest substantial potential pressure on the countries' fiscal positions**. Under the first scenario (column A, Table 8) governments' losses over five years are projected to be the largest in relation to GDP in the G-7 (15 percent of GDP). These are over a fifth larger than the potential losses in other advanced countries and over three times larger than for the emerging market group. Even under optimistic assumptions (column C), in the G-7, losses would amount to 10 percent of GDP. Assuming lower recovery rates increases the size of the expected losses very significantly (column B).

27. **The fraction of the expected losses that would likely be covered by government guarantees varies across countries**. The fraction would depend on whether small non-systemically important banks are allowed to fail or some debt holders end up not benefiting from a full guarantee in the event of default. Given that the size of expected losses increases with that of the banks, it is often the case that only large banks benefit from government guarantees or that the government guarantees are a combination of a blanket guarantee of all deposits (deposits are typically 40 to 60 percent of bank liabilities) up to a certain amount and a partial guarantee of banks' other liabilities. Therefore, in most instances *contingent fiscal liabilities* would likely represent a fraction of the *expected losses* presented above. A rough proxy for such fraction could be the proportion of losses that is accounted for by the

[18] The country classification of emerging markets is different than the one that is traditionally used in the IMF. In particular, Greece is classified as an advanced economy by the IMF. The countries that are included in the emerging market economies in this work are not very representative of this group.

[19] MKMV calculates the CCA models and expected losses for banks with traded equity and those without traded equity are not in the database.

largest banks. Table 9 assumes that the government guarantees 75 percent of the estimated expected losses reported in Table 8 above, and reports the annual fiscal cost (i.e., the losses spread equally over the 5 years).

28. **The reported results may overstate governments' costs owing to the increase in market risk premia over the recent period**. Estimating the fiscal costs of bank liabilities and the explicit financial support is a dynamic process: these could be large in the early stages or during a crisis, but are likely to fall after a restructuring process has taken place.

29. **The analysis could be complemented in several ways**. The estimates presented above provide a good indication of the range of contingent liabilities for governments associated with banks liabilities, but they do not take into account potential future equity injections or other forms of support for the banking system. Large equity injections may reduce the losses on debt and deposits, increase recovery rates, and thus reduce the cost of the guarantees.

30. **As a complementary measure to the MKMV estimate, we also calculate the potential cost to the government of providing guarantees by an alternative approach**. This approach simply entails multiplying the EICDS by the total of banks' liabilities that are guaranteed. The EICDS spread can in effect be regarded as being indicative of the insurance premium on banks' liabilities and provides a simple way to estimate the costs to the government of providing this "insurance." We should note, however, that an EICDS spread (based on market information) in the presence of government guarantees of liabilities may not fully capture government's risk and thus multiplying it by the liabilities may entail a downward bias in the potential cost to the government. A range of CDS spreads are therefore calculated to assess the possible bias. In particular, the 'conservative' CDS spread based on estimates of the present value of expected losses and multiplied by the amount of liabilities should be seen as a lower bound of the potential cost to the government. This approach is applied to compute the cost of the explicit guarantees provided by governments as discussed in the main paper (Chapter II). Aside from the cost of these explicit guarantees, it could be argued that there are also implicit guarantees stemming from too-big-to-fail or too-systemic-to-fail considerations. Thus, we report below the estimated cost of an implicit guarantee on the total of banking sector liabilities.

31. **The results using the complementary approach are substantially larger than those obtained above**. CDS spreads are calculated based on estimates of the present value of expected losses in the three scenarios noted earlier (Table 10): MKMV (columns A and E), conservative (columns B and F), and optimistic (columns C and G). The results show that the annual expected costs under the conservative scenario (column F) are significantly larger than the costs under the base case scenario (column E).

Table 8. Banking Sector: Expected Cost of Financial Guarantees Based on CCA Calculations [1/]

	Total Implicit Put Value		
	(i) MKMV LGD 2/ (A)	(ii) Conservative LGD 2/ (B)	(iii) Optimistic LGD 2/ (C)
		(in percent of GDP)	
G-7 economies 3/	15.0	30.1	10.0
Other non-G-7 advanced economies 4/	11.8	18.7	6.7
Advanced economies 5/	14.4	28.1	9.4
Emerging market economies 6/	4.1	4.5	1.5
Total	13.6	26.3	8.8

Source : Moody's KMV - Credit Edge; and IMF staff estimates.

1/ Assuming full guarantees to all banks (systemic and small). Numbers are weighted by PPP GDP of 2007.
2/ MKMV, Conservative and Optimistic LGD refer respectively to (i) Moody's estimated recovery rates (equivalently 1 - Loss Given Default (LGD)), (ii) a conservative recovery rate of 40 percent, and (iii) an optimistic recovery rate of 80 percent.
3/ For the United States, security dealers and brokers are added to the traditional banks.
4/ Other non-G-7 advanced economies: Australia, Austria, Belgium, Denmark, Ireland, Netherlands, Norway, Portugal, South Korea, Spain, Sweden, and Switzerland.
5/ Advanced economies include our sample of G-7 and non-G-7 advanced economies.
6/ Emerging market economies: Greece, Hungary, Russia and Saudi Arabia.

Table 9. Banking Sector: Expected Cost of Financial Guarantees Based on CCA Calculations Annual Cost Over Five Years [1/]

	Total Implicit Put Value		
	(i) MKMV LGD 2/ (A)	(ii) Conservative LGD 2/ (B)	(iii) Optimistic LGD 2/ (C)
		(in percent of GDP)	
G-7 economies 3/	2.2	4.5	1.5
Other non-G-7 advanced economies 4/	1.8	2.8	1.0
Advanced economies 5/	2.2	4.2	1.4
Emerging market economies 6/	0.6	0.7	0.2
Total	2.0	3.9	1.3

Source : Moody's KMV - Credit Edge; and IMF staff estimates.
1/ Assuming that 75 percent of the total expected losses for all the banks represents the contingent liability of the government. This is an annual cost figure over five years. Numbers are weighted by PPP GDP of 2007.
2/ MKMV, Conservative and Optimistic LGD refer respectively to (i) Moody's estimated recovery rates (equivalently 1 - Loss Given Default (LGD)), (ii) a conservative recovery rate of 40 percent, and (iii) an optimistic recovery rate of 80 percent.
3/ For the United States, security dealers and brokers are added to the traditional banks.
4/ Other non-G-7 advanced economies: Australia, Austria, Belgium, Denmark, Ireland, Netherlands, Norway, Portugal, South Korea, Spain, Sweden and Switzerland.
5/ Advanced economies include our sample of G-7 and non-G-7 advanced economies.
6/ Emerging market economies: Greece, Hungary, Russia, and Saudi Arabia.

Table 10. Banking Sector: Expected Costs of Financial Guarantees Based on Three Alternative Credit Spread Measures and Total Banking Liabilities[1/]

	CDS-A Spread - based on 2/ Total Implicit Put Value using MKMV LGD 3/ (A) (in basis points)	CDS-B Spread - based on 2/ Total Implicit Put Value using Conservative LGD 3/ (B) (in basis points)	CDS-C Spread - based on 2/ Total Implicit Put Value using Optimistic LGD 3/ (C) (in basis points)	Total Adjusted Book Liabilities/GDP (D) (in percent of GDP)	Expected Costs Based on MKMV CDS-A (E) = (A)*(D)	Conservative Case CDS-B (F)=(B)*(D) (in percent of GDP)	Optimistic Case CDS-C (G)=(C)*(D)
United States	405	750	220	90.4	3.7	6.8	2.0
United Kingdom	304	601	181	393.5	12.0	23.7	7.1
Austria	356	317	100	199.1	7.1	6.3	2.0
Belgium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
France	114	410	128	235.3	2.7	9.7	3.0
Germany	168	595	179	148.5	2.5	8.8	2.7
Italy	142	275	88	135.3	1.9	3.7	1.2
Netherlands	345	397	124	5.1	0.2	0.2	0.1
Norway	316	692	205	73.1	2.3	5.1	1.5
Sweden	173	450	139	286.6	5.0	12.9	4.0
Switzerland	182	573	173	310.5	5.6	17.8	5.4
Canada	125	223	72	145.5	1.8	3.2	1.0
Japan 4/	403	983	277	176.3	7.1	17.3	4.9
Greece	451	522	159	134.5	6.1	7.0	2.1
Ireland	90	115	38	356.1	3.2	4.1	1.3
Portugal	169	553	168	118.5	2.0	6.6	2.0
Spain	156	279	89	157.7	2.5	4.4	1.4
Australia	232	326	103	188.9	4.4	6.2	1.9
South Korea	470	540	164	108.2	5.1	5.8	1.8
Russia	644	734	216	17.6	1.1	1.3	0.4
Hungary	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Saudi Arabia	559	642	192	37.3	2.1	2.4	0.7
Total 5/					4.0	8.4	2.5
G-7 economies					4.4	9.7	2.9
Other non-G7 advanced economies					3.4	5.5	1.7
Emerging market economies					1.7	2.0	0.6
Non-G7 advanced and emerging market economies					2.8	4.3	1.3
Advanced G7 and non-G7advanced economies					4.3	9.0	2.7

Source : Moody's KMV - Credit Edge; and IMF staff estimates.

1/ Assuming full guarantees to all banks.

2/ Spreads are calculated based on estimates of implicit put option values for individual banks and using Moody's KMV Credit Edge database as of November 14, 2008. They are based on a five-year average duration.

3/ MKMV, Conservative and Optimistic LGD refer respectively to (i) Moody's estimated recovery rates (equivalently 1 - Loss Given Default (LGD)), (ii) a conservative recovery rate of 40 percent, and (iii) an optimistic recovery rate of 80 percent.

4/ Japan: The high expected losses reported under an assumed conservative LGD rate of 60 percent (column F) may be overly cautious in light of historical recovery rates in Japan.

5/ Weighted by the respective countries' PPP GDP of 2007.

V. ESTIMATION OF NONDISCRETIONARY IMPACTS[20]

A. Methodology for Calculating the Estimated Impact of Automatic Stabilizers

32. **The impact on fiscal balances from automatic stabilizers was computed as the change in the cyclical balance between two consecutive years**. The cyclical balance in year *t* was estimated as the difference between the overall balance in percent of GDP (OB_t) and the cyclically-adjusted balance in percent of potential GDP ($CAOB_t$), which was computed as:

$$CAOB_t = OB_t - (\eta_{Rt} - \eta_{Gt}) * GAP_t$$

where GAP_t is the output gap, calculated as the ratio of output to potential GDP minus one.[21] Output gap estimates were taken from the January 2009 IMF WEO for all G-20 countries, except Indonesia, Saudi Arabia and South Africa. For these three countries, potential GDP was computed as trend-GDP using a Hodrick-Prescott filter with the smoothing parameter 6.25.[22] η_{Rt} and η_{Gt} are revenue and expenditure budgetary-sensitivity parameters defined as:

$$\eta_{Rt} = (\varepsilon_R - 1)\frac{R_t}{Y_t} \text{ and } \eta_{Gt} = (\varepsilon_G - 1)\frac{G_t}{Y_t},$$

where ε_R and ε_G are revenue and expenditure elasticities with respect to the output gap assumed to be constant over time and $\frac{R_t}{Y_t}$ and $\frac{G_t}{Y_t}$ are ratios of primary revenue and expenditure to GDP.

Hence, the contribution from automatic stabilizers is, effectively, the first difference (change between the two consecutive years) of the output gap multiplied by the difference of revenue and expenditure budgetary-sensitivity parameters, namely:

$$AS_t = \Delta COB_t = \Delta\left[(\eta_{Rt} - \eta_{Gt}) * GAP_t\right]$$

33. **The estimates of revenue and expenditure elasticities were obtained as follows**. Girouard and André (2005) provide estimates for ε_R and ε_G for a number of advanced countries. For other G-20 countries, revenue elasticity ε_R was assumed to be equal to 1, and

[20] Prepared by Anna Ivanova, Steve Barnett, Mark Horton, and Daehaeng Kim.

[21] The use of total GDP has limitations for commodity-producing countries, given different cycles. However, due to limited data on non-oil GDP, the paper uses overall GDP for the estimates.

[22] The estimates extend IMF WEO growth projections through the year 2020 for the calculation of trend output.

expenditure elasticity ε_G was set equal to zero. In this simple case, the contribution from automatic stabilizers becomes:

$$AS_t = \Delta\left[\frac{G_t}{Y_t} * GAP_t\right]$$

With no significant change in government size between two consecutive years, the contribution from automatic stabilizers can be further approximated by $AS_t \approx \frac{G_t}{Y_t}\Delta GAP_t$.

Estimates of the impact of the automatic stabilizers on G-20 fiscal balances in 2008 and 2009 are shown in Table 11.

Table 11. Estimated Impact of Automatic Stabilizers on G-20 Fiscal Balances, 2008–09
(in percent of GDP, relative to the previous year)

	2008	2009
United States	-0.4	-1.5
China	-0.1	-0.6
Japan	-0.6	-1.4
India	-0.1	-0.5
Germany	0.2	-1.7
Russia	0.5	-1.4
United Kingdom	-0.7	-2.0
France	-0.6	-1.9
Brazil	0.1	-0.5
Italy	-0.6	-1.4
Mexico	-0.3	-0.8
Spain	-0.7	-1.8
Canada	-0.8	-1.4
Korea	-0.2	-2.0
Turkey	-0.9	-0.8
Indonesia	0.2	-0.3
Australia	-0.4	-1.3
Saudi Arabia	0.5	-0.9
Argentina	0.2	-0.8
South Africa	-0.1	-0.6
PPP-weighted average	-0.3	-1.2

Source: World Economic Outlook; and IMF staff estimates.

B. Estimates of the Impact of Other Nondiscretionary Factors

34. **As noted in the main paper, looking just at the influence of output gap changes is not sufficient to evaluate the effect of nondiscretionary factors on budgetary positions**. This is because some variables affecting fiscal balances are not perfectly correlated with output fluctuations. For example, exceptional declines in asset prices—i.e., significantly

above or below what might be considered "normal" levels—may reduce revenues by more than could be explained just by looking at output gap changes.

Estimation

35. **To assess the cost for fiscal revenues of equity and housing market price declines, staff regressions from a sample of advanced and emerging market countries were used to derive parameters that could be applied across the sample**. Country-specific parameters would have been preferable, given country-by-country differences in, for example, financial markets and taxation (see Morris and Schuknecht, 2007). However, a simpler approach was followed, in light of time and data constraints, as well as the aim of deriving estimates of broadly comparable and illustrative costs. This involved estimating regressions of the form:

$$\Delta CAR_t = F + \beta^t \Delta\%E_t + \beta^{t-1}\Delta\%E_{t-1} + \lambda^t \Delta\%H_t + \lambda^{t-1}\Delta\%H_{t-1}$$

where ΔCAR_t is the first difference in cyclically-adjusted revenue as a share of potential GDP; F are country specific fixed effects; E_t and H_t are, respectively, real equity and real housing prices.[23]

Results

36. **The results are presented in Table 12**. The estimated coefficients represent the percentage point change in cyclically-adjusted revenue for a given real change in asset prices. The estimates from the column 1 were used in the main paper. They suggest that a 10 percent decline in equity prices leads to a cyclically-adjusted decline in revenues by 0.07 and 0.08 percent of GDP in the current and subsequent years. The 0.15 percent of GDP cumulative effect is close to estimates for selected countries in Europe in Morris and Schuknecht (2007). For housing, a 10 percent decline in prices leads to a 0.27 percent of GDP decline in cyclically-adjusted revenues in the following year (the contemporaneous term was excluded).

37. **As the dependent variable is *cyclically-adjusted revenue*, staff estimates measure the impact of housing and equity price changes *beyond* the normal cycle**. If these asset prices moved in the same fashion as the business cycle, then the coefficients should be zero, as the standard cyclical adjustment should capture this effect.

[23] Cyclically-adjusted revenue data are based on the January 2009 WEO, using the methodology described in Section V.A. Housing price data and projections through 2009 covering 10 countries are from the IMF Research Department; data for some other G-20 countries (India, Russia, Brazil, Indonesia, and South Africa) were obtained from international real estate and investment banking sources. Equity price data are from Bloomberg, with IMF WEO GDP deflators used to convert nominal prices to real terms; data were obtained starting from 1990, with annual growth indicators from 1991.

Table 12. Responsiveness of Cyclically Adjusted Revenue to Asset Price Changes[1/]

	10 Countries, 1991-2007							20 Countries, 1991-2007		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Real house prices	...	-1.65	-0.60	...	-1.45	-0.12	...	...	...	...
(Std. error)	...	(1.47)	(1.23)	...	(1.58)	(1.33)	...	...	...	...
P-val (in %)	...	26.3	62.5	...	36.1	92.9	...	...	...	...
Real house prices (lag)	2.70	1.79	...	0.95	3.39	...	2.09	...	...	...
(Std. error)	(1.38)	(1.37)	...	(1.15)	(1.57)	...	(1.36)	...	...	...
P-val (in %)	5.2	19.3	...	40.7	3.2	...	12.8	...	...	...
Real equity prices	0.67	...	...	...	0.66	0.63	...	0.38	-0.06	...
(Std. error)	(0.32)	...	...	...	(0.32)	(0.32)	...	(0.27)	(0.22)	...
P-val (in %)	3.8	...	...	...	4.1	4.7	...	15.8	79.1	...
Real equity prices (lag)	0.81	...	...	...	0.82	...	0.84	0.88	...	0.80
(Std. error)	(0.31)	...	...	...	(0.31)	...	(0.32)	(0.23)	...	(0.22)
P-val (in %)	1.1	...	...	...	1.0	...	0.9	0.0	...	0.0
R-squared	0.17	0.07	0.06	0.07	0.17	0.09	0.14	0.14	0.09	0.14

Sources: WEO; Bloomberg; international real estate and investment banking sources; and staff estimates.
1/ Explantory variables are percent change in corresponding asset price for end-of-period values. Dependent variable is the first difference of cyclically-adjusted revenue as a share of potential GDP. Country (but not time) fixed effects are included.

VI. Fiscal Stimulus Packages in the G-20 Countries[24]

38. **This chapter provides a summary of the fiscal stimulus packages announced in late 2008 and early 2009 in the G-20 countries.** For each country, information is provided on the type of measure (expenditure or revenue), its nature (permanent, temporary, or self-reversing), and its estimated budgetary cost and time profile, where available (Table 13).[25] Data are expressed in U.S. dollars (unless otherwise indicated) and reflect staff's assessment of the authorities' estimates. For example, operations to financial institutions are typically included in national authorities' announced packages, but they have been excluded here if these operations are already covered in Chapters I and II of this paper. Similarly, announced measures that staff have been able to determine were not genuinely new have also been excluded.

39. **The data are derived from several sources, most importantly government announcements, websites, and reports.** They have been supplemented by information from IMF country desks. As national authorities continue to take measures to stem the crisis, this chapter reflects the status and information available through mid-February 2009.

[24] Prepared by Annalisa Fedelino, Elsa Sze, Daria Zakharova, and Mark Horton.

[25] *Temporary* measures have a temporary effect on the deficit but a permanent impact on the debt level (for example, expenditure measures that are one-off or designed to expire after a certain period). *Permanent* measures have a permanent effect on the deficit, and a cumulative one on debt (for example, most revenue measures seem permanent). *Self-reversing* measures have a temporary effect on both deficits and debts.

Table 13. Summary of the Fiscal Stimulus Packages in the G-20 Countries

Argentina

Measure	Nature	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		3.4	…
Infrastructure investment	Temporary	3.1	…
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	0.3	…
Housing/construction support	…	…	…
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	…	…	…
Revenue		0.7	
PIT/exemptions/deductions	…	0.7	…
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	…	…	…
Other	…	…	…
Memorandum items:			
Total cost		4.1	…
in percent of GDP		*1.3*	…

Australia

Measure	Nature	Cost 1/	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		16.5	13.2
Infrastructure investment	Temporary	1.2	6.2
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	10.5	1.1
Housing/construction support	Temporary	0.7	3.9
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	Temporary	4.1	2.0
Revenue		0.3	0.6
PIT/exemptions/deductions	…	…	…
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	Permanent	0.3	0.6
Other	…	…	…
Memorandum items:			
Total cost		16.8	13.6
in percent of GDP		*2.1*	*1.7*

1/ Fiscal year basis.

Brazil

Measure	Nature 1/	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		1.3	…
Infrastructure investment	…	…	…
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	0.2	…
Housing/construction support	Temporary	1.1	…
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	…	…	…
Revenue		3.6	3.2
PIT/exemptions/deductions	Permanent	2.1	2.2
Indirect tax reductions	Temporary	0.4	…
CIT/depreciation/incentives	Permanent	…	…
Other	…	1.1	1.0
Memorandum items:			
Total cost in 2009		4.9	3.2
in percent of GDP		*0.4*	*0.2*

1/ For some measure(s), the only information available is about their nature, but no estimate of their budgetary cost is available.

Canada

Measure	Nature	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		16.2	14.0
Infrastructure investment	Temporary	8.4	7.8
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	2.4	3.1
Housing/construction support	Temporary	3.8	1.8
Strategic industries support	Temporary	…	…
Increase in public wage bill	…	…	…
Other	Temporary	1.7	1.3
Revenue		2.9	3.0
PIT/exemptions/deductions	Permanent	2.5	0.2
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	Permanent	0.4	2.9
Other	…	…	…
Memorandum items:			
Total cost in 2009		19.1	17.0
in percent of GDP		*1.5*	*1.3*

China

Measure	Nature 1/	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		93.3	…
Infrastructure investment	Temporary	82.1	…
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	…	…
Housing/construction support	Temporary	6.5	…
Strategic industries support	Temporary	3.7	…
Increase in public wage bill	…	…	…
Other	Temporary	0.9	…
Revenue		…	…
PIT/exemptions/deductions	…	…	…
Indirect tax reductions	Permanent	…	…
CIT/depreciation/incentives	…	…	…
Other	…	…	…
Memorandum items:			
Total cost in 2009		93.3	102.1
in percent of GDP		*2.0*	*2.0*

1/ For some measure(s), the only information available is about their nature, but no estimate of their budgetary cost is available.

France

Measure	Nature	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		15.8	2.1
Infrastructure investment	Temporary	7.1	1.9
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	3.2	…
Housing/construction support	Temporary	1.5	0.1
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	Temporary	4.0	…
Revenue		1.5	16.3
PIT/exemptions/deductions	Temporary	1.51	0.14
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	Permanent	…	16.1
Other	…	…	…
Memorandum items:			
Total cost		17.3	18.5
in percent of GDP		*0.7*	*0.7*

Germany

Measure	Nature 1/	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		29.6	24.4
Infrastructure investment	Temporary	13.6	13.6
Support to SMEs and/or farmers	Temporary	…	1.2
Safety nets	Temporary	9.7	8.2
Housing/construction support	Temporary	…	…
Strategic industries support	Temporary	0.5	0.2
Increase in public wage bill	…	…	…
Other	Temporary	5.8	1.3
Revenue		19.4	42.2
PIT/exemptions/deductions	Permanent	15.9	35.0
Indirect tax reductions	Permanent	0.2	0.3
CIT/depreciation/incentives	Permanent	3.3	6.9
Other	…	…	…
Memorandum items:			
Total cost		49.0	66.7
in percent of GDP		*1.5*	*2.0*

1/ For some measure(s), the only information available is about their nature, but no estimate of their budgetary cost is available.

India

Measure	Nature	Cost 1/	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		4.7	…
Infrastructure investment	Temporary	2.2	…
Support to SMEs and/or farmers	…	…	…
Safety nets	…	…	…
Housing/construction support	…	…	…
Strategic industries support	Temporary	0.4	…
Increase in public wage bill	…	…	…
Other	Temporary	2.1	…
Revenue		2.1	…
PIT/exemptions/deductions	…	…	…
Indirect tax reductions	Temporary	2.1	…
CIT/depreciation/incentives	…	…	…
Other	…	…	…
Memorandum items:			
Total cost		6.8	…
in percent of GDP		*0.5*	...

1/ Fiscal year basis.

Indonesia

Measure	Nature	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		1.4	…
Infrastructure investment	Temporary	0.9	…
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	0.4	…
Housing/construction support	…	…	…
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	…	…	…
Revenue		5.1	3.4
PIT/exemptions/deductions	Permanent	2.8	0.6
Indirect tax reductions	Permanent	0.5	0.5
CIT/depreciation/incentives	Permanent	1.7	2.3
Other	…	…	…
Memorandum items:			
Total cost		6.4	3.4
in percent of GDP		*1.3*	*0.6*

Italy

Measure	Nature	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		5.2	2.7
Infrastructure investment	…	0.8	1.6
Support to SMEs and/or farmers	…	0.0	0.0
Safety nets	Temporary	3.6	0.3
Housing/construction support	…	0.5	0.0
Strategic industries support	…	0.0	0.0
Increase in public wage bill	…	0.0	0.0
Other	…	0.3	0.7
Revenue		2.5	1.8
PIT/exemptions/deductions	…	0.6	0.2
Indirect tax reductions	…	0.3	0.0
CIT/depreciation/incentives	…	1.5	1.5
Other	…	0.1	0.0
Memorandum items:			
Total cost (gross)		7.7	4.5
in percent of GDP		*0.4*	*0.2*
net, in percent of GDP 1/		*0.2*	*0.1*

1/ The stimulus measures announced by the government will be partially offset by other "deficit-reducing" measures; the net cost is based on Fund staff estimates.

Japan

Measure	Nature	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		69.7	15.9
Infrastructure investment	Temporary	15.5	7.8
Support to SMEs and/or farmers	Temporary	4.2	1.4
Safety nets	Temporary	36.2	4.0
Housing/construction support	Temporary	2.2	0.4
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	Temporary	11.6	2.3
Revenue		7.1	5.0
PIT/exemptions/deductions	Permanent	2.2	1.6
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	Permanent	2.8	2.0
Other	Permanent	2.1	1.5
Memorandum items:			
Total cost		76.8	21.0
in percent of GDP		*1.4*	*0.4*

Korea

Measure	Nature 1/	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		8.4	…
Infrastructure investment	Temporary	3.5	…
Support to SMEs and/or farmers	Temporary	2.6	…
Safety nets	Temporary	0.8	…
Housing/construction support	…	…	…
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	Temporary	1.5	…
Revenue		2.3	2.4
PIT/exemptions/deductions	…	…	…
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	Permanent	2.3	2.4
Other	…	…	…
Memorandum items:			
Total cost		10.7	2.4
in percent of GDP		*1.5*	*0.3*

1/ For some measure(s), the only information available is about their nature, but no estimate of their budgetary cost is available.

Mexico

Measure	Nature 1/	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		11.3	…
Infrastructure investment	Temporary	5.4	…
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	5.9	…
Housing/construction support	…	…	…
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	Temporary	…	…
Revenue		…	…
PIT/exemptions/deductions	…	…	…
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	Permanent	…	…
Other	…	…	…
Memorandum items:			
Total cost		14.1	…
in percent of GDP		*1.5*	...

1/ For some measure(s), the only information available is about their nature, but no estimate of their budgetary cost is available.

Russia

Measure 1/	Nature	Cost	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		5.7	…
Infrastructure investment	…	…	…
Support to SMEs and/or farmers	Temporary	0.4	…
Safety nets	Temporary	1.0	…
Housing/construction support	Temporary	2.7	…
Strategic industries support	Temporary	1.6	…
Increase in public wage bill	…	…	…
Other	…	…	…
Revenue		18.1	…
PIT/exemptions/deductions	…	0.3	…
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	Permanent	17.8	…
Other	…	…	…
Memorandum items:			
Total cost		23.9	…
in percent of GDP		*1.7*	...

1/ Possible additional discretionary measures for 2009 were announced at end-January and mid-February, but have not yet been approved by the Duma.

Saudi Arabia
According to staff estimates, a discretionary fiscal impulse of 2.4 percent of GDP was undertaken in 2008, while crisis-related discretionary measures of 3.3 percent of GDP and 3.5 percent of GDP will be implemented in 2009 and 2010, respectively.

South Africa
Stimulus estimates by the Fund staff for South Africa are based on the FY 2009/10 budget.

Spain

Measure	Nature	Cost 1/	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		15.3	…
Infrastructure investment	Temporary	11.2	…
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	0.8	…
Housing/construction support	Temporary	0.2	…
Strategic industries support	Temporary	2.4	…
Increase in public wage bill	…	…	…
Other	Temporary	0.8	…
Revenue		15.9	1.8
PIT/exemptions/deductions	Permanent	7.7	10.1
Indirect tax reductions	Self-reversing	8.2	-8.3
CIT/depreciation/incentives	…	…	…
Other	…	…	…
Memorandum items:			
Total cost		34.4	…
in percent of GDP		*2.3*	...

1/ Budget liquidity impact basis.

Turkey
No crisis-related discretionary measures were taken in 2008 and none are planned for 2009 and 2010.

United Kingdom

Measure	Nature	Cost 1/	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		7.9	-7.8
Infrastructure investment	Self-reversing	3.4	-2.3
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	2.1	0.9
Housing/construction support	Temporary	1.3	-0.7
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	Temporary	1.1	-5.6
Revenue		22.1	5.3
PIT/exemptions/deductions	Permanent	5.3	5.9
Indirect tax reductions	Self-reversing	17.0	…
CIT/depreciation/incentives	…	…	…
Other	Permanent	-0.2	-0.6
Memorandum items:			
Total cost		30.0	-2.5
in percent of GDP		*1.4*	*-0.1*

1/ Negative numbers refer to impact of offsetting measures.

United States

Measure	Nature	Cost 1/	
		2009	2010
(Billions of USD, unless otherwise stated)			
Expenditure		183.8	142.3
Infrastructure investment	Temporary	31.8	47.0
Support to SMEs and/or farmers	…	…	…
Safety nets	Temporary	77.0	13.8
Housing/construction support	…	…	…
Strategic industries support	…	…	…
Increase in public wage bill	…	…	…
Other	Temporary	75.0	81.5
Revenue		94.3	111.3
PIT/exemptions/deductions	Permanent	37.2	79.6
Indirect tax reductions	…	…	…
CIT/depreciation/incentives	Permanent	57.2	31.7
Other	…	…	…
Memorandum items:			
Total cost		283.2	257.3
in percent of GDP		*2.0*	*1.8*

1/ Excludes financial system rescue costs.

VII. Effect of Larger Debts on Interest Rates[26]

40. **Although empirical evidence on the impact of fiscal variables on interest rates is mixed, several studies find positive and significant effects** (Table 14):

- The few studies focusing on "world" long-term real interest rates (average interest rates in the advanced economies) find that their main correlates are investment prospects (reflected in stock returns) and the monetary stance, with average fiscal deficits or debts playing an insignificant role in most estimates (Barro and Sala-i-Martin, 1990).

- Studies focusing on country-specific interest rates based on panels of countries or individual country time series find either insignificant or positive and significant effects. For the OECD countries, Ardagna, Caselli, and Lane (2007) find that a one-percentage point increase in the ratio of the primary deficit to GDP is associated with a 10 basis point increase in nominal long-term (10-year) interest rates. The effect of an increase in public debt is estimated to be positive only for countries with large debts: a ten-percentage point increase in the debt/GDP ratio for a country with an initial ratio of 100 percent is associated with an increase of 20 basis points, whereas for a country with an initial ratio of 50 percent the effect is negligible. For the United States, studies that find a significantly positive effect put it in most cases in the range between 20–60 basis points for an increase in the budget deficit by 1 percentage point of GDP (Gale and Orszag, 2004).

- For emerging markets, variation in a country's sovereign bond spread is mainly correlated with changes in the average spread for all emerging markets; changes in country-specific fundamentals, including public debts or deficits, play a more limited role (see Mauro, Sussman, and Yafeh, 2006 for a review of this literature).

41. **Methodological considerations suggest that the findings of these empirical studies should be viewed as a lower bound on the true effects**. Observed fiscal deficits are an imperfect proxy for the concept of fiscal deficit that is expected to increase interest rates based on theory. Indeed, observed fiscal deficits are affected by a host of factors (to differing degrees in different countries) that cannot easily be controlled for in empirical studies (particularly for panels of countries), such as inflation, the position in the economic cycle, and varying quality of expenditures. With measurement error in the explanatory variable, the estimated coefficients are likely to reflect downward (i.e., "attenuation") bias. Moreover, the analysis is further complicated by the need to control for monetary policy, which may also respond to recessions at the same time as fiscal policy does.

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[26] Prepared by Paolo Mauro, Jacques Bouhga-Hagbe, and Stephanie Eble.

Table 14. Studies on Effects of Debts and Deficits on Interest Rates

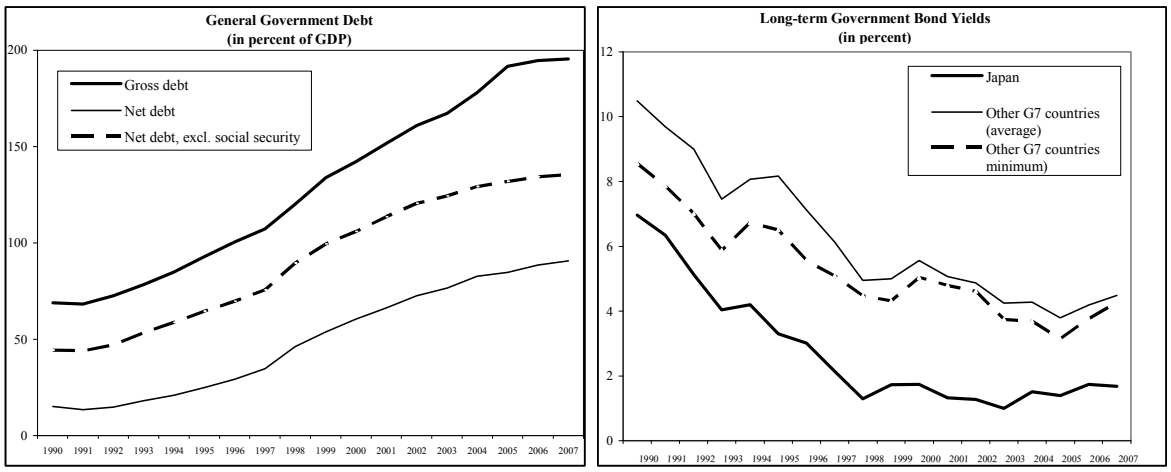
Predominantly positive significant effect			Mixed effect			Predominantly insignificant effect		
	Numerical effect 1/			Numerical effect 1/			Numerical effect 1/	
	Debt	*Deficit*		*Debt*	*Deficit*		*Debt*	*Deficit*
US								
Gale and Orszag (2004) 2/	0.04 / 0.06	0.25 / 0.35	Engen and Hubbard (2004)	0.03	0.03 / 0.19	Gale and Orszag (2004)	-0.03 / 0.04	0.02 / 0.17
Dai and Phillipon (2004)		0.43 / 0.89 (VAR)	Engen and Hubbard (2004)	0.02 (VAR)	0.12 (VAR)	Plosser (1987) 5/	-0.07	
Canzoneri, Cumby, and Diba (2002)		0.20 / 0.68	Perotti (2002) 8/		-1.41 / -0.52 (VAR)	Evans (1987)		-0.08 / 0.13
Miller and Russek (1996)		0.01 / 0.03	Perotti (2002) 9/		0.02 / 0.34 (VAR)	Evans (1985) 6/		-3.63 / 0.19
Thomas and Abderrezak (1988)		0.64 / 1.55	Quigley and Porter-Hudak (1994) 11/	0.01		Mascaro and Meltzer (1983)	-0.07 / 0.02	
			Kim and Lombra (1989) 7/		-0.01/ 0.02	Hoelscher (1983)	0.09	
			Zahid (1988) 7/		-0.05 / 0.08	Plosser (1982) 10/	-0.01 / -0.15	
			Tanzi (1985)	0.11 / 0.18	0.27 / 0.84			
Australia			Perotti (2002) 8/		0.09 / 0.45 (VAR)			
			Perotti (2002) 9/		-0.14 / 0.46 (VAR)			
Canada			Perotti (2002) 8/		-0.14 / 1.62 (VAR)	Evans (1987)		-0.04 / 0.02 (VAR)
			Perotti (2002) 9/		-0.41 / 0.25 (VAR)			
France						Evans (1987)		-0.03 / 0.07 (VAR)
West Germany			Perotti (2002) 8/		0.46 / 1.86 (VAR)	Evans (1987)		-0.43 / -0.17 (VAR)
			Perotti (2002) 9/		-0.21 / 0.75 (VAR)			
Italy			Cottarelli and Mecagni (1990)	0.13 / 2.01	0.2			
Japan						Evans (1987)		-0.27 / -0.23 (VAR)
UK			Perotti (2002) 8/		-.57 / 0.95 (VAR)	Evans (1987)		-0.37 / -0.36 (VAR)
			Perotti (2002) 9/		-0.07 / 0.34 (VAR)			
Panel (advanced and emerging countries)								
Aisen and Hauner (2008)		0.26 / 0.56				Cantor and Packer (1996) 3/ 4/	0.00 / 0.01	0.01 / 0.15
Panel (advanced countries)								
Ardagna et al. (2007)	0.002	0.1				Aisen and Hauner (2008)		-0.08
Panel (emerging countries)								
Aisen and Hauner (2008)		0.24	Dell' Ariccia et al. (2006) 12/	-0.02/ -0.08	-0.92 / 1.27			
Baldacci, Gupta and Mati (2008) 3/		0.24 / 0.44	Mauro et al (2006) 3/		0.00/0.20			
Eichengreen and Mody (1998) 3/	1.66							
Min (1998) 3/	3.56							

1/ Impact on interest rate (in percentage points) of a one-percentage point-of-GDP increase unless otherwise indicated.
2/ Impact of projected fiscal variables on 5-year-ahead interest rates
3/ Dependent variable is spreads (percentage points) on US-dollar denominated sovereign bonds over long-term interest rates on US government bonds
4/ Uses external debt (relative to exports)
5/ Uses shocks to the growth rate of real per capita public debt (1 percent)
6/ Uses the ratio of real deficit to real trend national income
7/ Measure the impact of a US$ 1 billion increase in the deficit
8/ Effects of a 1 percent of GDP increase in public spending
9/ Effects of a 1 percent of GDP increase in net taxes
10/ Uses shocks to the growth rate of public debt (1 percent)
11/ Uses shocks to the announced increase in deficit (1 percent)
12/ Uses external debt (relative to GDP)
VAR is Vector-Auto-Regression

VIII. JAPAN: HIGH PUBLIC DEBT AND LOW INTEREST RATES[27]

42. **Japan's gross public debt has increased steadily since the early 1990s and now exceeds that of all other major advanced countries.** Gross debt was close to 200 percent of GDP and net debt exceeded 90 percent of GDP at end-2007 (Figure 3). This reflects low economic growth and repeated efforts by the authorities to jump start the economy through fiscal stimuli.

Figure 3. Japan: Debt and Interest Rates:1990–2007



Source: World Economic Outlook.

43. **At the same time, the government has continued to benefit from low financing costs**. Long-term government bond yields gradually declined from 7 percent in 1990 to 1 percent in 2003 and have remained below 2 percent since. These yields have been consistently lower than for other G-7 countries.

Several factors, some of which may be seen as specific to Japan, could help reconcile low interest rates with large public debts:

- *High private saving rate*. The savings-to-GDP ratio of the private sector (including households, private corporations and private financial institutions), at 24 percent in 2007, is significantly above the OECD average (17 percent).

- *Institutional restrictions*. Until the late 1990s, private pension funds were required to invest a significant share of their assets in domestic bonds; moreover, the special treatment of the postal system allows it to provide favorable yields that attract a significant share of retail deposits, which are partly channeled to the Japanese government bond market.

[27] Prepared by Edouard Martin.

- *Home bias*. Despite the reduction/elimination of administrative and regulatory impediments to the acquisition or holding of foreign assets, home bias remains above the OECD average.

- *Net external position*. Japan is a large net creditor and does not depend on foreign creditors to finance its public debt.

Reflecting these factors, public debt is held almost exclusively by domestic investors (93 percent), notably domestic banks, life insurance companies, and several government-related entities (public financial institutions, pension funds, and the central bank).

44. **Another hypothesis is that Japanese households may behave in a Ricardian manner**: interest rates did not rise because households cut consumption to match the increasing dissaving of the government. This would also help explain why fiscal stimulus had limited impact in Japan.

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