IMF STAFF POSITION NOTE

Fiscal Implications of the Global Economic and Financial Crisis

A Staff Team from the Fiscal Affairs Department

INTERNATIONAL MONETARY FUND

INTERNATIONAL MONETARY FUND

Fiscal Implications of the Global Economic and Financial Crisis

Prepared by a Staff Team from the Fiscal Affairs Department[1]

June 9, 2009

<div style="text-align:center">Contents   Page</div>

---

[1] The views expressed herein are those of the authors and should not be attributed to the IMF, its Executive Board, or its management.

I. INTRODUCTION AND OVERVIEW

The global financial crisis is having major implications for the public finances of most countries. Fiscal revenues are declining through the operation of automatic stabilizers and because of lower asset and commodity prices. Direct fiscal support is being provided to the financial sector, and many countries are undertaking discretionary fiscal stimulus. This is cushioning the global economy from the effects of the crisis. But it implies a fiscal deterioration that is particularly strong for advanced countries, where the increase in both government debt and contingent liabilities is unprecedented in scale and pervasiveness since the end of the Second World War. Moreover, these developments are taking place in the context of severe long-run fiscal challenges, especially for countries facing rapid population aging.

The fiscal balances of G-20 advanced countries are projected to weaken by 8 percentage points of GDP on average, and government debt is projected to rise by 20 percentage points of GDP in 2008–09, with most of the deterioration occurring in 2009. The fiscal balances of G-20 emerging market economies will deteriorate by 5 percentage points of GDP. For advanced economies, the increase in debt mostly reflects support to the financial sector, fiscal stimulus, and revenue losses caused by the crisis. For emerging economies, a relatively large component of the fiscal weakening reflects declining commodity and asset prices. Collapsing asset prices have also had adverse effects on funded components of pension systems, with potentially significant risks for public accounts over the next few years.

While fiscal balances are expected to improve over the medium term, they will remain weaker than before the crisis. Public debt-to-GDP ratios will continue to increase over the medium term: in 2014 the G-20 advanced country average is projected to exceed the end-2007 average by 36 percentage points of GDP. On current policies, debt ratios will continue to grow over the longer term, reflecting demographic forces. Moreover, for both advanced and emerging economies, the crisis has increased short- and medium-term fiscal risks, with key downside risks arising from the need for possible further support to the financial sector, the intensity and the persistence of the output downturn, and the return from the management and sale of assets acquired during the financial support operations.

This somber fiscal outlook raises issues of fiscal solvency, and could eventually trigger adverse market reactions. This must be avoided: market confidence in governments' solvency is a key source of stability and a precondition for economic recovery. Therefore, there is an urgent need for governments to clarify their exit strategy to ensure that solvency is not at risk. In formulating such a strategy, four components are particularly important: (1) fiscal stimulus packages, where these are appropriate, should not have permanent effects on deficits; (2) medium-term frameworks, buttressed by clearly identified policies and supportive institutional arrangements, should provide a commitment to fiscal correction, once economic conditions improve; (3) structural reforms should be implemented to enhance growth; and (4) countries facing demographic pressures should firmly commit to clear strategies for health

and pension reforms. While these prescriptions are not new, the weaker state of public finances has dramatically raised the cost of inaction.

This note reflects macroeconomic and fiscal forecasts presented with the April 2009 *World Economic Outlook*, as well as information on fiscal stimulus and financial and industrial sector support gathered through mid-May. It follows the request by G-20 leaders for the Fund to assess regularly the actions taken by countries to address the global crisis and accelerate the recovery.

An earlier version of the paper was discussed by the IMF's Executive Board at a seminar on February 20, 2009.[2]

---

[2] The Board paper and the companion paper on the State of Public Finances are available on www.imf.org; see IMF (2009a and 2009b). The updated, comprehensive staff study, which is the basis for this Staff Position Note, will be published in the IMF's Occasional Papers series.

II. Fiscal Implications of the Crisis: Direct Costs

1.   Government support to the financial sector can take various forms, with different implications for gross and net debt. Operations undertaken directly by the government typically entail an upfront rise in gross government debt, though not necessarily a change in net worth and the deficit, given the related acquisition of assets. Over time, the fiscal impact will critically depend on the realization value of the acquired assets (i.e., recoveries from their sale). Other operations—those undertaken by the central bank or guarantees—have less immediate implications for the fiscal accounts, but may also have important costs over the medium term. For all, a transparent treatment in the fiscal accounts is necessary (see Box 2.1).

Box 2.1. Fiscal Accounting Treatment of Support to the Financial Sector
(Guidance based on *Government Finance Statistics Manual* (*GFSM 2001*))

The following is the recommended treatment of the impact on the government balance of the main financial support operations:

Capital grants. Increase the deficit by the amount of the grant.

Equity purchases. Have no impact on the fiscal balance, if purchase is at market value, but increase government gross debt, unless funded by drawing down cash balances. Raise the deficit by any marked/undisputable excess of what the government pays over the value of the equity.

Asset purchases/swaps. Same as equity purchases.

Loans. Have no immediate impact on the fiscal balance if there is no inherent subsidy, but increase government debt. Reduce the balance by any amount that the government cannot expect to be repaid.

Guarantees. Have no immediate impact on the fiscal balance or debt unless there is a significant probability the guarantee will be called (in practice, when a reserve has been created). In other cases, the fiscal balance would weaken and debt increase if and when the guarantee is called.

Associated fees, interest, and dividends. Affect the deficit in the same way as other government income or expense.

Central bank operations. Are reflected in the central bank's own balance sheet and income statement, rather than those of the government. However, losses on these operations will affect the budget over time, as they affect profit transfers or necessitate recapitalization. For transparency and to facilitate policy decision making, these operations should be disclosed, possibly as complementary information in the budget.

A. Headline Support to Financial Sectors [3]

Advanced Countries

2.   Many advanced countries have provided, or announced the intent to provide, significant support to their financial sectors. Support measures have varied markedly in extent and nature. Estimates in Table 2.1 are based on official announcements of amounts allocated for financial sector support (or maximum amount of banks' liabilities to be guaranteed), although they may not be used in full.[4]

- *Capital injections.* Many countries have recapitalized their banks, particularly the systemically important ones. For the advanced G-20 countries, the average outlay to date is projected at 3.2 percent of GDP, with considerable variation across countries (ranging from 4.6 percent in the United States to none for Australia and Spain). Among smaller advanced economies, Austria, Belgium, Ireland, and the Netherlands have announced large programs, ranging from 3½ to 5½ percent of GDP.

- *Asset purchases and direct lending by the treasury.* Governments and some central banks have provided substantial direct loans and have purchased illiquid assets from financial institutions. Amounts involved range widely, with the United Kingdom, Japan, and Norway accounting for over 10 percent of GDP. The advanced G-20 average is 4.4 percent of GDP.

- *Central bank support with or without direct treasury funding.* Central bank support has been provided primarily through credit lines to financial institutions, purchase of asset-backed securities and commercial paper, and asset swaps (Table 2.1, columns C and D).[5] In only three countries have these operations been undertaken with treasury support (Russia, the United Kingdom, and the United States). Liquidity provisions that do not require upfront treasury financing have also been made, and could eventually entail fiscal costs (Table 2.1, column D).

- *Guarantees for financial sector liabilities.* Guarantees have been provided for bank deposits, interbank loans and, in some cases, bonds. Deposit insurance limits have been raised in almost all countries. Guarantees provided in Ireland, the Netherlands, Sweden, the United Kingdom, and the United States are particularly large, relative to GDP.

---

[3] Some countries have also provided direct support to the nonfinancial sector but for fairly small amounts.

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

[5] For the euro area countries, the European Central Bank (ECB) has provided significant support since the summer of 2007, initially mainly through lengthening of the maturity of its refinancing operations, and since October 2008, through an increase in the aggregate amount of liquidity provision (by around 70 percent). This also applies to other major central banks, with some variation in the modalities in the provision of the support.

Table 2.1. Headline Support for the Financial Sector and Upfront Financing Need

(As of May 19, 2009; in percent of 2008 GDP)

	Capital Injection	Purchase of Assets and Lending by Treasury	Central Bank Support Provided with Treasury Backing	Liquidity Provision and Other Support by Central Bank 1/	Guarantees 2/	Total	Upfront Government Financing 3/	
	(A)	(B)	(C)	(D)	(E)	(A+B+C+D+E)		
Advanced North America								
Canada	0.9	8.8	0.0	1.9	13.5	25.1	9.8	
United States	4.6	2.3	0.7	41.9	31.4	81.0	7.5	4/
Advanced Europe								
Austria	5.3	3.5	0.0	0.0	26.6	35.4	8.9	
Belgium	4.8	0.0	0.0	0.0	26.4	31.1	4.8	
France	1.4	1.3	0.0	0.0	16.4	19.2	1.6	5/
Germany	3.8	0.4	0.0	0.0	18.0	22.2	3.7	
Greece	2.1	3.3	0.0	0.0	6.2	11.5	5.4	
Ireland	5.4	0.0	0.0	0.0	261	267	5.4	
Italy	0.8	0.0	0.0	2.5	0.0	3.3	0.8	6/
Netherlands	3.4	2.8	0.0	0.0	33.9	40.1	6.2	
Norway	2.0	15.8	0.0	0.0	0.0	17.7	15.8	
Portugal	2.4	0.0	0.0	0.0	12.0	14.4	2.4	
Spain	0.0	4.6	0.0	0.0	18.3	22.8	4.6	
Sweden	2.1	4.8	0.0	15.4	47.5	69.7	5.2	7/
Switzerland	1.1	0.0	0.0	7.2	0.0	8.3	1.1	
United Kingdom	3.9	13.8	12.8	0.0	51.1	81.6	18.9	8/
Advanced Asia and Pacific								
Australia	0.0	0.7	0.0	0.0	8.8	9.5	0.7	
Japan	2.4	11.4	0.0	1.2	7.3	22.2	0.8	9/
Korea	2.5	5.0	0.0	0.2	12.7	20.4	0.3	10/
Emerging economies								
Argentina	0.0	0.9	0.0	0.0	0.0	0.9	0.0	11/
Brazil	0.0	0.0	0.0	1.5	0.0	1.5	0.0	
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
India	0.4	0.0	0.0	6.3	0.0	6.7	0.4	
Indonesia 12/	0.0	0.0	0.0	0.0	0.1	0.1	0.1	
Hungary	1.1	2.2	0.0	4.8	1.1	9.2	3.3	
Poland	0.0	0.0	0.0	0.0	3.2	3.2	0.0	
Russia	0.6	0.5	0.4	7.6	0.5	9.6	1.7	13/
Saudi Arabia	0.0	1.2	0.0	0.0	…	1.2	1.2	
Turkey	0.0	0.3	0.0	0.0	0.0	0.3	0.0	14/
Average (PPP GDP weights)								
G-20 countries	2.1	2.8	0.8	12.5	14.4	32.5	3.7	
G-20 EU countries	2.6	3.8	3.1	0.5	22.1	32.2	6.3	
Advanced economies	3.2	4.4	1.2	18.7	22.9	50.4	5.8	
Emerging economies	0.1	0.1	0.0	2.0	0.1	2.4	0.3	

Source: IMF staff estimates.

1/ This table includes operations of new special facilities designed to address the current crisis and does not include the operations of the regular liquidity facilities provided by central banks. Outstanding amounts under the latter have increased substantially, and their maturity has been lengthened in recent months in many cases, including the European Central Bank.

2/ Excludes deposit insurance provided by deposit insurance agencies.

3/ This includes components of A, B, and C that require upfront government outlays.

4/ Upfront financing is $1,074 billion (7.5 percent of GDP), consisting of the Troubled Asset Relief Program (TARP; $700 billion); government sponsored enterprise (GSE) support ($200 billion); GSE Mortgage-Backed Securities (MBS) purchase program ($124 billion); and Treasury support for Commercial Paper Funding Facility ($50 billion). Guarantees on housing GSEs are excluded.

5/ Support to the country's strategic companies, including carmakers, is recorded under (B); of which €20 bn will be financed by a state-owned bank, Caisse des Dépôts et Consignations, not requiring upfront Treasury financing.

6/ The amount in Column D corresponds to the temporary swap of government securities held by the Bank of Italy for assets held by Italian banks. This operation is unrelated to the conduct of monetary policy which is the responsibility of the ECB.

7/ Some capital injection (SKr 50 billion) will be undertaken by the Stabilization Fund.

8/ Costs to nationalize Northern Rock and Bradford & Bingley recorded under (B), entailed upfront government financing of £32 billion. Asset purchase facility will initially be financed through extending central bank's balance sheet, and entails no upfront government financing.

9/ Budget provides ¥3,900 billion to support capital injection by a special corporation and lending and purchase of commercial paper by policy-based financing institutions or the Bank of Japan.

10/ W 76.7 trillion support for recapitalization and purchase of assets needs upfront financing of W 3.5 trillion.

11/ Direct lending to the agricultural and manufacturing sectors and consumer loans are likely to be financed through Anses, and would not require upfront Treasury financing.

12/ Small interventions have been recently implemented through the deposit insurance agency that are not yet quantified.

13/ Asset purchase will be financed from National Wealth Fund; and the government will inject Rub 200 billion to deposit insurance fund financed from the budget.

14/ Loans from KOSGEB do not require upfront Treasury financing.

3.   While the support operations have been large, the immediate impact on financing needs have been more limited. The immediate impact averages 5¾ percent of GDP for the advanced G-20 (Table 2.1, last column). The figures are much larger (Table 2.1, sixth column) when taking into account: (1) central bank liquidity provisions—which, however, are sizable only in a few countries; and (2) especially, guarantees, which do not require upfront financing.

Emerging Markets

4.   Financial sector support has been limited so far in emerging economies, which have only recently seen a pronounced impact of deleveraging and increased risk aversion on their financial sectors. The main measures announced include:[6]

- *Bank recapitalization.* Hungary, Poland, and Ukraine;

---

[6] Many countries noted below have announced measures that are difficult to quantify and so are not included in Table 2.1.

- *Liquidity provision.* Hungary, India, Mexico, Russia, Turkey, and Ukraine. These countries have extended (or committed to extend) liquidity facilities to banks or to state-owned or managed enterprises; and

- *Guarantees.* Blanket coverage has been provided in Egypt and Saudi Arabia; several other countries (Hungary, Indonesia, Mexico, Poland, and Russia) have committed to provide more limited guarantees (e.g., trade credit to exporters and interbank lending).

Based on the (limited) information available, the average immediate impact on gross debt of these operations is about ⅓ percent of GDP.

B. Net Cost over the Medium Term

5.   The medium-term net budgetary cost of financial support operations will depend on the extent to which the assets acquired by government or the central bank will hold their value and can be disinvested without losses, and the potential loss from guarantees. Although there are significant uncertainties relating to each of these channels, and the current crisis is unique in its complexity and pervasiveness, past experience can provide some guidance for asset recovery rates. Moreover, estimates of default probabilities based on financial market data can be used to provide an educated guess of the potential losses from guarantees.

Recovery Rates and Net Cost

6.   The amounts recovered from the sale of assets acquired through interventions will likely vary significantly across countries, depending on the type of intervention, the approach followed in managing and selling the assets, and various macroeconomic factors. Econometric analysis suggests that recovery rates are positively correlated with per capita income: advanced countries had higher recovery rates (an average of 51 percent compared with 13 percent for emerging markets in past banking crises).[7] Recovery rates are also higher, the stronger the fiscal balance at the start of the crisis, possibly an indicator of sounder fiscal and public financial management frameworks.

7.   Based on these estimates, the medium-term impact on gross government debt could be substantially lower than the upfront impact, but still sizable. The average net cost for the G-20 advanced economies is projected to be 2½ percent of GDP, compared to upfront cost of 5¾ percent of GDP (Table 2.2). In general, recovery rates estimated for emerging markets are markedly lower, so the difference between the gross and net outlays would be smaller.

---

[7] For methodological details on the estimates of recovery rates, see Chapter III in IMF (2009b).

Table 2.2. Upfront Gross Fiscal Cost and Estimated Recovery Rate

(In percent of GDP, unless otherwise indicated)

	Upfront Government Financing	Recovery Rate 1/		Medium-term Net Cost of Direct Support	
		Point estimate	95% interval	Point estimate	95% interval
Average for 2/					
G-20 economies	3.7	48.0	[28.2, 67.7]	1.7	[0.9, 2.3]
Advanced economies	5.8	50.6	[29.5, 71.4]	2.5	[1.4, 3.5]
Emerging economies	0.3	35.3	[21.3, 49.2]	0.2	[0.1, 0.2]

Source: IMF staff estimates.
1/ In percent of upfront outlays.
2/ Weighted by PPP GDP of 2007.

8.   The timing of asset recoveries will depend on the speed of the economic and financial recovery. Past experience indicates that the bulk of asset recovery takes place only after economic and financial rebound firms up demand and stabilizes asset prices. For example, Sweden achieved a recovery rate of 94 percent after only five years following the 1991 crisis, while Japan had recovered only 1 percent of assets after five years following the 1997 crisis (by 2008, the recovery rate for Japan reached 54 percent).

Net Cost of Central Bank Liquidity Support and of Government Guarantees

9.   Potential costs involved in central bank liquidity support are likely to be more contained than those associated with government intervention. Given the unprecedented magnitude of central bank support operations, there is little evidence to assess likely recovery rates. However, in most countries, central banks have focused on providing liquidity support (with relatively short maturities and higher-quality collateral), whereas governments have generally provided solvency support—operations with the highest risk of loss. Therefore, the recovery rate for outlays by central banks is likely to be higher than for governments (the calculations here assume 90 percent). The net cost from central bank operations could, thus, average 1¾ percent of GDP for advanced countries (Table 2.3).

10.   The expected cost of the (explicit) guarantees provided so far is not trivial, but the margin of uncertainty is large. Some indicative estimates can be obtained using standard financial derivative pricing models—in particular, by estimating the expected default frequency implied credit default swap (EICDS) spreads and applying them to the guaranteed amounts. EICDS can be regarded as indicative of the "insurance" premium for providing the guarantees, and the approach—which takes into account market volatility and hence the probability of default of individual institutions—provides an approximate measure of the cost to government of providing this "insurance." Based on November 2008 market data, outlays from contingent liabilities could be of the order of 1–3 percent of GDP (cumulative) for 2009–13 for the advanced G-20 countries, with a point estimate of 1½ percent of GDP

(Table 2.3). This range corresponds to the assumed recovery rates under an optimistic scenario (80 percent recovery rate) and a conservative scenario (40 percent recovery rate).[8]

Table 2.3. Hypothetical Net Cost from Financial Sector Support Measures: Illustrative Scenarios

(In percent of GDP, unless otherwise indicated)

	Net cost of direct support	Guarantees			Liquidity provision by Central Bank and others		Total net cost
		Gross	Expected cost 1/		Gross	Net 2/	
			Point estimate	Range			
	(i)		(ii)			(iii)	(i)+(ii)+(iii)
Average for 3/							
G-20 economies	1.7	14.4	1.0	[0.6, 1.9]	14.3	1.1	3.8
Advanced economies	2.5	22.9	1.6	[1.0, 3.1]	21.7	1.7	5.8
Emerging economies	0.2	0.1	0.0	[0.0, 0.0]	2.0	0.2	0.4

Source: IMF staff estimates.
1/ Cumulative cost over five years. Guarantee fees have not been netted from the gross cost of guarantees given the variability in fees across countries and maturity structure of debt, and given the legislative differences in applying those fees. The range reflects assumptions of (1) an optimistic recovery rate of 80 percent; and (2) a conservative recovery rate of 40 percent.
2/ The recovery rate for outlays by central banks is assumed to be 90 percent.
3/ Weighted by PPP GDP of 2007.

III. FISCAL IMPLICATIONS OF THE CRISIS: THE COST OF THE RECESSION

11.   The recession (and actions to alleviate it) entail fiscal costs through three channels: automatic stabilizers; other nondiscretionary effects going beyond the normal impact of the cycle, including from lower asset prices, financial sector profits, and commodity prices; and discretionary fiscal stimulus. Some of these effects will be short-lived; others will be longer lasting or even permanent. For example, the cyclical impact of automatic stabilizers will reverse with recovery, and some discretionary measures may explicitly incorporate sunset provisions. By contrast, tax breaks may be difficult to reverse, and while revenues associated with "normal" long-term trends in commodity and asset prices will resume, those associated with "above-normal" price levels before the crisis will not.

---

[8] The point estimate reflects the EICDS spreads observed in the market. These spreads, once the guarantees are in place, capture the residual risk for banks, but may not capture the full risk for the government that is providing the guarantee. The approach, therefore, may bias downward the calculation of the potential costs for the government. To correct for this, a "conservative" CDS was calculated (assuming a conservative recovery rate—broadly in line with market practices) and used to derive the figure reported in the text as upper bound (Table 2.3). Chapter IV in IMF (2009b) provides illustrative estimates of government contingent liabilities to the banking sector.

A. Automatic Stabilizers

12.   The impact of the automatic stabilizers is increasing rapidly with the weakening of economic conditions. For 2008, the estimated impact of automatic stabilizers—computed on the basis of changes in the output gap—is just –0.2 percent of GDP for the G-20.[9] A larger impact, –1.8 percent of GDP, is projected in 2009, as the output gap widens. The impact in 2009 ranges from –3.5 percent of GDP for the Germany to –2½ percent for France, Italy, Japan, Russia, Turkey, and the United Kingdom, and to –½ percent for several emerging economies, including China, India, and Indonesia (differences across countries reflect differences in the change in the output gap and the revenue and expenditure elasticity assumptions). As a gauge for sensitivity analysis, a uniform 1 percentage point of GDP worsening in the G-20 output gap broadly translates into a ⅓ percent of GDP increase in the fiscal deficit. An intuition behind this approximation is that government size—a good proxy for the magnitude of automatic stabilizers—is around one-third of GDP for the G-20 weighted average.

Table 3.1. G-20 Countries: Contribution of Automatic Stabilizers
(In percent of GDP, relative to previous year) [1/]

	2008	2009
Automatic stabilizers	-0.2	-1.8
Of which:		
Advanced countries	-0.4	-2.1
Emerging market countries	0.1	-1.1

Sources: IMF, *World Economic Outlook*, April 2009; and IMF staff estimates.
1/ Averages, based on PPP GDP weights.

B. Other Nondiscretionary Effects

13.   Looking just at output gap changes is not sufficient to evaluate the effect of nondiscretionary factors on budgetary positions. In fact, some variables affecting fiscal balances are not perfectly correlated with output fluctuations. For example, exceptional declines in asset prices may reduce revenues by more than could be explained by looking at output gap changes. In quantifying these effects, it is important to avoid double-counting (i.e., the fact they would *partly* be captured by the standard output gap calculation).

14.   Five effects are worth considering more closely:[10]

---

[9] For methodological details on the computation of the automatic stabilizers and other nondiscretionary effects, see Chapter V in IMF (2009b).

[10] Severe disruptions in payment and credit markets could also abnormally reduce revenue collection, including through failure to file returns, underdeclaration, or payment deferrals. These effects, which may only affect the fiscal balance on a cash (and not accrual) basis, are difficult to estimate, and are not included here.

- *Equity prices.* Recent swings in equity prices were more pronounced than in past business cycles, and would, thus, not be fully included in the above estimates. The fall in revenues could come through several channels, including declines in capital gains taxation, a fall in wealth, consumption, and consumption tax revenue, and the impact on profit tax revenues from firms with trading activity. Regression estimates suggest that a 10 percent decline in equity prices leads cyclically adjusted revenues to fall by 0.07 and 0.08 percent of GDP in the current and subsequent years, close to estimates by Morris and Schuknecht (2007). Using these estimates, the equity market declines through end-2008 imply a cumulative fall in revenue for 2008–09 for the G-20 weighted average of 0.6 percent of GDP (of which 0.5 percent of GDP in 2009, assuming no further decline in equity prices takes place).

- *Housing prices.* Regression estimates suggest that a 10 percent decline in real housing prices leads to a 0.27 percent of GDP decline in cyclically adjusted revenues in the following year, a stronger elasticity than for equity price changes (see also Carroll, Otsuka, and Slacalek, 2006; and Morris and Schuknecht, 2007). However, as the decline in housing prices has been smaller than for equity prices (less than 10 percent versus 50 percent), the fall in cyclically adjusted revenues arising from house price declines would be more contained (0.2 percent of GDP for the G-20 weighted average in 2009).

- *Financial sector profits.* In many countries, financial sector profits are an important source of corporate income tax (CIT) revenue; in some, stamp duties and financial transaction taxes are also levied. Over one-quarter of CIT revenues for the United States and the United Kingdom during 2000–07 came from the financial sector. Extrapolating from this, the decline in financial sector profits could contribute to a 0.2 percent of GDP additional revenue decline (evenly split between 2008 and 2009).[11]

- *Commodity prices.* The effect on fiscal revenues of the decline in commodity prices could be sizable in 2009 for some emerging markets (Table 3.2). For the G-20 group, the figures are smaller, but significant (0.7 percent of GDP in 2009), largely reflecting the impact on Russia, Saudi Arabia, and Brazil.[12] Some countries could benefit to the extent that governments decide not to pass through to users the decline in commodity prices. This decision—effectively a cut in subsidies or a tax increase—is considered a discretionary change, and associated fiscal savings are not included in these adjustments.

---

[11] CIT revenues averaged 3 percent of GDP across the G-20 during 2004–06 (weighted average). The calculation assumes that the financial sector pays 25 percent of CIT and has a decline in profits of 50 percent on top of the average decline in profits (already captured by the cyclical adjustment calculation). Because of the possible double-counting between this effect and the equity price effect, the former is reduced by a quarter.

[12] Another major G-20 oil producer, Mexico, hedged its 2009 oil export price at US$70 per barrel. Staff estimate that each 10 percent fall in commodity prices will reduce G-20 fiscal revenue by 0.15 percent of GDP.

- *Interest rate and exchange rates.* In lower-risk countries, the decline in interest rates on government debt would reduce the debt service. In other countries, rising risk premia and exchange rate depreciation could raise it. However, the impact, in both directions, is likely to be modest in 2008 and 2009, at least in G-20 countries.

Table 3.2. Impact on Fiscal Revenue from Commodity Price Movements
(In percent of GDP)

	2008	2009
Argentina	0.0	-0.4
Australia	0.0	-0.4
Brazil	1.0	-2.8
Canada	0.3	-0.7
Indonesia	0.0	0.2
Mexico	0.8	-0.8
Russia	1.7	-5.9
Saudi Arabia	15.0	-29.7
South Africa	0.2	-0.1

Source: IMF staff estimates.

15. Overall, these other nondiscretionary effects appear to be sizable (Table 3.3). Their impact could account for an estimated 1.3 percent of GDP deterioration in fiscal positions of G-20 countries in 2009.

Table 3.3. G-20 Countries: Other Nondiscretionary Factors
(In percent of GDP, relative to previous year)1/

	2008			2009		
	All G-20	Advanced	Emerging	All G-20	Advanced	Emerging
Nondiscretionary factors	0.1	-0.4	1.0	-1.3	-0.5	-2.4
Equity prices	-0.2	-0.3	0.0	-0.5	-0.4	-0.5
Housing prices	0.1	-0.1	0.3	-0.2	-0.3	0.0
Financial sector	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2
Interest payments	0.0	0.0	0.1	0.2	0.4	0.0
Commodity prices	0.3	0.0	0.8	-0.7	0.0	-1.8

Sources: IMF, *World Economic Outlook*, April 2009; Bloomberg and other financial sources; and IMF staff estimates.
1/ Averages based on PPP GDP weights.

C. Discretionary Responses to the Crisis

16. On average, G-20 countries have adopted, or plan to adopt, fiscal stimulus measures amounting to ½ percent of GDP in 2008, 2.0 percent of GDP in 2009, and 1.5 percent of GDP in 2010 (Table 3.4).[13] The impact of these stimulus measures on government deficits and debts will vary, depending on their nature. Table 3.5 identifies three types of measures:

---

[13] These figures reflect the budgetary cost of the stimulus measures in each year. They are based on packages announced through early May 2009. The figures have been corrected for (1) "below-the-line" operations that do

(continued)

- *Temporary.* These measures will have a temporary effect on the deficit, but a permanent one on the debt level. Most of the stimulus measures on the spending side are designed to expire after a certain period (although some spending programs may have recurrent cost implications, such as maintenance costs for new infrastructure projects).

- *Permanent.* These measures have a permanent effect on the deficit, and a cumulative one on debt. Most revenue measures announced so far are permanent.

Table 3.4. G-20 Countries: Estimated Cost of Discretionary Measures
(In percent of GDP, relative to 2007 baseline) 1/ 2/

	2008	2009	2010
Argentina	0.0	1.5	…
Australia	1.2	2.5	2.1
Brazil	0.0	0.6	0.5
Canada	0.0	1.9	1.7
China	0.4	3.1	2.7
France	0.0	0.7	0.8
Germany	0.0	1.6	2.0
India 3/ 4/	0.6	0.6	0.6
Indonesia	0.0	1.4	0.6
Italy	0.0	0.2	0.1
Japan 5/	0.3	2.4	1.8
Korea	1.1	3.7	1.2
Mexico	0.0	1.5	…
Russia	0.0	4.1	1.3
Saudi Arabia	2.4	3.3	3.5
South Africa 3/ 6/	2.3	3.0	2.1
Spain 7/	1.9	2.3	…
Turkey 8/	0.0	0.8	0.3
United Kingdom	0.2	1.5	0.0
United States 9/	1.1	2.0	1.8
Total (PPP-weighted average)	0.6	2.0	1.5

Source: IMF staff estimates.
1/ Figures reflect the budgetary cost of crisis-related discretionary measures in each year compared to 2007 (baseline), based on measures announced through mid-May 2009. They do not include (i) "below-the-line" operations that involve acquisition of assets (including financial sector support) or (ii) measures that were already planned for. Some figures represent staff's preliminary analysis.
2/ "..." is used for countries for which no information is available on the size of their fiscal packages.
3/ Fiscal year basis.
4/ Includes only on-budget measures. Additional off-budget measures amount to 0.8 percent of GDP in 2008/09 and 1.6 percent of GDP in 2009/10 (including 0.4 percent of GDP for bank recapitalization).
5/ Based on staff preliminary analysis, financial sector-related measures of 0.1 percent of GDP in 2008, 0.5 percent of GDP in 2009, and 0.2 percent of GDP in 2010 are excluded. These measures cover both subsidies to and capital injections in public financial institutions.

not have an impact on the fiscal balance; and (2) the fact that in some countries part of the announced stimulus included measures that were already planned for.

6/ Based on staff estimates of the cyclically-adjusted general government balance. Additional stimulus in the form of infrastructure investment is being provided by the broader public sector, so that the total fiscal stimulus (as measured by the public sector borrowing requirement) is 4.2 percent of GDP in 2008, 6.2 percent in 2009, and 4.9 percent in 2010.
7/ Budget liquidity impact basis.
8/ Includes only discretionary measures taken from September 2008 through March 2009. Another stimulus package was announced in early June, involving investment incentives, training, and short-term public sector employment. The impact of the package has not yet been quantified.
9/ Excludes cost of financial system support measures (estimated at 1.4 percent of GDP in 2008, 4.5 percent of GDP in 2009 and 0.9 percent of GDP in 2010).

- *Self-reversing*. These have a temporary effect on both deficit and debt. Few measures are truly self-reversing (e.g., bringing forward some investment spending). But some *sets of measures*, as a whole, could have no long-term impact. For example, in the United Kingdom, the upfront value-added tax (VAT) cut will be offset by revenue-increasing measures starting in 2010.

17.   Almost two-thirds of the fiscal stimulus has so far been represented by expenditure measures with particular emphasis on increased spending for infrastructure (see Figure 3.1 and Table 3.5).

- Seventeen of the G-20 countries have announced plans to increase spending on infrastructure, many on transportation networks (Australia, Canada, France, Germany, Korea, and Saudi Arabia among others)—either in the form of direct central government spending, or through capital transfers to local authorities.

- Several countries have announced plans to protect vulnerable groups, including by strengthening unemployment benefits (Canada, Russia, the United Kingdom, the United States, and Turkey), cash transfers to the poor (Korea) or support to children (Australia and Germany) or pensioners (Australia and Canada).

- A few G-20 countries are also stepping up support for small and medium-sized enterprises (SMEs; e.g., Korea) and strategic or vulnerable sectors, such as forestry and construction (in Canada and in Germany, for energy efficient buildings and repairs and renovations) and defense and agriculture (Russia).

- Finally, a few countries are using stimulus measures to address longer-term policy challenges, such as improving the quality of health and education (Australia, China, and Saudi Arabia) or introducing incentives for environmentally friendly technologies (China, Germany, and the United Kingdom).

Figure 3.1. Composition of Discretionary Fiscal Measures in G-20 Countries, 2008–10

(Bubble size = percent of GDP, PPP-weighted average) 1/
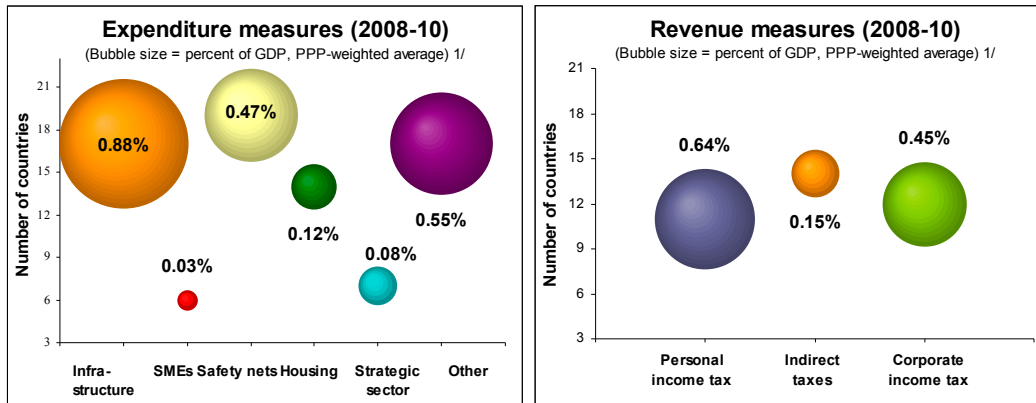
Source: IMF staff estimates.
1/ PPP weights include all countries.

18.   Revenue measures—in terms of relative magnitude—have targeted primarily households, through cuts in personal income and indirect taxes.

- Fourteen G-20 countries have announced sizable cuts in personal income taxes (including Brazil, Canada, Germany, Indonesia, Japan, Spain, the United Kingdom, and the United States); while in six, indirect tax cuts have been announced.

- Cuts in the CIT have also been frequent but not as large; these include outright reduction in the CIT rate (Canada, Korea, and Russia), investment incentives (France and Korea), or more favorable depreciation schedules (Germany, Russia, and the United States).

Table 3.5. G-20 Stimulus Measures, 2008–10 [1]

Measure	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Spain	Turkey	UK	US
Expenditure																				
Infrastructure investment	T	T		T	T	T	T	T	T	T	T	T	T		T	T	T		S	T
Support to SMEs and/or farmers				T			T				T	T		T				T		
Safety nets	T	T	T	T	T	T	P	T	T	T	T	T	T	T			T	T	T	T
Housing/construction support		T	T	T	T	T	P	T		T	T	T		T			T	T	T	
Strategic industries support				T	T		T			T				T			T	T		
Increase in public wage bill																				
Other		T	T	T	T	T	T	T	T	T	T	T	T	T			T	T	T	T
Revenue																				
CIT/depreciation/incentives 2/		T	P	P			P		P	P	P	P		P				P		P
PIT/exemptions/deductions 3/	P		T	P		T	P		P	T	P	P		P			P	P	P	P
Indirect tax reductions/exemptions 4/	P	T		T	P	P	P	T	P	T		T					S	T	S	
Other		T								P	P	T						P	P	

Sources: Country authorities; and IMF staff estimates.
Note: T = temporary measures (with explicit sunset provisions or time-bound spending); S = self-reversing measures (measures whose costs are recouped by compensatory measures in future years); and P = permanent measures (with recurrent fiscal costs).
1/ Measures announced through early May 2009.
2/ Some of the corporate income tax (CIT) reductions in Germany, Italy, and Korea are temporary.

3/ Some of the personal income tax (PIT) reductions in Indonesia are temporary. For Spain, some are temporary and some are self-reversing.
4/ The reduction in the value-added tax in the United Kingdom is a temporary measure, but lost revenue will be replaced by restricting personal income tax allowance and increasing income tax for high earners in 2010–11. For India and Italy, indirect tax reductions include a mix of permanent and temporary measures.

IV. FISCAL IMPLICATIONS OF THE FINANCIAL CRISIS: EFFECTS THROUGH THE FUNDED COMPONENT OF THE PENSION SYSTEM

19.   A key fiscal risk presented by the crisis is its effect on funded components of the pension system, both public and private. The level of funding for pensions has increased rapidly in recent years as a share of GDP, reflecting both earnings on existing retirement saving and net deposits. Some of the countries most affected by the recent stock market decline are those where private pensions play an important role in mandatory pension provision. It is useful to assess at the outset the overall loss suffered by funded pension schemes.

Figure 4.1. Pension Fund Assets in OECD Countries
(End-year 1995 to end-year 2007)
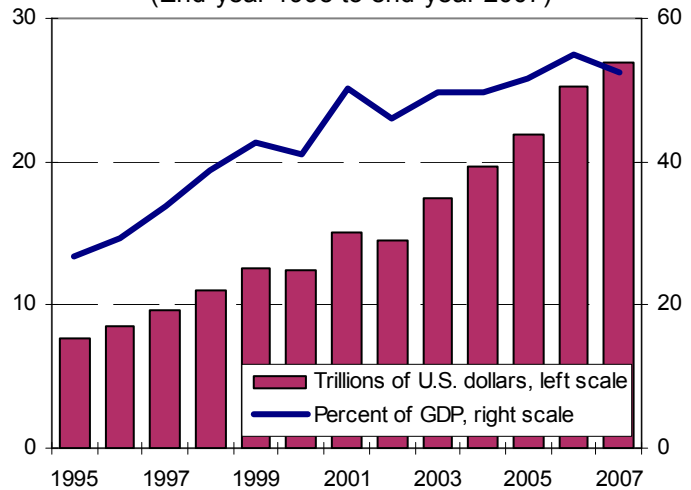
Sources: Organization for Economic Cooperation and Development (OECD); and IMF staff estimates.
Note: Totals include both public and private plans.

A. Losses of Funded Pension Schemes

20.   Public and private pension fund losses are concentrated in a limited number of countries. These are countries that, with more mature funded pension schemes, have higher shares of equities and mutual funds in pension fund portfolios and higher shares of pension saving in relation to GDP:[14] 16 of the 46 countries for which data are available have pension fund investments in equities and mutual funds greater than 10 percent of GDP (striped circles in Figure 4.2). Countries more exposed include Australia, the United States, Canada, Iceland, the Netherlands, Switzerland, Denmark, and the United Kingdom. Among emerging economies, South Africa, Chile, and Brazil are more exposed. Estimated losses in the United States and the United Kingdom during 2008 are, respectively, 22 percent and 31 percent of GDP.

---

[14] Mutual funds in these countries are also heavily weighted toward equities. Investment by funded pension funds in real estate is small (below 3 percent of total assets, on average, for member countries of the Organization for Economic Cooperation and Development (OECD)).

Figure 4.2. Pension Plan Assets by Economy, End-2007
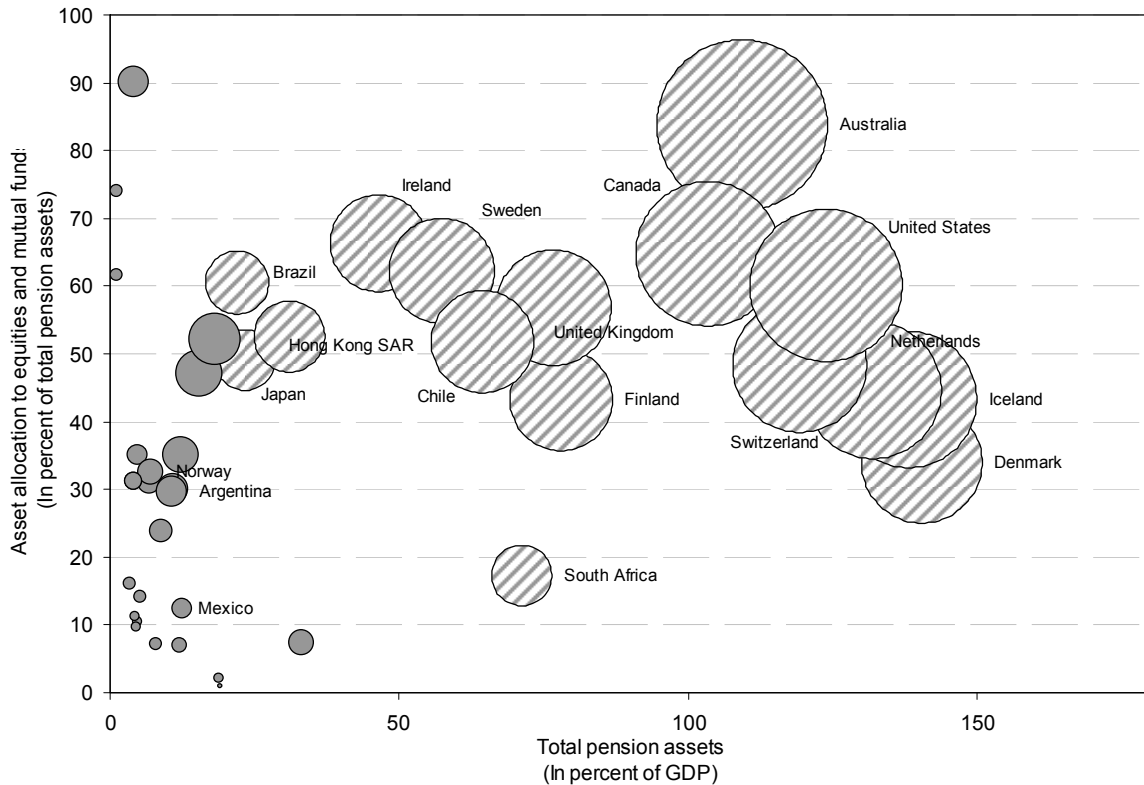
Sources: OECD Global Pension Database; and IMF staff estimates.
Note: Size of circles represents pension funds' equity and mutual fund assets as a percent of GDP. Circles with stripes denote countries where this value exceeds 10 percent of GDP. Data do not include reserve funds of social security systems or funds whose assets may be used for purposes other than financing the social security system, such as in Norway.

21.   A separate risk is pension fund exposure to potentially "toxic" assets, such as mortgage-backed securities and credit default swaps. The OECD has estimated average holdings of 3 percent of such assets in the portfolios of pension funds of member countries (OECD, 2008). Structured products—the class of assets within which toxic assets fall—represent about 8 percent of pension fund assets worldwide. The risk is concentrated in the United States, Sweden, and Japan.

B. Risks for Fiscal Accounts

22.   The risks for governments are difficult to quantify exactly, but are significant. They stem from (1) direct effects arising from investments by government pension funds in assets affected by the crisis; (2) explicit guarantees provided by governments to funded schemes; and (3) pressures to make up for losses suffered by pensioners covered by private pension plans. Whether these risks will materialize depends on the timing and the extent of the recovery in asset prices.

23.   Direct effects relate to

- Pension plans sponsored by governments for their employees, which are significant in some countries. For example, as of end-2007, over $4 trillion of assets were held by federal, state, and local government defined-benefit pension plans in the United States (more than one-fifth of total U.S. pension assets). The value of these assets had fallen by roughly $1 trillion by October 2008 (Munnell, Aubry, and Muldoon, 2008). Three-quarters of these assets are held by state and local pension plans, which are typically subject to stringent funding requirements. The drop in equity prices will trigger requirements to close the resulting funding gap over the next five years (on a mark-to-market basis, the estimated aggregate funding ratio fell to 65 percent in October 2008). During 2000–02, when the equity market experienced a similarly sharp decline, contributions subsequently increased by 45 percent over a two-year period. Although contributions are presently shared between the employer and employees, recent court rulings in some states and restrictions on modifying accrued pension benefits imply that the burden of making up the current shortfall is likely to fall primarily on employers and, indirectly, on taxpayers.

- National social insurance pension plans—these also hold significant assets affected by the crisis. In some countries (e.g., the United States), these assets are specialized and largely impervious to financial market movements. In other countries (e.g., Japan, Canada, the Netherlands, and New Zealand), national pension systems hold a substantial quantity of marketable securities, including equities. However, national pension systems are not typically fully funded, and the impact may be postponed or mitigated by recovery.

24.   Explicit guarantees have been provided in two forms:

- Insurance against the loss of assets in private, defined-benefit plans due to employer insolvency (Canada (province of Ontario), Germany, Japan, Sweden, Switzerland, the United Kingdom, and the United States). Maximum benefits differ across countries, with the United States, the United Kingdom, Sweden, and Germany offering relatively high amounts. The crisis has yet to lead to widespread claims on these schemes; however, it is possible that the shock may overwhelm those already in deficit and require government intervention.[15] In the United States, the federal Pension Benefit Guaranty Corporation (PBGC), represents a sizable potential liability to the federal government, although legislation would be necessary for this liability to be significant. In the United Kingdom, the Pension Protection Fund (PPF) is not explicitly backed by taxpayers, but should the balance on these schemes deteriorate further, pressures for government financial support may arise. Recent estimates suggest that potential costs to the government arising from

---

[15] Partly because of low pricing of premiums, weak funding rules, and limited adjustment for plan-sponsor risk, guarantee schemes in the United States, the United Kingdom, and Ontario, Canada were in deficit in 2008.

deficits of the guarantee funds as well as from contingent liabilities of probable employer bankruptcies would amount to 0.4 percent of GDP in the United States and 0.1 percent of GDP in the United Kingdom (PBGC, 2008; and PPF, 2008). These costs will likely increase if economic conditions deteriorate further.

- Guarantees of minimum benefits or rates of return for defined-contribution pension plans (France, Spain, Switzerland, the United Kingdom, and many Eastern European countries) (Whitehouse, 2007).

25.   Arguably the largest fiscal risk is that the government may be forced to step in to support participants covered by private pension plans severely hit by the crisis.[16] This could happen for:

- "Unprotected" defined-contribution plans (roughly three-quarters of defined-contribution assets). Younger workers may wait for market recovery. Older workers are likely to suffer more severe cuts in retirement income, particularly those who have to purchase annuities. The depressed value in their accounts, combined with low interest rates, will make the purchase of annuities less favorable.

- Defined-benefit plans run by private employers where benefits can be cut under certain conditions. Funding rules determine the extent and timing of increases in contributions and the degree to which benefits can be reduced.[17]

26.   To some extent, the potential call for government support will be influenced by the distributional incidence of the losses of participants in these plans. Among people over age 65 in the United States, for instance, funded pensions and annuities account for 21 percent of income of the richest income quintile, but just 3 percent for the poorest (Burtless, 2008). In the United Kingdom, occupational pensions comprise over 30 percent of income for the richest quintile of pensioners and only 1 percent for the poorest. In a few countries, however, funded plans cover a larger share of the retirement income of lower-income pensioners. For instance, all participants in the Chilean pension system invest in individual accounts, although the government does guarantee a minimum pension level.

---

[16] In the United States, pension plans of S&P 1500 companies lost nearly half a trillion dollars in 2008, nearly 80 percent of which occurred in the last quarter (Mercer, 2009).

[17] To avert windup of plans, there are increasing demands for temporarily amending funding rules. Several countries are considering regulatory adjustments, for example, to adjust the time within which pension plans have to restore adequate funding levels. For example, in December 2008, the U.S. Congress rolled back part of the Pension Protection Act of 2006, which had increased the funding requirements of underfunded plans. Concerns remain, however, that such a relaxation would weaken the long-term health of the plans, affecting members and the government in the future.

V.   THE OUTLOOK FOR PUBLIC FINANCES IN LIGHT OF THE CRISIS

27.   This section assesses the short- and medium-term outlook for public finances, bringing together the themes discussed in earlier sections. There is, of course, considerable uncertainty around this outlook, and outcomes could be significantly worse than the baseline figures reported below in case of further distress and weaker output growth.[18]

A.   Short-Term Outlook

28.   Fiscal balances will be severely affected by the crisis in the short run. For G-20 advanced economies, fiscal balances are projected to worsen, on average, by 8 percentage points of GDP in 2009 relative to 2007 (see Table 5.1), thus reaching 9¾ percent of GDP in 2009 (Figure 5.1). The fiscal balances of G-20 emerging economies deteriorate less—given the lower impact on growth, automatic stabilizers and fiscal stimulus—but still significantly (reversing the improvement achieved since 2003). For the advanced countries, half of the deterioration is due to fiscal stimulus and financial sector support, while for emerging economies, a relatively large component is due to declining commodity and asset prices (Figure 5.2).

Table 5.1. G-20 Countries: Change in Fiscal Balances and Government Debt[1/]
(In percent of GDP, difference with respect to previous period)

	2008 (A)	2009 (B)	2008-09 (A+B)
Fiscal Balance			
Advanced G-20 countries	-2.5	-5.5	-8.0
Emerging market G-20 countries	-0.6	-4.5	-5.1
G-20 countries	-1.8	-5.1	-6.9
Public Debt			
Advanced G-20 countries	5.8	14.2	20.0
Emerging market G-20 countries	-1.3	2.3	0.9
G-20 countries	3.1	9.8	12.9

Source: IMF, *World Economic Outlook*, April 2009.
1/ General government if available, otherwise most comprehensive fiscal aggregate reported in the *WEO*. Table reports PPP GDP-weighted averages.

29.   The increase in government debt ratios will be even more sizable (Figure 5.1). The debt-to-GDP ratio of advanced countries is expected to rise by 20 percentage points over 2008–09, the most pronounced upturn in the last few decades (Figure 5.3). The one-year increase in government debt in 2009 is three times as large as that experienced during the

---

[18] Baseline data are from the IMF's April 2009 *World Economic Outlook.*

1993 recession. More than a quarter of this increase is due to financial sector support packages. The debt ratio for the average of the emerging economies also shows a sizable increase in 2009, the first since 2002.

Figure 5.1. G-20 Countries: Outlook for Public Finances[1/]
(In percent of GDP)

Sources: IMF, *World Economic Outlook*, April 2009 .
1/ General government if available, otherwise most comprehensive data reported in the *WEO*.
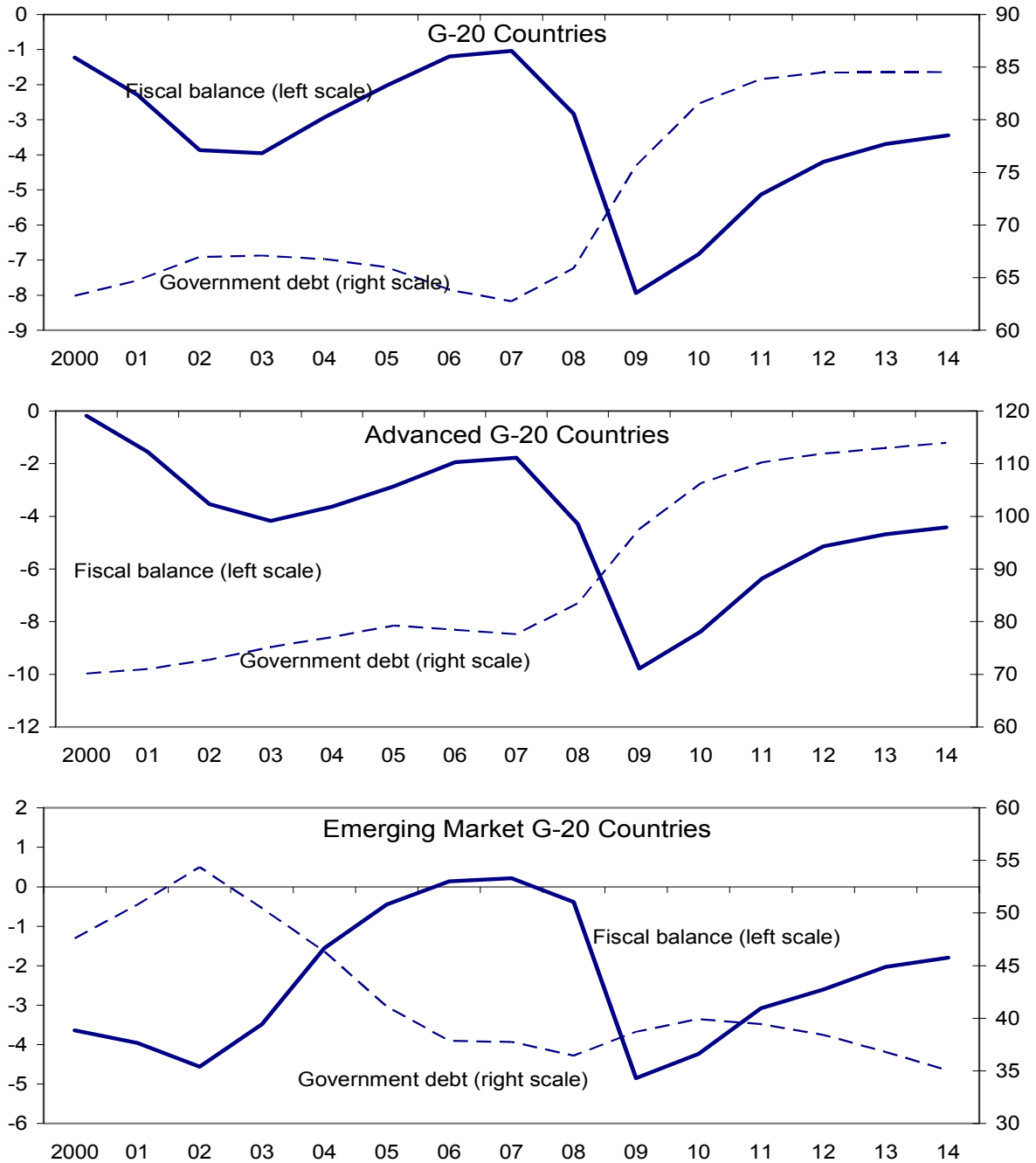Figure reports PPP GDP-weighted averages.

Figure 5.2. Impact of the Crisis on Public Finances: Contributing Factors [1/]

(In percent of GDP)

Fiscal Balance

Financial-sector support

Fiscal stimulus

Automatic stabilizers

Asset/commodity prices/interest

Advanced G-20 Countries   Emerging Market G-20 Countries

Government Debt

Other

Asset/commodity prices/interest

Automatic stabilizers

Fiscal stimulus

Financial-sector support

Advanced G-20 Countries   Emerging Market G-20 Countries
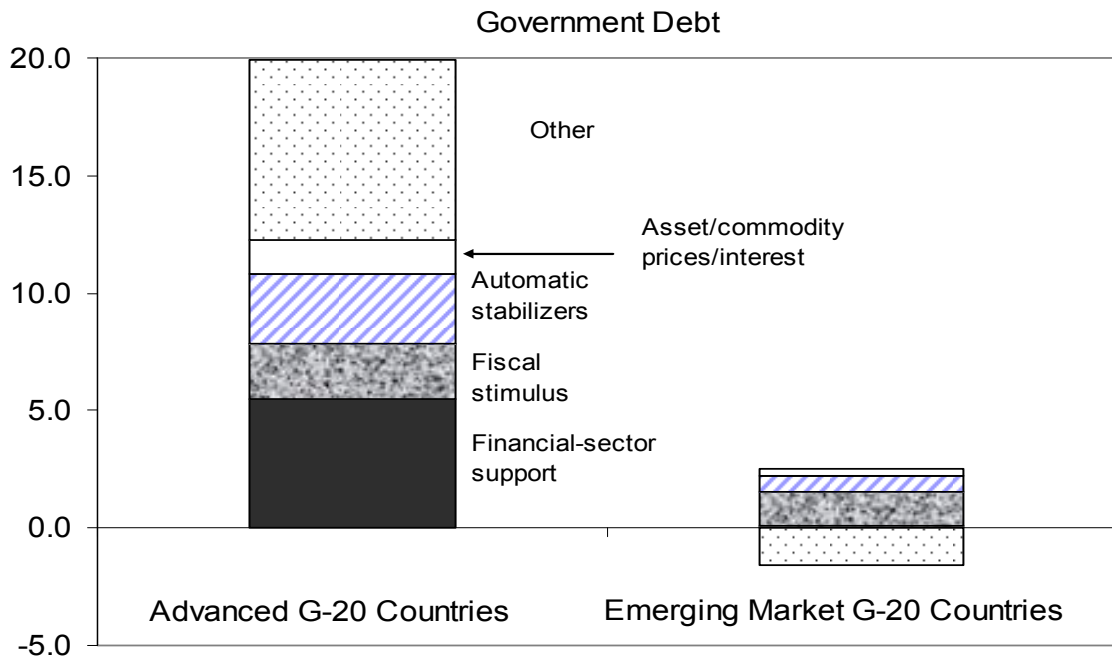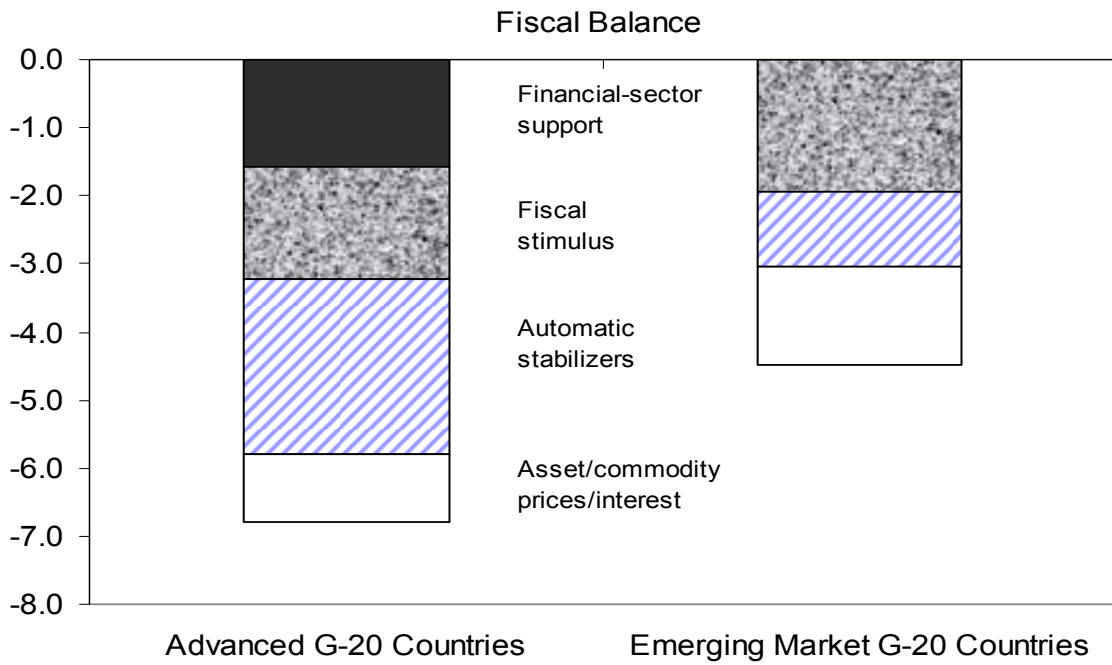
Source: IMF staff estimates.
1/ Figure reports contributions to fiscal balance-to-GDP ratio in 2009, and
debt-to-GDP ratio at end-2009 relative to 2007 level based on PPP GDP-weighted
averages. The category "other" in this figure refers to the impact on debt of a variety of additional factors
including valuation changes, changes in GDP, and privatization receipts.

Figure 5.3. G-20 Advanced Economies: Evolution of Government Debt [1/]
(In percent of GDP)
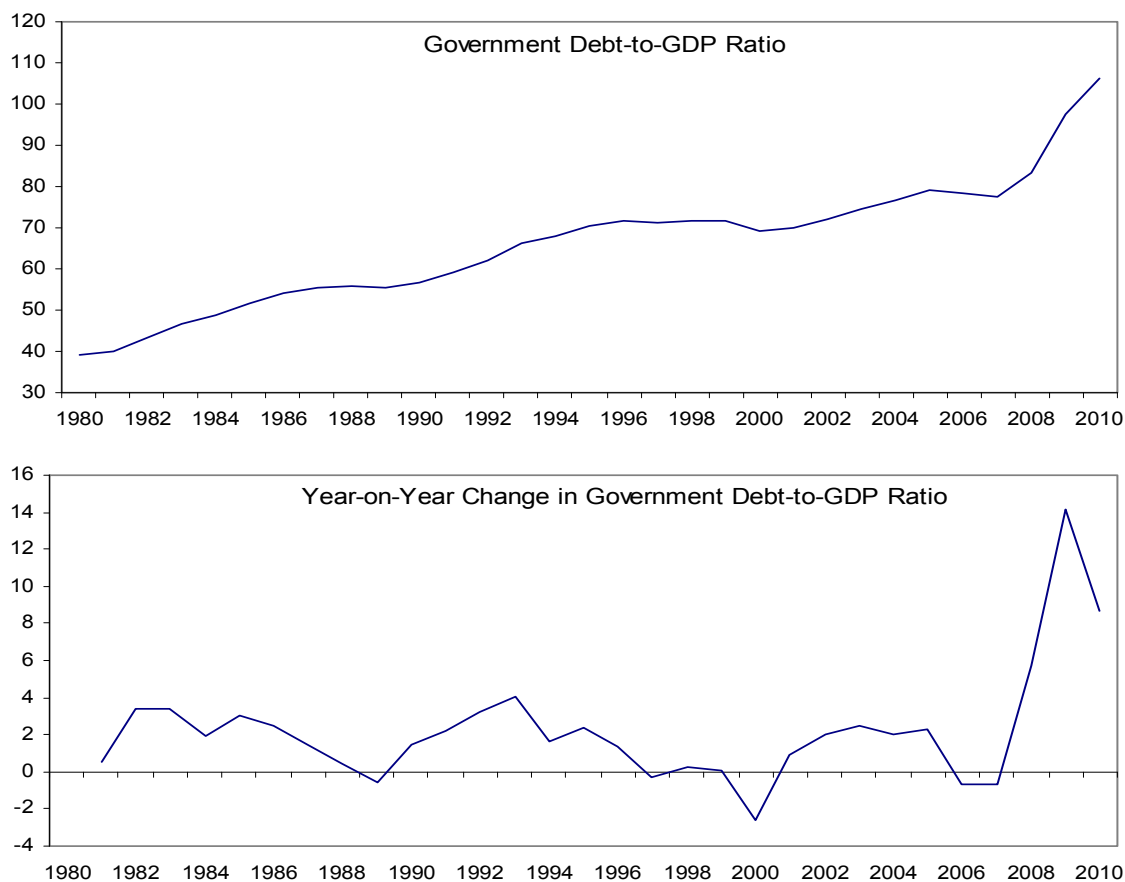
Source: IMF, *World Economic Outlook*, April 2009.
1/ Averages based on PPP GDP weights.

B. The Medium-Term Outlook and Risk Assessment

30.   In the medium term, fiscal balances are expected to improve, while remaining weaker than before the crisis. Beyond 2009, activity is expected to recover, reflecting supportive macroeconomic and financial sector policies. Fiscal balances are projected to improve (Figure 5.1 and Table 5.2) as some of the stimulus measures are temporary and as the effects of the automatic stabilizers are gradually reversed. Nevertheless, unless tightening measures are introduced later, fiscal balances for advanced economies would remain weaker in the medium term than in 2007. Moreover, also for advanced economies, the effect on debt ratios would be long lasting: the debt-to-GDP ratio in 2014 is projected to be 36 percentage points above the 2007 level (Table 5.2).[19] For emerging economies, the projected medium-term debt path is more benign owing to higher growth. Still, debt ratios in 2010 will be above their 2007 levels, and the declining trend will not resume until 2011.

---

[19] These projections assume different recovery rates for the financial support operations as discussed in Section II, depending on the nature of the support.

Table 5.2. Public Finances [1, 2]

(In percent of GDP)

	Fiscal Balance					
Country	2006	2007	2008	2009	2010	2014
Argentina	-1.1	-2.0	-0.5	-3.3	-2.8	-1.7
Australia	1.9	1.5	-0.7	-4.3	-5.3	-2.0
Brazil	-2.9	-2.2	-1.5	-1.9	-0.8	-0.6
Canada	1.3	1.4	0.4	-3.4	-3.6	0.4
China	-0.7	0.9	-0.3	-3.6	-3.6	-0.2
France	-2.4	-2.7	-3.4	-6.2	-6.5	-4.6
Germany	-1.5	-0.5	-0.1	-4.7	-6.1	-1.4
India	-5.7	-5.2	-8.4	-10.2	-8.7	-4.7
Indonesia	0.2	-1.2	0.0	-2.5	-2.2	-1.7
Italy	-3.3	-1.5	-2.7	-5.4	-5.9	-4.5
Japan	-4.0	-2.5	-5.6	-9.9	-9.8	-7.1
Korea	1.7	3.5	1.1	-3.2	-4.7	0.0
Mexico	-0.6	-1.4	-1.8	-3.6	-3.7	-2.7
Russia	8.3	6.8	4.3	-6.2	-5.0	-4.4
Saudi Arabia	24.6	15.8	35.5	-3.8	-1.4	5.8
South Africa	0.8	1.2	-0.4	-2.9	-3.2	-2.3
Spain	2.0	2.2	-3.8	-7.5	-7.5	-4.0
Turkey	-0.7	-2.1	-2.7	-5.9	-5.1	-3.6
United Kingdom	-2.6	-2.6	-5.4	-9.8	-10.9	-6.4
United States	-2.2	-2.9	-6.1	-13.6	-9.7	-4.7
G-20	-1.2	-1.0	-2.8	-8.0	-6.9	-3.4
Advanced G-20 Countries	-1.9	-1.8	-4.3	-9.8	-8.4	-4.4
Emerging Market G-20 Countries	0.1	0.2	-0.4	-4.8	-4.2	-1.8

	Government Debt					
Country	2006	2007	2008	2009	2010	2014
Argentina	76.5	67.9	57.7	50.4	50.6	48.5
Australia	9.6	8.9	8.9	11.3	13.9	16.6
Brazil	63.7	67.7	64.5	65.4	64.0	54.1
Canada	67.9	64.2	63.6	75.4	77.2	66.2
China	16.5	20.2	17.7	19.8	21.6	17.9
France	63.6	63.9	67.3	74.9	80.3	89.7
Germany	66.0	63.6	67.2	79.4	86.6	91.0
India	82.2	80.4	81.9	86.8	88.9	76.8
Indonesia	39.0	35.1	32.3	32.9	32.8	31.0
Italy	106.5	103.5	105.8	115.3	121.1	129.4
Japan	191.3	187.7	196.3	217.2	227.4	234.2
Korea	34.1	33.0	33.6	40.0	46.3	51.8
Mexico	38.3	38.2	43.3	46.9	49.3	44.0
Russia	9.1	7.3	5.8	6.9	7.0	7.4
Saudi Arabia	27.3	18.7	15.8	15.6	13.1	7.9
South Africa	33.0	28.5	27.3	29.1	30.8	29.9
Spain	39.6	36.2	39.4	51.8	59.2	69.2
Turkey 3/	46.1	39.4	39.5	47.2	50.4	53.7
United Kingdom	43.3	44.1	51.9	62.7	72.7	87.8
United States	61.9	63.1	70.5	87.0	97.5	106.7
G-20 countries	63.1	62.8	65.9	75.7	81.6	84.6
Advanced G-20 countries	78.3	77.6	83.4	97.7	106.4	114.1
Emerging market G-20 countries	37.6	37.8	36.4	38.7	39.9	35.0

Source: IMF, *World Economic Outlook*, April 2009.

1/ The fiscal balance corresponds to general government if available, otherwise most comprehensive fiscal balance reported in the *WEO*.

2/ Averages based on PPP GDP weights.

3/ Fiscal projections reflect staff's estimates based on the authorities' policy intentions as stated in the EU Pre-Accession Program document.

31.   It is worth assessing how these projections might change in the event of downside risks materializing. Two scenarios are explored:

- *Lower growth in 2009–11.* If growth is 1 percent a year below the baseline during 2009–2011, fiscal deficits would rise, on average, by 1 percent of GDP, and the debt to GDP ratio would increase by an additional 6 percentage points by 2011 (Figure 5.4). This deterioration would mainly reflect the impact of automatic stabilizers. Fiscal balances in emerging economies are less adversely affected, mainly because of their smaller automatic stabilizers (but could be affected more significantly through further declines in commodity prices).

Figure 5.4. Lower Growth Scenario [1]
(In percent of GDP)
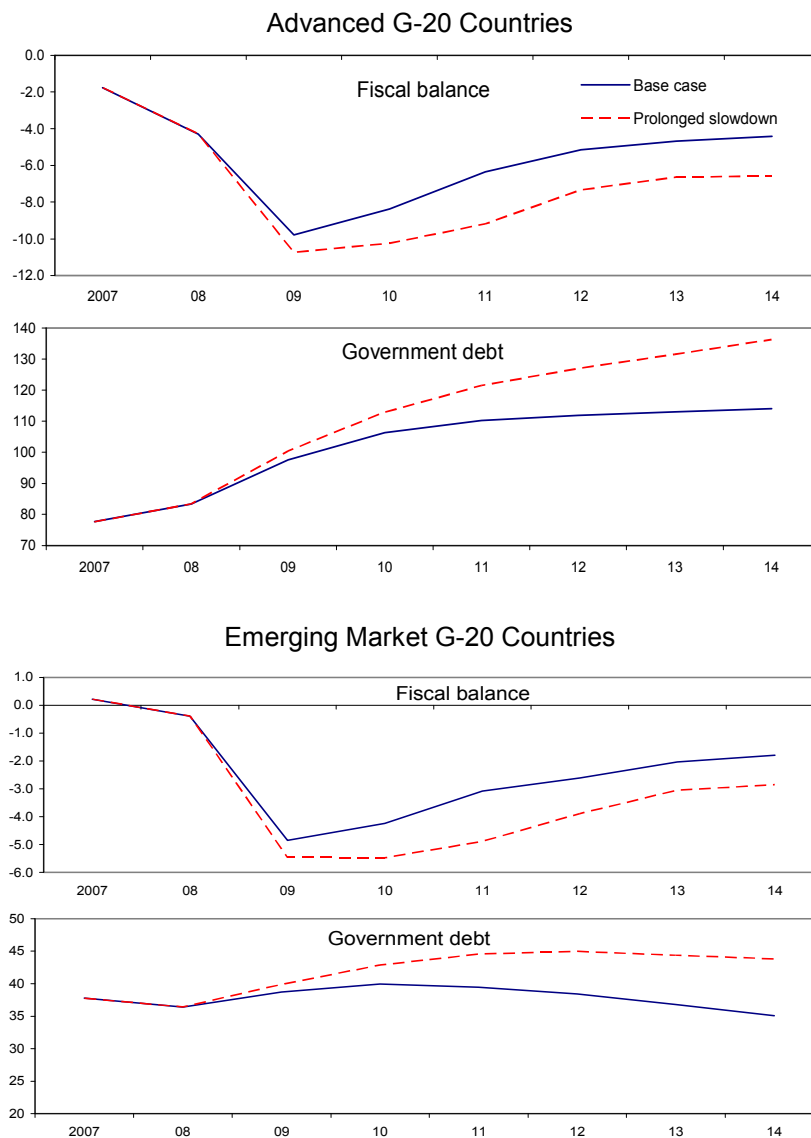Advanced G-20 Countries

Emerging Market G-20 Countries
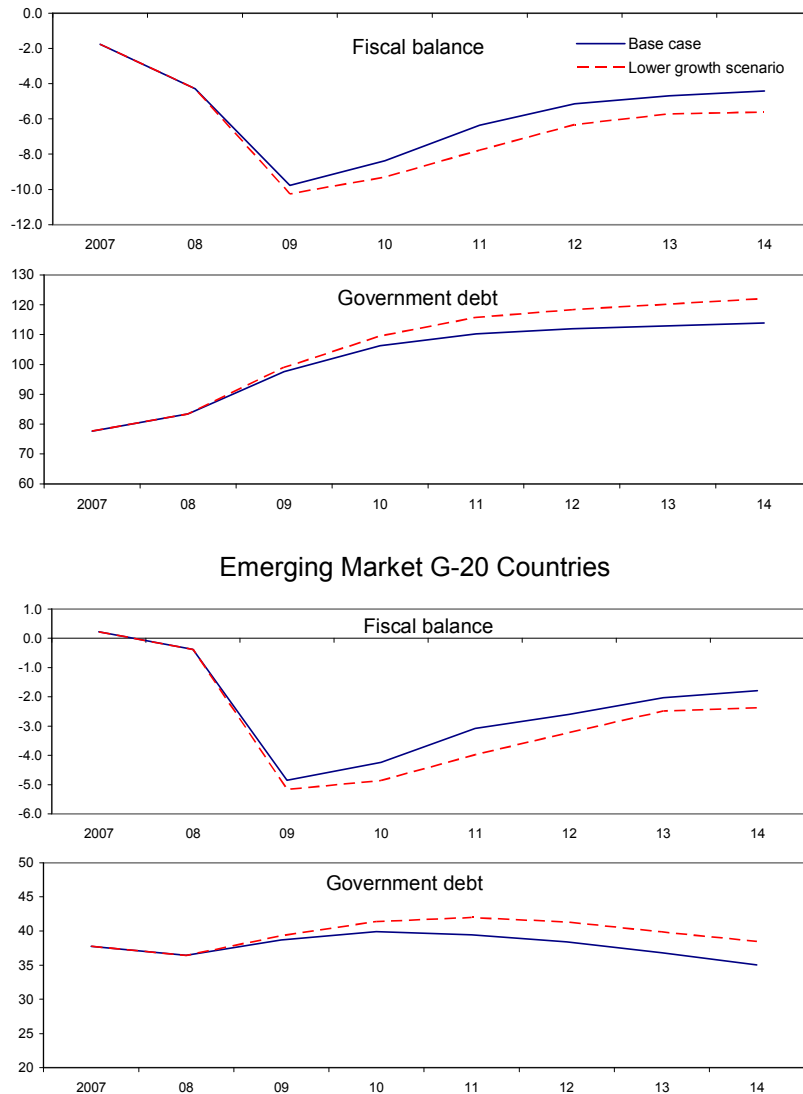
Source: IMF staff estimates.
1/ Figure reports results of a 1 percentage point decline in growth relative to baseline during 2009–11.

- *A prolonged stagnation.* What would be the effect of a protracted deflationary slump, akin to the experience of Japan in the 1990s? From 1991 to 2007, GDP annual growth in Japan averaged 1.6 percent, a drop of 2.3 percentage points compared with the 1970–90 average. In light of that experience, a decline in growth (relative to the baseline) of 2 percentage points during 2009–2013—was investigated. In this scenario, for the advanced countries, the fiscal balances would deteriorate, on average by 2 percentage points of GDP relative to the baseline, with debt ratios rising by 18 percentage points by 2013 (Figure 5.5). The deterioration is also notable for emerging economies.

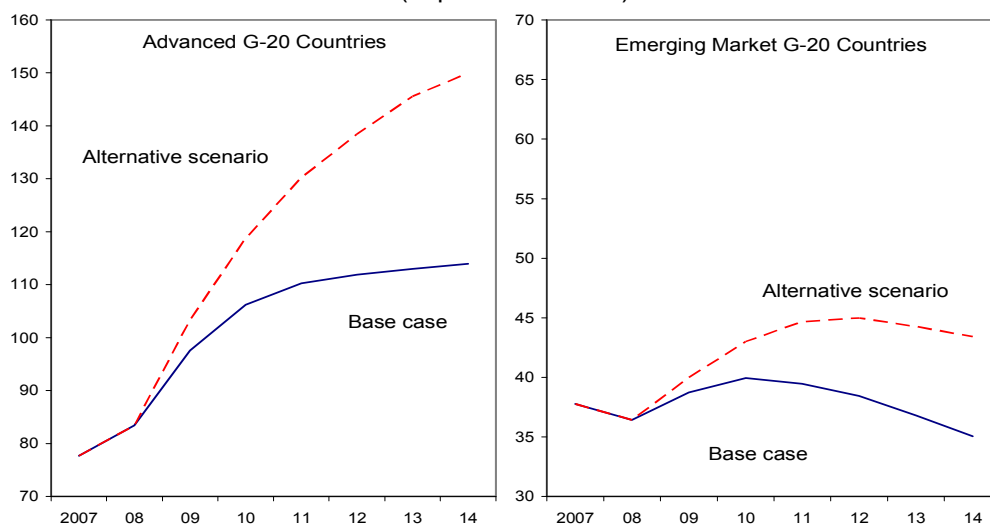## Figure 5.5. Prolonged Slowdown Scenario [1/]
(In percent of GDP)

Source: IMF staff estimates.
1/ Figure reports results of a 2 percentage point decline in growth relative to baseline starting in 2009. Averages based on PPP GDP weights.

32.   There are other significant downside risks.

- In view of the considerable margin of uncertainty, the baseline estimates do not take into account the potentially large contingent liabilities of the government arising from explicit and implicit guarantees and central bank support operations. These additional costs could materialize in case of further financial instability, and further raise government debt in advanced countries.

- Government intervention to support financial markets has so far been limited in emerging market countries. However, the ramifications of the crisis in these countries may not have yet been fully felt, and stronger government support may be needed.

- The recovery rates assumed in the baseline may not materialize. Recovery rates in the aftermath of this global crisis could be particularly low, for example, because of the dearth of external buyers and high risk aversion.

- The baseline does not include the possible costs arising from the support that the public sector may be called to provide to fully-funded pension schemes. As discussed in Section IV, these costs could be significant.

- It is important to note that these additional risks are not independent from those arising from the shocks discussed earlier. Indeed, they are more likely to arise in the context of weaker output growth. They could also be accompanied by heightened concerns about fiscal solvency, leading to higher interest rates. All these risks could materialize at the same time, with a major deterioration of the fiscal outlook with respect to an already weak baseline (Figure 5.6), and at a time when supportive fiscal action may, in principle, still be needed.

Figure 5.6. Government Debt in Case of Prolonged Slowdown, Higher Interest Rate, and Contingent Liability Shock [1]
(In percent of GDP)

Source: IMF staff estimates. 1/ Figure reports results of a 2 percentage point decline in growth, and a 200 basis point increase in real interest rates relative to the baseline starting in 2009; as well as a contingent liability shock corresponding to expected cost of guarantees. Averages based on PPP GDP weights.

VI. THE RISK FOR FISCAL SOLVENCY AND THE APPROPRIATE POLICY RESPONSE

33.   The deterioration of the fiscal outlook highlighted in Section V raises issues of fiscal solvency, and could eventually trigger adverse market reactions. Economic agents' confidence in governments' solvency has been a source of stability and has, so far, helped to avoid a meltdown of financial markets. But doubts about fiscal solvency—the risk that governments find it more convenient to repudiate their debt or to inflate it away—could lead to an increase in the cost of borrowing. In turn, higher interest rates (and exchange rate depreciations, particularly in countries with significant borrowing in foreign currency, like most emerging economies) could further add to government debts—in some cases, resulting in "snowballing" debt dynamics. This scenario would be deleterious for global growth.

34.   Thus far, government debt market reaction to the weaker fiscal outlook has been relatively muted, but not all signs are reassuring. Long-term nominal interest rates have declined in the main advanced economies since the beginning of the crisis, albeit in recent months this trend has reversed in several countries (Figure 6.1). However:

- Real interest rates are broadly the same as in early 2007 (where these can be reliably observed from long-term inflation-indexed bonds traded on liquid markets, for example, in the United States and the United Kingdom),[20] although one might have expected a decline as a result of cyclical developments.

- For some highly indebted advanced economies (e.g., Greece and Italy), spreads have risen significantly, although government bond yields in those countries remain broadly similar to their precrisis levels (Figure 6.1).[21]

- There has been an uptick in credit default swap (CDS) spreads for some of the major advanced countries, including the United States, though the implied perceived default risk remains relatively small.[22]

---

[20] This trend is also confirmed for other advanced countries using consensus inflation forecasts to estimate real bond yields.

[21] Spreads also rose to above 200 basis points for Ireland (Figure 6.1), where government guarantees provided to financial sector obligations amount to more than 250 percent of GDP.

[22] CDS spreads for the United States rose from 8 basis points in June 2008 to almost 100 basis points in late February 2009 before moderating to around 50 basis points by mid-April 2009. Similarly, CDS spreads for Austria, Greece, Iceland, Ireland, Italy, Portugal, and Spain had all risen more than 150 basis points (by end-February 2009, compared with their June 2008 levels), though in some cases they declined somewhat by mid-April 2009.

Figure 6.1. Long-Term Government Bond Yields and Spreads, 2007–09
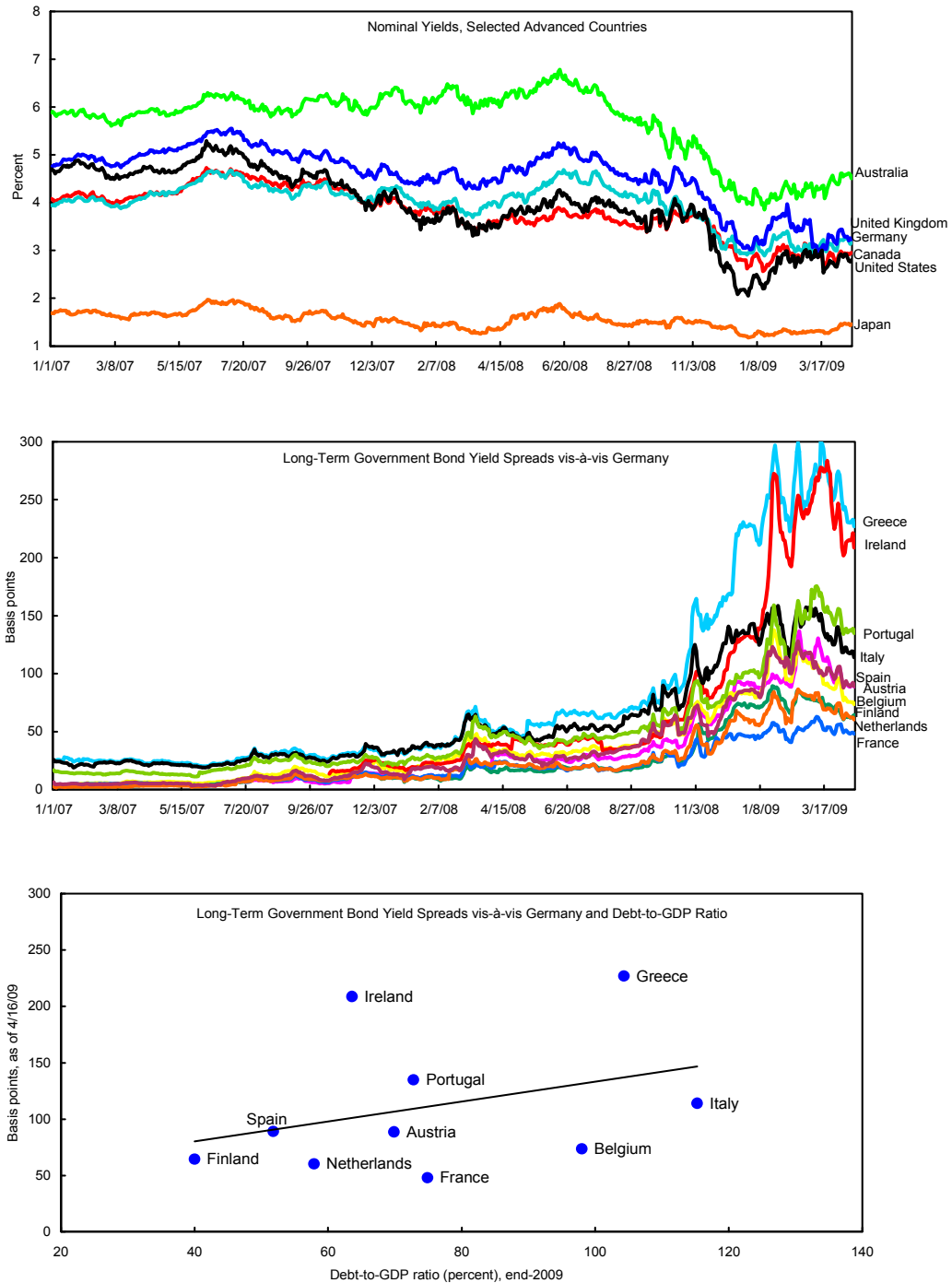
Sources: IMF, World Economic Outlook database; Bloomberg; and IMF staff calculations.
Note: 10-year government bonds. Nominal yields in the top panel; spreads vis-à-vis Germany in the middle and bottom panels. In the bottom panel, the slope coefficient is 1.3 (i.e., a 10 percentage point increase in the debt-to-GDP ratio is associated with a 13 basis point increase in spreads).

- Sovereign bond spreads for emerging economies have risen sharply—reflecting increased risk aversion, and far in excess of what would seem warranted on the basis of domestic fundamentals. The EMBI Global composite spread rose to 750 basis points in December 2008 from 170 basis points in the beginning of 2007, and primary bond issuance slowed sharply—issuance by all emerging markets in August–December 2008 was half of its level during the same period in 2007.

35.   More generally, recent history suggests that an abrupt market reaction to weakening fundamentals is possible. Thus, it is necessary to look closely at the risks arising from the deterioration of the fiscal outlook, and to draw implications for fiscal policy in the medium term.

A. The Level of Government Debt

36.   The rise in government debt levels caused by the crisis does not, in itself, have major adverse implications for solvency.

- Fiscal solvency requires that government debt is not on an explosive path (as this would violate the government's intertemporal budget constraint—that is, the no-Ponzi-game condition that the government does not borrow just to pay interest on debt).[23] Following the simple arithmetic of changes in the debt-to-GDP ratio (Box 6.1), a one-off rise in the government debt ratio only requires a small increase in the primary balance to ensure solvency: for example, a rise in the government debt-to-GDP ratio by 10 percentage points requires an improvement in the primary balance of less than 0.1 percentage point of GDP to stabilize the debt ratio (assuming an interest rate/growth differential of 1 percentage point, in line with the average of the past few decades).

- The rise in government debt observed so far in advanced countries, while sizable, is not exceptional from a long-term perspective. Historically, large debt accumulations (bringing the debt to 100–200 percent of GDP) have resulted from war-related spending, prolonged recessions, or protracted fiscal problems (Figure 6.2).

- Highly disruptive ways of reducing debt/GDP ratios have occurred in some instances, but not since the 1940s for advanced countries.[24]

---

[23] Strictly speaking, the no-Ponzi-game condition is equivalent to the stabilization of the debt-to-GDP ratio only if the interest rate on government debt exceeds the growth rate of the economy (otherwise, it is more stringent). It is, however, common to assume that this is the case in the long run.

[24] Hyperinflations occurred in the aftermath of major wars and in a context of domestic political instability, although moderate inflation has also occasionally played a significant role in reducing the real value of debt—especially until the 1950s. Partial defaults occurred during the interwar period, for example, in Italy in the late

- A rise in debt ratios does not seem likely, in itself, to cause a large increase in interest rates. While such an increase would make the solvency arithmetic less favorable, empirical evidence shows that, in normal circumstances and in advanced countries, even a 10 percentage point of GDP increase in debt ratios would raise interest rates only by a few basis points (at least, if debt ratios are below 100 percent).

Box 6.1. Debt/GDP Stabilizing Primary Balance

$$\Delta\left(\frac{D}{Y}\right)_t = \left(\frac{r-g}{1+g}\right)\left(\frac{D}{Y}\right)_{t-1} - pb$$

where D is the debt stock, Y is GDP, r is the nominal interest rate, g is the nominal growth rate, pb is the primary fiscal balance as a share of GDP, and Δ indicates a change over the previous year. The debt ratio is constant when $pb = (D/Y)(r-g)/(1+g)$.

37.   However, the rise in government debt cannot be ignored:

- There is a need to avoid the perception that all one-off shifts in debt ratios would be accommodated: in order to allow government debt to act as shock absorber in bad years, it must improve in good years. Thus, particularly in countries with relatively high debt ratios, it will be necessary not just to *stabilize* the debt ratio but to bring it back to its precrisis level (or even below, if the initial level was excessive). In this respect, in 2014, gross government debt ratios would stand above 100 percent of GDP in six advanced economies (Belgium, Greece, Ireland, Italy, Japan, and the United States) and between 60–100 percent of GDP in ten (Table 6.1).[25] This level of debt sets a more demanding requirement on the primary balance: for example, for a 10 percent increase in the debt ratio, the primary balance would have to improve by more than 1 percentage point to bring back the ratio to its original level within 10 years.

- Debt tolerance seems to be lower for emerging economies. Indeed, government debt was below 60 percent of GDP in most default cases recorded in emerging economies in recent decades, though there has been wide variation (Reinhart, Rogoff, and Savastano, 2003; and IMF, 2003). Lower debt tolerance in these countries may reflect factors related to liquidity and solvency risks, such as greater reliance on financing by nonresidents, low

---

1920s (Alesina, 1988), and in the United States in 1933, when the abrogation of "gold clauses" in debt contracts prevented a 25 percentage point increase in the government debt/GDP ratio (Kroszner, 2003).

[25] Some advanced countries have exhibited strong resilience to high government debt. Japan is the most noteworthy example.

shares of long-term, domestic currency denominated debt, and low and volatile revenue-to-GDP ratios.

Figure 6.2. Selected Countries: Public Debt-to-GDP Ratio
(In percent)
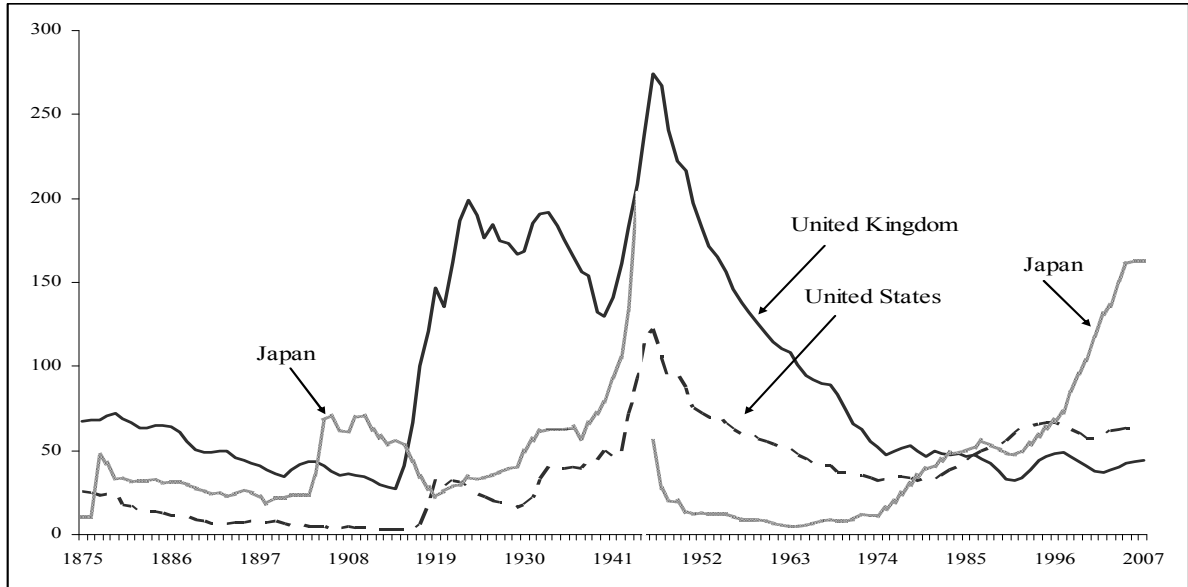
Sources: United Kingdom: Goodhart (1999) and IMF, World Economic Outlook database. United States: *Historical Statistics of the United States*, Millennial Edition Online; Office of Management and Budget; and U.S. Census Bureau. Japan: Bank of Japan, *Hundred-Year Statistics of the Japanese Economy*; and Toyo Keizai Shinposa, *Estimates of Long-Term Economic Statistics of Japan Since 1868*. Data for Japan refer to the central government.

- Rollover risks are likely to increase. Market analysts have recently focused on increased debt issuance by advanced countries in 2009. While roll-over risk has in the past been seen as affecting primarily emerging economies, higher-debt advanced countries may also be more exposed in coming years.

- When considering lessons from history, it is important to bear in mind two important differences. First, in wartime episodes, debt financing was facilitated by comprehensive government control over the economy, including capital controls. Moreover, citizens may feel the "moral duty" to support the war effort by purchasing government debt. Second, the current crisis involves truly novel features compared with historical episodes: in particular, it involves large contingent liabilities associated with guarantees of financial sector obligations; and it takes place, in many countries, in a context where pension and health care systems will give rise to large future spending increases. We turn to these factors in the next section.

Table 6.1. Debt and Primary Balance
(In percent of GDP)

	Pre-crisis WEO projections 1/				Current WEO projections				Debt-stabilizing PB or PB needed to bring debt to benchmark level (shaded) 2/
	Debt		PB		Debt		PB		
	2009	2012	2009	2012	2009	2014	2009	2014	
Advanced countries									
Australia	7.8	6.0	0.9	0.6	11.3	16.6	-3.6	-1.0	0.2
Austria	56.8	51.5	2.2	2.0	69.9	66.0	-0.7	2.5	1.0
Belgium	79.2	71.2	3.7	3.5	98.0	109.8	-0.6	-1.7	4.2
Canada	61.0	51.3	1.2	0.5	75.4	66.2	-2.8	0.0	1.0
Denmark	16.1	6.6	3.5	2.3	25.1	28.9	-1.5	-0.9	0.3
Finland	29.6	26.8	3.2	1.8	40.0	54.6	-2.4	-3.0	0.5
France	63.0	60.5	-0.3	0.8	74.9	89.7	-4.1	-1.8	2.7
Germany	61.1	59.4	2.1	2.0	79.4	91.0	-2.4	1.0	2.8
Greece	75.0	70.1	1.5	1.7	104.3	109.7	0.1	-1.0	4.2
Iceland	28.8	27.4	-1.6	-0.6	128.3	79.7	-7.4	5.0	2.0
Ireland	23.6	23.2	0.5	0.4	63.6	126.0	-12.7	-6.7	5.3
Italy	104.1	102.0	2.5	2.6	115.3	129.4	-0.4	0.8	5.6
Japan	194.2	189.6	-1.8	-0.2	217.2	234.2	-8.6	-4.7	9.6
Netherlands	42.4	33.1	2.8	2.9	57.9	59.6	-1.6	0.8	0.6
New Zealand	20.8	20.7	2.3	2.1	23.4	53.9	-2.1	-4.6	0.5
Norway	43.8	43.8	13.0	9.6	67.2	67.2	6.9	11.5	1.1
Portugal	63.6	57.0	1.3	2.1	72.8	85.6	-2.8	0.8	2.4
Spain	32.4	29.7	1.6	1.5	51.8	69.2	-6.3	-1.9	1.2
Sweden	33.6	21.1	2.1	2.7	39.9	39.3	-3.6	0.8	0.4
United Kingdom	42.9	42.5	-0.5	0.2	62.7	87.8	-7.8	-3.1	2.6
United States	63.4	65.8	-0.8	-0.3	87.0	106.7	-12.5	0.4	3.9
Emerging market economies									
Argentina	51.0	39.6	2.8	2.4	50.4	48.5	0.4	0.9	1.0
Brazil	67.7	62.7	3.4	3.4	65.4	54.1	2.8	3.5	1.4
Bulgaria	20.8	15.6	3.1	1.1	19.4	16.4	1.8	0.0	0.2
Chile	3.8	2.8	4.4	3.1	3.3	1.5	-3.0	1.3	0.0
China	13.4	11.2	-0.4	-0.6	19.8	17.9	-3.1	0.3	0.2
Hungary	66.0	65.6	0.3	0.2	75.9	59.0	1.5	4.3	1.7
India	69.8	61.6	0.2	0.5	86.8	76.8	-4.3	0.7	3.0
Indonesia	32.8	27.7	0.1	0.6	32.9	31.0	-0.5	0.3	0.3
Korea	36.1	35.9	2.2	1.5	40.0	51.8	-1.7	1.9	1.2
Malaysia	40.7	35.8	-1.1	-1.6	38.6	50.1	-3.3	-5.2	1.1
Mexico	40.9	41.3	0.9	0.2	46.9	44.0	-0.9	-0.1	0.7
Nigeria	11.1	8.9	8.1	4.2	9.7	13.0	-7.3	2.2	0.1
Pakistan	48.9	43.2	0.7	0.5	56.9	48.8	0.6	0.6	1.0
Philippines	46.1	42.7	2.2	1.9	50.1	44.2	2.2	2.2	0.7
Poland	45.6	44.6	-0.7	-0.2	50.9	52.1	-1.8	0.6	1.3
Russia	3.9	2.3	1.7	1.5	6.9	9.6	-5.7	-4.0	0.1
Saudi Arabia	14.8	11.4	19.2	16.8	15.6	7.9	-3.3	6.3	0.1
South Africa	24.0	18.1	2.5	1.9	29.1	29.9	-0.7	0.0	0.3
Turkey 3/	48.7	37.3	6.3	6.3	47.2	53.7	-0.2	1.7	1.4
Ukraine	13.5	12.1	-1.7	-1.6	19.3	15.1	-2.8	-1.5	0.1

Sources: IMF, *World Economic Outlook*, April 2009 and IMF staff calculations.
1/ IMF, *World Economic Outlook*, October 2007. A direct comparison for Turkey can not be made, as post-crisis numbers reflect a substantial revision in the GDP series; 2/ Average primary balance needed to stabilize debt at end-2014 level if the respective debt-to-GDP ratio is less than 60 percent for advanced economies or 40 percent for emerging market economies (no shading); or to bring debt ratio to 60 percent (halve for Japan and reduce to 40 percent for emerging market economies) in 2029 (shaded entries). The analysis is illustrative and makes some simplifying assumptions: in particular, beyond 2014, an interest rate–growth rate differential of 1 percent is assumed, regardless of country-specific circumstances; moreover, the projections are "passive" scenarios based on constant policies. The primary balances reported in this table include interest revenue, which could be sizable in some countries; 3/ Fiscal projections reflect staff's estimates based on the authorities' policy intentions as stated in the EU Pre-Accession Program document.

B. The Dynamics of Government Debt: Current and Future Deficits

38.   Debt solvency is a forward-looking concept. Public debt dynamics are driven not only by current but also future deficits. As discussed earlier, the crisis has led to a weakening of fiscal flows, not just stocks.

39.   Primary balances, in particular, are now at levels that, in many countries, are insufficient to ensure debt stabilization, let alone to reduce debt to precrisis levels. For some of the main advanced countries where the crisis has resulted in large increases in debt—including the United Kingdom and the United States—the primary fiscal balance would have to improve, starting in 2012, by several percentage points of GDP (compared with "unchanged policies" projections) to gradually bring the debt back to, say, 60 percent of GDP over the following 15 years (Table 6.1). More generally, almost all the advanced countries reported in Table 6.1 will still have primary balances in 2012 that are below what is required to stabilize their government debts (or bring them gradually down to 60 percent), in spite of the projected cyclical recovery of output and revenues (assuming an interest rate/growth rate differential of 1 percent). For a sample of selected emerging markets, the share of countries with 2012 primary balances below the level needed to stabilize the debt ratio or reduce it to a benchmark level of 40 percent of GDP is lower, but still more than one half. Primary gaps would be larger if the risks to the baseline materialize.

40.   To make matters worse, primary balances are projected to weaken further owing to the demographic shock.

- For the EU-25 countries, Eurostat 2008 projections suggest on average a doubling of the old-age dependency ratio (population older than 65 relative to working-age population) from 2005 to 2050, with the modal age-cohorts moving from mid-thirties to late fifties. These changes will exert upward pressure on public spending for pensions and health care (Table 6.2). The European Commission (EC, 2006) projects that for the EU-25, average spending will increase by 3.4 percent of GDP, with an increase in pension expenditures of 2.3 percent of GDP, and the rest accounted for by health and long-term care spending.[26]

- For the United States, the Congressional Budget Office (CBO) projects annual federal budget spending on pensions to increase from 4.3 percent to 6.1 percent of GDP from

---

[26] The EC projections of pension and health care costs are currently being updated. The baseline scenario assumes that the increase in life expectancy will lead to some postponement of the need for additional care. The health care projections assume an elasticity of demand higher than unity (1.1) in the short term, gradually declining to unity over the projection period.

2007 to 2050 (CBO, 2007).[27] Significant aging-related budgetary pressures are also present in Japan, particularly from spending on health and long-term care.

- While less affected, the share of the populations older than 65 is projected to increase in all emerging economies, with the old-age dependency ratio expected to triple, on average, by 2050 (United Nations, 2006). Korea faces the steepest increase, but there are also significant pressures in China and many other countries (Figure 6.3). Outside the G-20 countries, demographic trends are expected to be particularly negative in most of central and eastern Europe. Overall, budgetary aging-related spending is likely to increase in emerging economies, but given the smaller role of the public sector in the provision of pensions and health care (with some exceptions such as in eastern Europe), less so than in advanced economies.

- An illustrative additional "cost pressure" scenario (Table 6.2, 2050 CPS column) indicates that budget strains could be substantially larger if the increase in the relative price of health and long-term care services are higher than assumed in the relatively conservative baseline scenario. The high income elasticity shown by the price of these services in many countries and the rapid increase in social demand for them make this alternative scenario a plausible possibility.[28]

Figure 6.3. Population Aging in Emerging Market Countries, 2005–50
(Old-age dependency ratio) [1/]
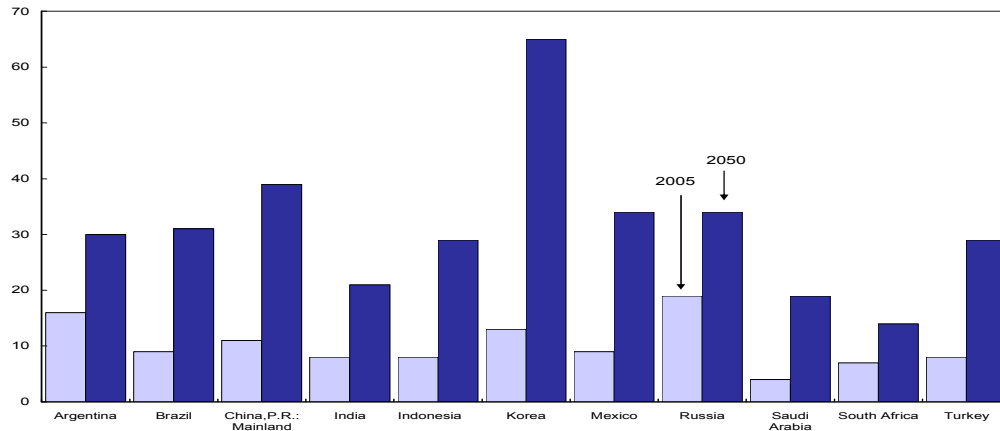
Source: United Nations, 2006.
1/ Population aged 65 or over relative to population aged 15–64, in percent.

---

[27] The relatively small increase in U.S. health care spending in Table 6.2 reflects the fact that only the demographic effect is considered and not the impact of high income elasticity of demand and/or faster growth of health care costs relative to GDP (see last bullet of this paragraph).

[28] The above outlook does not take into account, on the one hand, additional costs that may arise for public finances from climate change (IMF, 2008), and, on the other hand, some savings associated with demographic change, for example, lower costs for education.

Table 6.2. Fiscal Costs of Aging
(In percent of GDP)

	Pension		Health			Long-term health care			Total increase 2/
	t	2050	2005	2050	2050 CPS 1/	2005	2050	2050 CPS 1/	
Australia	3.0 (2000)	4.6	5.6	6.5	9.7	0.9	2.2	2.9	3.8
Canada	5.1 (2000)	10.9	6.2	7	10.2	1.2	2.3	3.2	7.7
France	12.8 (2004)	14.8	7	7.3	10.6	1.1	2.3	2.8	3.5
Germany	11.4 (2004)	13.1	7.8	8.2	11.4	1	1.9	2.9	3
Italy	14.2 (2004)	14.7	6	6.5	9.7	0.6	2	3.5	2.4
Japan	7.9 (2000)	8.5	6	7.1	10.3	0.9	2.3	3.1	3.1
Korea	2.1 (2000)	10.1	3	4.6	7.8	0.3	4.1	4.1	13.4
Mexico	…	…	3	4.3	7.5	0.1	2	4.2	3.2
Russia	5.4 (2006)	8.4	3.2	3.3	…	…	…	…	3.2
Spain	8.6 (2004)	15.7	5.5	6.4	9.6	0.2	1	2.6	8.8
Turkey	…	…	5.9	6.7	9.9	0.1	1.8	1.8	2.5
United Kingdom	6.6 (2004)	8.6	6.1	6.5	9.7	1.1	2.1	3	3.4
United States	4.3 (2007)	6.1	6.3	6.5	9.7	0.9	1.8	2.7	2.9

Sources: Organization for Economic Cooperation and Development (2001 and 2006); European Commission (2006); Hauner (2008); World Bank (2006); and Congressional Budget Office (2007). Data for other G-20 countries were not available.
1/ CPS = cost pressure scenario. For health spending, assumes additional 1 percent annual growth in spending on top of the demographic and income effect. For long-term health care, it assumes full "Baumol" effect, that is, long-term costs per dependent increase.
2/ Total increase includes change in the fiscal cost of aging due to pension, health, and long-term health care between *t* and 2050 for the base-case scenario only.

41.   Altogether the global fiscal outlook is somber. The debt ratio of G-20 advanced countries is projected to increase by an additional 59 percentage points by 2030 (Figure 6.4).[29] Strains are also likely to appear in emerging economies (as demographic forces will operate also there), though long-term projections in those economies are subject to greater uncertainty, owing to data limitations.

---

[29] The projection assumes an interest rate growth differential as projected in the April 2009 *World Economic Outlook* until 2014 and converging thereafter to 1 percentage point; and pension and health contributions remaining constant as a ratio to GDP after 2014.

Figure 6.4. Advanced G-20 Countries: Government Debt [1, 2]
(In percent of GDP)
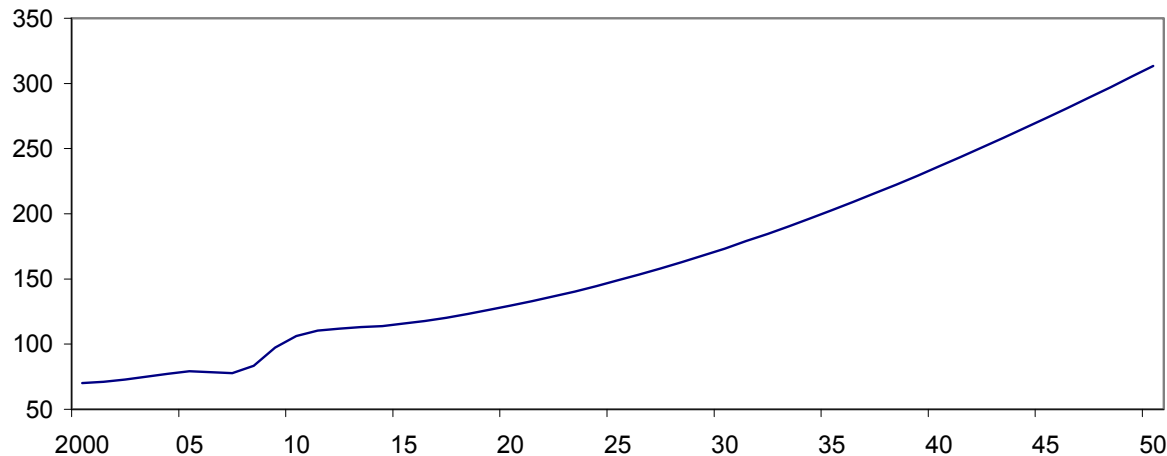
Sources: IMF, *World Economic Outlook (WEO)*, April 2009 projections up to 2014.
1/ After 2014, projections assume (1) structural primary balance deteriorates due to demographic factors
(Table 6.2); (2) if the debt-to-GDP ratio falls below 20 percent, the fiscal balance loosens to ensure the debt
ratio remains above 20 percent; in the case of Korea, which faces particularly severe demographic pressures,
the debt ratio is permitted to fall below 20 percent; and (3) the interest rate/growth differential converges
to 1 percentage point.
2/ Debt data correspond to general government if available, otherwise most comprehensive fiscal aggregate
reported in the *World Economic Outlook*. Averages based on PPP GDP weights.

C. The Way Forward

42.   This somber outlook raises two critical, and related, questions:

- Should the economic outlook deteriorate further, how much room does fiscal policy have
to continue its supportive action?

- What should be done to reassure markets that fiscal solvency is not at risk?

43.   The issue of how much further room there is for fiscal support cannot be answered in
absolute terms, but should be addressed as a risk management issue. Indeed, not all countries
will have fiscal space for stimulus. So governments will have to balance two opposite risks:

- *The risk of prolonged depression and stagnation.* From this perspective, the economic
and fiscal costs of inaction could be even larger than the costs of action. The higher this
risk, the more it will be necessary for governments to take risks on the fiscal side by
providing further support (to the financial sector—as a key priority—but possibly also to
directly support aggregate demand).[30]

---

[30] To the extent that fiscal action is effective in supporting growth, its net fiscal cost is reduced by the automatic
stabilizers. For example, the net cost of a 1 percentage point of GDP of fiscal stimulus, assuming a unit
multiplier, is about ¾ percentage point of GDP for the G-20. More generally, if fiscal action succeeds in

(continued)

- *The risk of a loss of confidence in government solvency.* Fiscal balances are expected to deteriorate in bad times. But the risks have increased and there is a need to closely monitor developments in real interest rates, spreads, and debt maturity. The more these indicators weaken, the less would be the room for further fiscal action.[31]

44.   Balancing these risks will be challenging but the trade-off can be improved if governments clarify, in a credible way, their strategy to ensure fiscal solvency. Indeed, greater clarity is urgently needed. The problem cannot simply be ignored.

45.   A strategy to ensure fiscal solvency should be based on four pillars**:**

- Fiscal stimulus packages should consist as much as possible of temporary measures;

- Policies should be cast within medium-term fiscal frameworks that envisage a gradual fiscal correction, once economic conditions improve, with proper arrangements to monitor progress;

- Governments should pursue growth enhancing structural reforms; and

- There should be a firm commitment and a clear strategy to contain the trend increase in aging-related spending in countries exposed to unsustainable demographic shocks.

These prescriptions are, of course, not new. Some of them are part of the long-standing policy advice provided by the IMF. However, the weaker state of public finances has now raised the cost of inaction.

The Composition of the Stimulus Package

46.   The fiscal stimulus should not raise deficits permanently. As noted in Spilimbergo and others (2008), fiscal stimulus measures will likely have to be prolonged—because the decline in private sector demand is likely to be long-lasting—but should not be permanent. Ideally, what is needed is an intertemporal shift that, with respect to the precrisis baseline, raises deficits for the expected duration of the crisis and reduces them later, so as to leave long-run debt levels unchanged. Stimulus measures (or sets of measures) should thus be self-reversing, to the extent possible, or at least temporary.

---

rescuing the economy from a downward expectations spiral, its long-run costs could be lower than in the absence of intervention.

[31] Indeed, as noted in Spilimbergo and others (2008), even in 2008, not all countries were in a position to implement fiscal stimulus.

47.   Thus far, not all the stimulus provided conforms to this prescription. The deficit increases related to automatic stabilizers will, of course, be reversed when output recovers, but only part of the announced stimulus packages involves temporary or self-reversing measures. It will, therefore, be important that governments indicate at an early stage how these measures will be offset over the medium term.

Medium-Term Fiscal Frameworks

48.   Ensuring fiscal solvency would be facilitated by medium-term fiscal and debt targets buttressed by a clear adjustment strategy and strong institutional setup (Kumar and Ter-Minassian, 2007). Governments should have a medium-term plan on how to move public finances back to a more sustainable level, backed up by clear policies and supported, where appropriate, by fiscal responsibility laws, fiscal rules, or independent fiscal councils. With the recovery, this approach would help mitigate pressures from procyclical spending increases or tax cuts, allowing more robust buffers to be built. Such an approach has been followed successfully by some countries that had to face a surge of government debt as a result of financial crises. More specifically:

- Medium-term frameworks setting credible targets over the following four–five years can help clarify vulnerabilities, and impel policymakers to take steps to improve the medium-term viability of public finances. But stating medium-term targets is not sufficient: the credibility of these targets—more than in the past—should be buttressed by the definition of clear policy actions through which they will be reached. This is not always the practice in countries with medium-term scenarios.

- To capture fiscal risks, such frameworks should also assess debt solvency under different scenarios. This is particularly important in the current context in which the contingent liabilities of governments have increased.

- Effective and transparent processes should be set in place to maximize revenues from management and recovery of assets acquired during the financial support operations. Losses incurred by central banks as a result of support to financial institutions should be promptly covered through transfers recorded in the government's budget.

- Fiscal rules may help to maintain or restore solvency if they are supported by the requisite political commitment, allow sufficient flexibility to respond to exceptional circumstances, and are designed and implemented in a way that avoids excessive constraints on policy. Whether or not formal rules are introduced, governments should be committed to tighten fiscal policy in good times, now that fiscal policy has been relaxed during bad times.

- A complementary role can be played by fiscal councils, already established in many countries, to provide independent monitoring and forecasts.

Growth-Enhancing Structural Reforms

49.   Rapid growth has been a key factor in bringing about sustained improvements in government debt ratios. For example, the aftermath of World War I saw a further increase in the debt ratios in several advanced economies (e.g., France and the United Kingdom) as a result of the Great Depression, whereas the aftermath of World War II was characterized by declining debt ratios fostered by rapid economic growth. Strong growth has also been a key source of debt reduction in more recent emerging market episodes (Table 6.3; see also World Bank, 2005; and IMF, 2005).

Table 6.3. Emerging Economies: Selected Debt Reduction Episodes
(In percent of GDP)

Country/Time period	Initial level of debt	Debt reduction	Contribution to debt reduction			
			Primary surplus	Growth-interest rate differential	Real exchange rate appreciation	Other
Poland (1993-98)	84.3	47.7	3.3	22.6	9.6	12.1
Chile (1990-1998)	45.9	33.0	30.0	11.5	3.9	-12.5
Ecuador (1988-1990)	113.5	32.1	4.1	11.4	-11.8	28.4
Pakistan (2001-07)	84.8	29.7	6.4	17.1	5.1	1.0
Egypt (2003-07)	114.9	27.7	-11.0	29.9	1.9	6.8
Jamaica (2002-07)	122.0	27.4	50.8	-30.3	3.8	3.2
Brazil (2002-05)	85.0	20.8	12.4	1.7	4.6	2.1
Colombia (2002-07)	49.8	16.4	14.4	1.0	4.6	-3.6
Malaysia (2003-07)	44.4	14.5	-4.3	8.3	2.4	8.1
Tunisia (2001-07)	62.7	11.8	-0.7	8.1	6.4	-2.0
Average (unweighted)	80.7	26.1	10.6	8.1	3.0	4.4

Sources: IMF, *World Economic Outlook;* and IMF staff estimates.

50.   Thus, together with other structural reforms, expenditure and tax policies will need to focus on fostering growth (Daniel and others, 2006; Gupta, Clements, and Inchauste, 2004). Expenditure-led adjustments supported by tax base broadening, creating scope for tax rate reductions, have in some cases reduced interest costs and spurred economic growth, resulting in especially successful debt reductions. More specifically:

- *Expenditure policies*. The fiscal stimulus measures that are being adopted should be consistent with boosting growth potential. Similarly, in identifying the measures needed to consolidate the fiscal accounts, governments should seek to reduce unproductive spending while preserving expenditures that are likely to yield high-quality growth and a high social rate of return (e.g., basic transportation infrastructure, education, preventive health care). Distributional objectives should be pursued by targeted spending measures.

- *Tax reform*. Reforms should focus not only on broadening the tax base and reducing rates, so as to minimize distortions and promote equity, but also on improving incentives to work and to invest, simplifying administration and compliance, and enhancing the transparency of the tax code. Changes to the tax structure should give greater emphasis—beyond externality-correcting taxes (e.g., carbon pricing schemes)—to consumption taxes (especially a broad-based VAT), and property taxes (with income tax and benefit systems addressing equity considerations more directly), and reduce remaining taxes on international trade. It will also be important to reduce the bias in favor of debt vis-à-vis equity financing, present in most tax systems.

Containing Age-Related Spending

51.   Two considerations are relevant in the current context:

- In spite of the large fiscal costs of the crisis, the major threat to long-term fiscal solvency is still represented, at least in advanced countries, by unfavorable demographic trends. Net present value calculations illustrate the differential impact of the crisis vis-à-vis aging: in particular, for advanced countries, the fiscal burden of the crisis is about 11 percent of the aging-related costs (Table 6.4, last column). Addressing pressures arising from aging can go a long way in allaying market concerns about fiscal solvency, in spite of the current fiscal weakening.

- The strategy followed so far in many advanced countries (notably in Europe) has focused not only on entitlement reforms, but also on prepositioning the fiscal accounts for the demographic shock, by cutting the level of debt and reducing spending in other areas (or keeping relatively high tax rates) to make room for expected future increases in pension and health spending. However, this strategy has been derailed, or at least delayed, by the crisis (see Figure 6.5, reporting the pre- and post-crisis outlook in the fiscal balances of five large European countries).

52.   The fiscal impact of the crisis thus reinforces the urgency of entitlement reform. With larger headline debt and lower primary balances, pressures from aging will need to be addressed directly by reforming pension and health entitlements. The amount and speed of adjustment should be country-specific, depending on factors such as demographic and economic growth prospects, cost of borrowing, debt tolerance, and public attitudes toward the tax burden, expenditure needs, and the size of the public sector. Nevertheless, for most countries, postponing required reforms would likely result in larger and more painful adjustment in later years. Moreover, compared with the previously pursued strategy of prepositioning the fiscal accounts for the demographic shock, a direct reform of health and pension entitlements may have some advantages, as it involves smaller cuts in other priority spending (or lower taxation).

Table 6.4. Net Present Value of Impact on Fiscal Deficit of Crisis and Aging-Related Spending [1], [2]
(In percent of GDP, unless otherwise indicated)

| Country	Crisis	Aging	Crisis/Aging
Australia	30	482	6.1
Canada	21	726	2.9
France	31	276	11.2
Germany	29	280	10.3
Italy	35	169	20.7
Japan	35	158	22.3
Korea	20	683	2.9
Mexico	13	261	4.8
Spain	39	652	5.9
Turkey	22	204	10.9
United Kingdom	48	335	14.2
United States	37	495	7.5
Advanced G-20 Countries	35	409	10.8

Source: IMF staff estimates.

1/ Table reports net present value of the impact on fiscal balance of the crisis and of aging-related spending increases reported in Table 6.1. The third column reports the ratio of the first column to the second column in percent. The discount rate used is 1 percent a year in excess of GDP growth for each country. Given that real growth is expected to average 3 percent a year, this is equivalent to applying an average real discount rate of 4 percent a year. For years after 2050, the calculation assumes the impact is the same as in 2050.
2/ Averages based on PPP GDP weights.

Figure 6.5. EU-5 Countries: Outlook for Fiscal Balance Versus 2006 Stability Program[1]
(In percent of GDP)
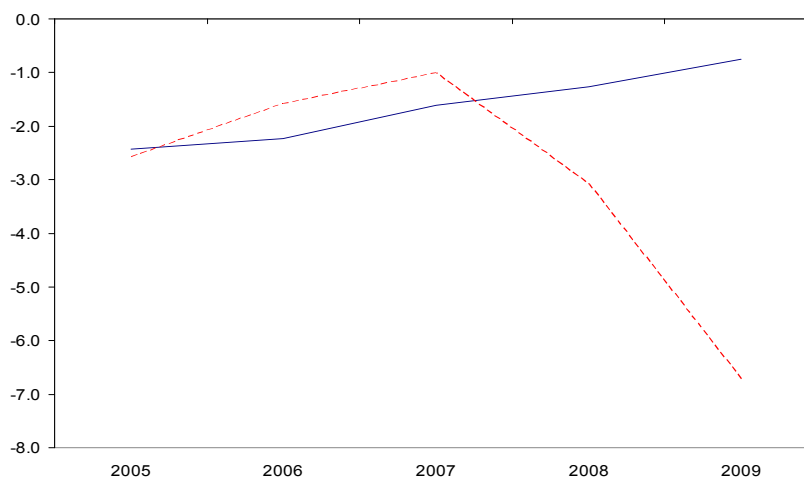
1/ Solid line refers to 2006 Stability Program.
Dashed line refers to IMF, *World Economic Outlook*, April 2009 estimates and projections.
EU-5 denotes simple average of France, Germany, Italy, Spain, and United Kingdom.

53.   Effective entitlement reform should abide by well-known principles. In the area of pensions, savings must be attained while sufficiently preserving intergenerational equity. The main tool should be increases in the effective retirement age, although other parametric changes may be needed. Any assistance to funded pension plans that incurred major losses as a result of the financial crisis should be targeted to lower-income households for whom current retirement income is likely to be seriously reduced. Regarding health care, reforms will need to be equitable to secure broad public support when limiting the service coverage, or shifting costs to the private sector (Verhoeven, Gunnarsson, and Carcillo, 2007).

54.   A specific challenge in the current conjuncture is to take early action in these areas without undermining ongoing efforts to jumpstart economic growth. The key objective should be to ensure that entitlement reform yields savings for the government without reducing aggregate demand. Some steps are less controversial, from an economic perspective. For example, in the area of pensions, an increase in the retirement age would seem unlikely to lead to a decline in consumption. Other steps are more controversial: an increase in contribution rates would reduce workers' disposable incomes and, as a result, consumption; this latter type of measure would thus seem less desirable in the current conjuncture. In the area of health care, while most countries will need to limit the types of services covered under public systems to ensure solvency, reforms aimed at expanding the provision of basic health care coverage to greater shares of the population—in countries where no major fiscal correction is needed even after the crisis—could help reduce precautionary savings by households. Consideration could also be given to reducing entitlements in a gradual way so that any adverse economic reaction would be spread out over time. What is critical, in any case, is the clear communication of a stronger commitment than in the past to address entitlement reforms decisively, supported by the identification of the necessary actions and their timing.

55.   Enacting major reforms in entitlements at times of severe economic weakening is likely to be challenging from a political economy perspective, but there are opportunities too. If the fiscal stimulus succeeds in supporting activity, the climate for reform would also improve. Indeed, it may also be that the crisis environment offers in some countries an opportunity for a comprehensive "big bang" approach, where a strong package of immediate stimulus to support the economy would provide the quid pro quo for the introduction of long-lasting reforms in entitlements and other areas. Moreover, times of crisis have in the past provided opportunities for enacting politically difficult reforms.

References

Alesina, Alberto, 1988, "The End of Large Public Debts" in *High Public Debt: The Italian Experience*, ed. by Francesco Giavazzi and Luigi Spaventa (Cambridge, United Kingdom: Cambridge University Press).

Burtless, Gary, 2008, "Stock Market Fluctuations and Retiree Incomes: An Update" (Washington: Brookings Institution).

Carroll, Christopher D., Misuzu Otsuka, and Jirka Slacalek, 2006, "How Large Is the Housing Wealth Effect? A New Approach" NBER Working Paper No. 12746 (Cambridge, Massachusetts: National Bureau of Economic Research).

Cebotari, Aliona, 2008, "Contingent Liabilities: Issues and Practice," IMF Working Paper 08/245 (Washington: International Monetary Fund).

Congressional Budget Office (CBO), 2007, *The Long-Term Budget Outlook,* December (Washington).

Daniel, James, Jeffrey Davis, Manal Fouad, and Caroline Van Rijckeghem, 2006, *Fiscal Adjustment for Stability and Growth* (Washington: International Monetary Fund).

European Commission (EC), 2006, *The Impact of Aging on Public Expenditure.* Special Report No. 1 (Brussels).

Goodhart, Charles, 1999, "Monetary Policy and Debt Management in the United Kingdom: Some Historical Viewpoints," in *Government Debt Structure and Monetary Conditions*, ed. by K. Alec Chrystal (London: Bank of England).

Gupta, Sanjeev, Benedict Clements, and Gabriela Inchauste, 2004, *Helping Countries Develop: The Role of Fiscal Policy* (Washington: International Monetary Fund).

Hauner, David, 2008, "The Macroeconomic Effects of Pension Reform," *Russian Federation: Selected Issues*, IMF Country Report No. 08/308 (Washington: International Monetary Fund).

International Monetary Fund, 2001, *Manual on Government Finance Statistics* (Washington).

_____, 2003, "Public Debt in Emerging Markets: Is It Too High?" Chapter 3, *World Economic Outlook, September 2003* (Washington).

_____, 2005, "Is Public Debt in Emerging Markets Still Too High?" Box in *World Economic Outlook, September 2005* (Washington).

_____, 2007, *World Economic Outlook, October 2007* (Washington).

_____, 2008, "The Fiscal Implications of Climate Change," Fiscal Affairs Department, February 22. Available via the Internet: (http://www.imf.org/external/np/pp/eng/2008/022208.pdf).

_____, 2009a, "The State of Public Finances: Outlook and Medium-Term Policies After the 2008 Crisis," Fiscal Affairs Department, March 6. Available via the Internet: www.imf.org/external/np/pp/eng/2009/030609.pdf.

_____, 2009b, "Companion Paper—The State of Public Finances: Outlook and Medium-Term Policies After the 2008 Crisis," Fiscal Affairs Department, March 6. Available via the Internet: www.imf.org/external/np/pp/eng/2009/030609a.pdf.

Kroszner, Randall S., 2003, "Is it Better to Forgive Than to Receive? An Empirical Analysis of the Impact of Debt Repudiation," University of Chicago Graduate School of Business. Available via the Internet: http://gsbwww.uchicago.edu/fac/randall.kroszner/research/.

Kumar, Manmohan S., and Teresa Ter-Minassian, eds., 2007, *Promoting Fiscal Discipline* (Washington: International Monetary Fund).

Mercer, 2009, "Pension Plan Deficit Hits Record $409 Billion for S&P 1500 Companies; Pension Expense May Rise," January 7, 2009. Available via the Internet: http://www.mercer.com/summary.htm?siteLanguage=100&idContent=1332250.

Morris, Richard, and Ludger Schuknecht, 2007, "Structural Balances and Revenue Windfalls: The Role of Asset Prices Revisited," ECB Working Paper No. 737 (Frankfurt: European Central Bank).

Munnell, Alicia, Jean-Pierre Aubry, and Dan Muldoon, 2008, "The Financial Crisis and State/Local Defined Benefit Plans," Issue Brief 8-19 (Chestnut Hill, Massachusetts: Center for Retirement Research at Boston College).

Organization for Economic Cooperation and Development (OECD), 2001, *Fiscal Implications of Aging*, Economics Department Working Paper No. 305 (Paris).

_____, 2006, *Projecting OECD Health and Long-Term Care Expenditures: What Are the Main Drivers?* Economics Department Working Paper No. 5 (Paris).

_____, 2008, "Pension Markets in Focus," Issue 5 (Paris).

Pension Benefit Guaranty Corporation (PBGC), 2008, *Annual Management Report: Fiscal Year 2008* (Washington).

Pension Protection Fund (PPF), 2008, *Annual Report and Accounts, 2007/2008* (London).

Reinhart, Carmen, Kenneth Rogoff, and Miguel Savastano, 2003, "Debt Intolerance," *Brookings Papers on Economic Activity:1*, pp. 1–62.

Spilimbergo, Antonio, Steve Symansky, Olivier Blanchard, and Carlo Cottarelli, 2008, "Fiscal Policy for the Crisis," IMF Staff Position Note 08/01 (Washington: International Monetary Fund).

United Nations, 2006, *World Population Prospects: The 2006 Revision*, United Nations Population Division (New York).

Verhoeven, Marijn, Victoria Gunnarsson, and Stéphane Carcillo, 2007, "Education and Health in G7 Countries: Achieving Better Outcomes with Less Spending," IMF Working Paper 07/263 (Washington: International Monetary Fund).

Whitehouse, Edward, 2007, *Pensions Panorama* (Washington: World Bank).

World Bank, 2005, "Public Debt and Its Determinants in Market Access Countries" (unpublished; Washington).

_____, 2006, "From Red to Grey: Report on Aging in Eastern Europe" (Washington).